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EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

ABSTRACT **BOOK**

ESCAIDE

European Scientific Conference on Applied Infectious Disease Epidemiology

Lisbon, 11–13 November 2010

The conference is sponsored by ECDC (European Centre for Disease Prevention and Control) and jointly organised by ECDC, EPIET (European Programme for Intervention Epidemiology), EAN (EPIET Alumni Network), TEPHINET EUROPE (Training Programs in Epidemiology and Public Health Interventions NETwork)

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FOREWORD

Welcome by Chairman of ESCAIDE
I would like to extend a warm welcome to all those attending the 4th ESCAIDE in Lisbon. This year we experienced a record amount of abstract submissions – almost double compared to previous years. This is of course promising not only for this year's scientific programme but for future ESCAIDE conferences. I would also like to thank our invited plenary speakers for taking time to contribute to what will hopefully lead to stimulating discussions and exchange of experience and knowledge.

Johan Giesecke
Chair, ESCAIDE

The aim of ESCAIDE has always been to provide a forum where the sharing of knowledge in the fields of applied infectious disease takes place. ESCAIDE has also been the platform for our future public health experts both within the FETP (Field Epidemiology Training Programme) and EPIET (European Programme for Intervention Epidemiology Training) to present their work and findings. This year does in fact celebrate 15 successful years of the EPIET programme which is now fully established at ECDC. This year we will also be able to welcome the first two fellows that have completed the most recent training programme coordinated by ECDC, EUPHEM (European Public Health Microbiology Training Programme) which aims at developing a European network of public health microbiologists to strengthen communicable disease surveillance and control.

It is with pleasure that I can already now announce that Stockholm will host ESCAIDE 2011 at Waterfront Congress Centre on 7–9 November 2011. Hopefully we will see you all there.

Johan Giesecke
Chair, ESCAIDE

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PLENARY SESSION **ABSTRACTS**

ESCAIDE

PLENARY SESSIONS **ABSTRACTS**

Plenary Session A — Novel methods to identify and assess infectious disease threats

Mapping infectious disease vector habitats in Europe: VECMAP, an ESA Integrated Applications Promotion project

Michiel Kruijff (1), G. Hendrickx (2), A. Ginati (1)

AFFILIATION:
1. European Space Agency, ESTEC, Noordwijk, The Netherlands
2. Avia-GIS, Zoersel, Belgium

ABSTRACT

Mosquito-borne diseases such as Malaria, Chikungunya, Dengue and West Nile are an increasing public health concern in many European countries. International exchanges and changing climate conditions set a favourable ground for foreign species to colonize new environments world-wide. VECMAP is a project of the European Space Agency's Integrated Application Promotion program. A consortium led by Avia-GIS is currently developing a service to assist national public health agencies and regional mosquito controllers in predicting mosquito-realted health risks (early warning) and in reducing nuisance (targeted control effort). VECMAP enhances and simplifies traditional modelling, field and laboratory work with the help of satellite navigation and Earth Observation.

Predicting mosquito abundance and risks is challenging. It requires elaborate numerical simulations, to be steadily fed with observations. To this end field measurements of environmental properties are carried out. In addition mosquitoes are trapped in a large number of locations and analyzed in a laboratory so the presence of the various species can be identified. It is expected that the amount of field work can be greatly reduced by exploiting capabilities of satellites.

Using geo-referencing techniques and mobile communication technologies, field data are automatically fed into the VECMAP prediction model. In addition space imagery (processed to extract vegetation, weather data, proximity of water bodies, land use) is used to smartly interpolate the in-situ data points. VECMAP provides maps of predicted risk of mosquito presence and supports the assessment of when and where hatching of larvae will occur. The services are easily accessible through a web interface.

Mosquito mapping is just one example where exploitation of space assets can support health and epidemiological activities. Other services developed under IAP address water management. Satellites prove useful to deliver and help process critical information on environment or infrastructure distributed over wide areas, in remote locations and/or over long durations.

Keywords: Vectors, GIS, Earth Observation, Satellite Navigation, Chikungunya, modelling, mosquitoes, aedes albopictus

CONTACT DETAILS:
Mr. M. Kruijff, ESTEC/TIA-AFS, Inbox Ca409, Keplerlaan 1,
2201 AZ NOORDWIJK, The Netherlands, michiel.kruijff@esa.int,
+31-71-565-8883

Plenary Session A — Novel methods to identify and assess infectious disease threats

EpiScanGIS: an online geographic surveillance system for invasive meningococcal disease

Presenting author: Johannes Elias, Authors: Johannes Elias, Heike Claus, Matthias Frosch, Ulrich Vogel

AFFILIATION:
Reference Centre for Meningococci, Institute for Hygiene and Microbiology, University of Wuerzburg, Germany

ABSTRACT:

The German Reference Centre for Meningococci (NRZM) performs typing of meningococcal strains and DNA isolated from cases of invasive meningococcal disease (IMD). Routine typing includes serogrouping and antigen sequence typing of meningococcal outer membrane proteins PorA and FetA. A capture-recapture analysis evidenced that NRZM processed samples from approx. 65% of all occurring cases of IMD in 2003. In 2005 the NRZM introduced regular prospective surveillance for spatio-temporal clusters of disease using the program SaTScan (www.satscan.org). A year later an interactive web-accessible geographic information system (GIS) for the prospective laboratory surveillance of IMD was launched in collaboration with Markus Reinhardt of the 2nd Chair of Informatics, University of Wuerzburg. Since its inception, EpiScanGIS (www.episcangis.org) has supported the objective assessment of several disease clusters, including community outbreaks of serogroup B disease in Western, and flare-ups of serogroup C disease in Southern Germany. EpiScanGIS is updated weekly with data from the NRZM and presently contains typing information of over 3600 cases from a period covering more than 5 years. It continues to serve as an epidemiological information hub facilitating communication between stakeholders in public health, which include regional and state health authorities, the Robert Koch-Institute, and the public.

Keywords: invasive meningococcal disease, disease cluster, laboratory surveillance, bacterial typing, geographic information system

CONTACT DETAILS:
Dr Johannes Elias, Institute for Hygiene and Microbiology,
University of Wuerzburg; Josef Schneider-Strasse 2,
97080 Wuerzburg, Germany.

Plenary Session A — Novel methods to identify and assess infectious disease threats

The Influenzanet self-reporting system warrants consistency in epidemic monitoring across countries and seasons

Presenting author: Sander P. van Noort;
Authors: Sander P. van Noort (1), C. T. Codeço (2), C. E. Koppeschaar (3), M. van Ranst (4), V. Faustino (1), M.G. Gomes (1).

AFFILIATION:
1. Instituto Gulbenkian de Ciência, Apartado 14, 2781-901 Oeiras, Portugal.
2. Oswaldo Cruz Foundation, Rio de Janeiro, Brazil.
3. De Grote Griepmeting / Acquisto Inter BV, Amsterdam, The Netherlands.
4. Laboratory of Clinical and Epidemiological Virology, Department of Microbiology and Immunology, Rega Institute for Medical Research, University of Leuven, Leuven, Belgium.

ABSTRACT
Recent public health threats have propelled major innovations on infectious disease monitoring, culminating in the development of innovative syndromic surveillance methods. Influenzanet is an internet-based system that monitors influenza-like illness (ILI) in cohorts of self-reporting volunteers in The Netherlands (since 2003), Belgium (2003), Portugal (2005), Italy (2008) and United Kingdom (2009).

Influenzanet participants are recruited from the general population by completing an intake questionnaire on one of the national websites, containing various demographic and life style questions. During the influenza season, participants receive a weekly newsletter by e-mail in which they are directed to an online questionnaire about a number of symptoms that they might have experienced since their last report.

Based on the reported symptoms, the ILI incidence in the cohort of Influenzanet participants determined.

We investigate and confirm coherence through the entire 7 years duration of Influenzanet's activity in The Netherlands, Belgium and Portugal, including the pandemic 2009-2010 season, when compared with data from the European Influenza Surveillance Network and Google Flu Trends. Using logistic regression models, we determine that diabetes or asthma, living with a child, being female, belonging to a young age group, and being a heavy smoker, are all independent predictors of ILI risk. Risk factors in the 2009-2010 season were similar to previous seasons, with a slight increased risk in children and people with chronic diseases, and a slight decrease in seniors.

These results further establish that the Influenzanet population is a valuable sentinel for ILI surveillance.

Keywords: Influenza, Population Surveillance, Internet, Disease Outbreaks

CONTACT DETAILS:
Sander P. van Noort, Instituto Gulbenkian de Ciência, Oeiras, Portugal vnoort@igc.gulbenkian.pt

Plenary Session B — The Coming Flu Pandemic – How Europe should do even better next time

The 2009 influenza A (H1N1)v pandemic in the EU/EEA countries

Presenting author: Andrew J. Amato-Gauci MD, MSc, FFPH, FRCP (Glasg.), Authors: Andrew J. Amato-Gauci, Zucs P., Snacken R., Ciancio B., Lopez V., Broberg E., Penttinen P., Nicoll A., on behalf of the EISN.

AFFILIATIONS:
ECDC, Stockholm.

ABSTRACT:
Epidemiological and virological data reported to the European Centre for Disease Prevention and Control (ECDC)'s European Surveillance system (TESSy) through the European Influenza Surveillance Network (EISN), supplemented by epidemic intelligence and targeted science watch methods is presented. The main trends derived from the analysis and interpretation of this data over the whole official length of the 2009 pandemic (68 weeks from April 2009 to August 2010) in the EU/EEA countries is discussed.

In the EU/EEA, A(H1N1)v started to be transmitted around week 16 of 2009, leading on to an initial spring/summer wave of transmission which was only striking in a few countries. The transmission briefly subsided as the summer progressed, but then accelerated again in the early autumn, this time affecting all countries. In most countries, this wave of infection was sharp in shape, lasting about 14 weeks and was accompanied with a similar wave of hospitalisations and deaths. By the time the WHO declared the pandemic officially over in August 2010 (week 32/2010), the EU/EEA had been in the post-peak phase for about 34 weeks.

The EISN virological and primary care-based surveillance in particular worked well, augmented by the ECDC epidemic intelligence and targeted science watch activities.Some general lessons are apparent, there needs to be:
– better routine 'severe end' surveillance of people in hospitals and deaths.
– more sharing of early analyses from the first affected countries.
– research and development into how to make seroepidemiology available in real time
– more modelling that is more closely related to policy and operations across Europe, not just in one or two countries.

Keywords: Influenza, Pandemic, Surveillance, Epidemic Intelligence.

CONTACT DETAILS:
AJAG. Dr. Andrew Joseph Amato-Gauci MD, MSc, FFPH, FRCP (Glasg.), Deputy Head, Surveillance Unit, European Centre for Disease Prevention and Control (ECDC), Tomtebodavägen 11A, 171 83 Stockholm, Sweden. Office tel: +46 8 586 01 420, Fax: +46 8 586 01 001. Email: Andrew.amato@ecdc.europa.eu

PLENARY SESSIONS **ABSTRACTS**

Estimating the mortality and YPLL attributable to influenza to direct public health action

Kåre Mølbak, MD, DMSc

AFFILIATIONS:
Department of Epidemiology, Statens Serum Institut, Copenhagen, Denmark

ABSTRACT:
Measurement of influenza-related mortality is saddled with methodological challenges. In the 2009 influenza A/H1N1 pandemic, case-fatality rates were exaggerated due to underascertainment of the true number of infections and could therefore not be applied to the population as a whole or easily be compared between countries and over time.

Reporting of deaths among virological confirmed cases underestimated total number of deaths and numbers were not comparable with available estimates of deaths due to seasonal influenza or previous pandemics. Attempts have been made to adjust these figures by "multipliers", but uncertainty around "multipliers" is substantial. Relatively speaking, the pandemic spared individuals > 50 years of age, which led to a shift in the age-distribution of cases compared with seasonal influenza. Therefore, it has been proposed to apply measures such as years of potential life lost (YPLL) reflecting that death early in life represents a more significant loss than late in life. YPLL estimates depends on the definition of life expectancy, and since most influenza deaths occur in patients with underlying illness it is important to include competing risks in the estimation of mortality burden. YPLL may not meet this requirement and may therefore overestimate the mortality burden.

To overcome these challenges, it is proposed to use real-time monitoring of all-cause mortality to obtain early and robust measures of overall impact on mortality. This approach is applied in a project including countries of the European network of monitoring mortality for public health action, EuroMOMO. These estimates measure age-specific impact on mortality, sudden as well as sustained shifts in mortality, and assess potential harvest effects, and may therefore serve as means to overcome the methodological challenges discussed above.

Plenary Session B The Coming Flu Pandemic – How Europe should do even better next time

How surveillance in a pandemic can be improved with serology

Pia Hardelid (1), K. Hoschler (2), N. Andrews (1), E. Stanford (3), M. Zambon(2), M Baguelin (4), E. Miller (5)

AFFILIATIONS:
1. Statistics Unit, Health Protection Agency Centre for Infections, London, UK
2. Respiratory Virus Unit, Health Protection Agency Centre for Infections, London, UK
3. Vaccine Evaluation/Seroepidemiology Unit, Health Protection Agency, Manchester, UK
4. Modelling and Economics Unit, Health Protection Agency Centre for Infections, London, UK
5. Immunistion, Hepatitis and Blood Safety Department, Health Protection Agency Centre for Infections, London, UK

ABSTRACT:
Background: Knowledge of the age-specific prevalence of pre-existing immunity to 2009 pandemic influenza A H1N1 virus, and the incidence of infection by pandemic influenza is essential for modelling the future burden of disease and the effectiveness of interventions such as vaccination.

Methods: The Health Protection Agency has collected and stored residual serum samples sent for microbiology testing throughout England for many years for the purpose of monitoring population immunity to vaccine preventable diseases. Such samples, collected in 2008, were used to determine the extent of baseline prevalence of cross-reactive antibody to influenza A/H1N1 (2009), using haemagglutination inhibition (HI) and microneutralisation (MN) assays. Samples collected during the course of the 2009 pandemic were used to estimate seroincidence after the summer and autumn waves.

Results: Baseline HI and MN titres of cross-reactive H1N1 antibody showed a strong positive association with age. Using samples collected during the pandemic, it was possible to demonstrate that the extent of spread of H1N1 infection in the summer wave was limited in areas outside London and that younger age groups (<24 years of age) were the most affected. HI results from samples collected in the early months of 2010 indicate 70% of school aged children (between 5 and 14 years) in London and around 60% of school children elsewhere seroconverted during the pandemic period.

Conclusions: Rapid development of HI and MN assays, a large archive of stored sera and a pre-existing network of collecting laboratories made large-scale and timely collection of samples for H1N1 serology during the pandemic possible. Some challenges will also be discussed.

Laboratory developments – production of serological data

Johan H.J. Reimerink, A. Meijer and M. P. G. Koopmans

AFFILIATIONS:
Laboratory for Infectious Diseases and Screening, National Institute for Public Health and the Environment, Bilthoven, the Netherlands

ABSTRACT:
Hemagglutinin (HA) and neuraminidase (NA) are the major antigenic determinants of influenza A viruses and strains are grouped into subtypes that are numbered sequentially after the HA protein (H1 to H16) and NA protein (N1 to N9). Hemagglutinin mediates attachment to and entry of the virus into the host cells by binding to sialic acid receptors at the cell surface and is the main target of protective humoral immunity by neutralizing antibodies. A notable feature of influenza virus is their propensity to undergo antigenic variations through antigenic drift and shift resulting in alterations in the antigenicity of hemagglutinin or appearance of a novel hemagglutinin/neuraminidase combination that may lead to pandemics.

Hemagglutinin-inhibition (HI) assays the gold standard, and microneutralization assays detect functional anti-HA antibodies which correlate with protection from infection with seasonal influenza. HI antibody titers are used to evaluate influenza vaccines. However, interlaboratory variation in results is observed for both assays and limits comparison of results from different studies unless this is specifically addressed. Variability is partly attributed to differences in protocols and expression of end-points, but may also be related to specific virus variants. The use of an international standard should reduce variation associated with assay differences because standardization of protocols may be limited by local availability of reagents.

Currently alternative assays are developed based on recombinant proteins with multiplex capabilities to profile exposure to many subtypes of influenza virus in a single test. These different aspects of influenza virus serology will be reviewed and discussed.

Keywords: influenza virus, serology, hemagglutinin-inhibition, micro-neutralisation

CONTACT DETAILS:
Johan H.J. Reimerink
National Institute for Public Health and the Environment
Laboratory for Infectious Diseases and Screening
Antonie van Leeuwenhoeklaan 9, 3721 MA Bilthoven,
the Netherlands, E-mail: Johan.Reimerink@rivm.nl

Plenary Session B The Coming Flu Pandemic – How Europe should do even better next time

How will we do even better next time – how pandemic preparedness and response in Europe should proceed from here on – a personal view

Dr. Preben Aavitsland

AFFILIATIONS:
Norwegian Institute of Public Health, Norway

ABSTRACT:
To be published during session!

PLENARY SESSIONS **ABSTRACTS**

What is evidence-based medicine and why is it important?

Paul Garner

AFFILIATIONS:
International Health Group, Liverpool School of Tropical Medicine, Liverpool L3 5QA, GB

ABSTRACTS:

Traditionally in health, policies, treatment practices and guidelines were based on guess-work and expert opinion. Good empirical evidence has clearly shown that such policies and practices can be misleading and at times do more harm than good. Evidence-informed policies and practice (often called “evidence-based medicine”) is about a) good quality primary research concerning the effects of health care, including both benefits and harms; b) formal, scientifically defensible, synthesises that critically appraise and summarise all relevant available research around a particular policy or practice (sometimes called a “systematic review of effects”); and c) a process for using research evidence in making an evidence-informed guideline or recommendation.

We have been working for the last 18 years in evidence-based medicine and public health in a variety of areas, but with a focus on infectious diseases, particularly those of the tropics, as part of the Cochrane Infectious Diseases Group. This is one small part f the global Cochrane Collaboration, an international network of 22,000 people across 100 countries committed to preparing and updating systematic reviews about the effects of health care.

This talk will consider some of the historical backdrop to evidence-based medicine and the principles in which it is based, with illustrations from clinical medicine, public health and health systems

Plenary Session C Assessing the evidence base for public health action: Judging quality in epidemiological studies and outbreak investigations

The Challenges of Using Evidence-based Methodology in Infectious Disease Public Health.

Stephen Palmer

AFFILIATIONS:
Cochrane Professor of Epidemiology Public Health, Cardiff University

ABSTRACTS:

Evidence-based medicine (EBM) approaches are strongest when dealing with pharmaceutical or other clinical interventions for well-characterised diseases in well defined populations of patients. However, in public health, interventions are often of a different nature, ranging from international legislation on trade or travel or food production to local advice on individual behaviour. Rarely has it been possible to undertake RCTs of public health strategies or programmes and the weakness of the public health evidence base, relying mainly on observational epidemiology, is widely acknowledged.

Explicit in EBM methods is the systematic assessment of the quality of studies as well as robust methods to draw conclusions and make recommendations. For observational studies the STROBE guidelines for reporting studies have been published but there is little evidence so far of their application to communicable disease field epidemiology or population surveillance. Introducing requirements for quality control of evidence and evidence synthesis in the heat of communicable disease incidents may be seen as a step too far by practitioners but will increasingly be needed to give the necessary assurance to the public and governments about the validity of recommended control measures. Expert opinion is no longer seen as authoritative in itself and the media can readily find alternative experts to challenge official advice. When independent reviews are undertaken after the pandemic or outbreak “the pressure of the acute situation” is a weak defence for not having used the best evidence. A defensible position requires prior agreement on criteria and methods, and robust tools for the rapid identification, appraisal and synthesis of evidence and the development of public health advice in rapidly moving situations.

However, this requirement presents special and serious problems in acute infectious disease control: the demands of timeliness mean that advice is often based on preliminary findings which may not be confirmed or may be later contradicted leading to loss of confidence by the public; pressure of time militates against peer review; local teams often, and national teams in some situations, are unlikely to have all the expertise immediately available to provide advice based explicitly on best current evidence; for new and emerging diseases there is not likely to be an extensive body of specific knowledge to draw upon, and advice will often be based on analogy and modelling rather than disease specific empirical data; relevant knowledge as it develops will first appear in outbreak reports, grey literature and conferences, well before peer reviewed publication, creating a special challenge in identifying that knowledge systematically and quickly; surveillance and field investigation will be vital but many countries have inadequate surveillance capability and limited capacity and expertise for rapid field investigation; science is but one contributor to policy development and other considerations may sometimes seem to over-ride evidence, leading to a loss of confidence of public health scientists in the policy making process.

There is an urgent need to adapt EBM methods to meet the specific emerging requirements of acute communicable disease control.

Plenary Session C — Assessing the evidence base for public health action: Judging quality in epidemiological studies and outbreak investigations

Adapting Evidence-based methodology in time-limited and evidence-limited settings

Presenting author: Dr. Frode Forland, Senior Expert ECDC

AFFILIATIONS:
Scientific Advice Unit, European Centre for Disease Prevention and Control, Tomtebodavägen 11A, 171 83, Stockholm, Sweden.

ABSTRACT S:
This is often the case when public health advice has to be given in a setting of communicable diseases. How can we work according to the best standards of evidence based methodologies in such situations? How can we merge the best from the methods of classical epidemiology with the advances in clinical epidemiology which has further led to the methods known as evidence-based medicine (EBM) and health technology assessment?

An international Methods Working Group was established in January 2010 with a mix of people from Public health institutes, EBM institutions and ECDC, with an aim to explore these challenges and to come up with a set of proposed practical tools and procedures to follow in daily public health work.

The group has worked on assessing the challenges of infectious disease prevention and control when time, evidence and recourses are limited and when experts disagree. Is there a need to adjust or adapt standard EBM tools like check list for evaluating the quality of studies, the use of the GRADE instrument to make recommendations and instruments for guidelines development and evaluation? In what situations can elements from different consensus methods be useful and applicable in a public health decision making process, and finally for which topics is there a need for further research? Preliminary results will be presented in the presentation.

The benefit of applying the principles of EBM in time and evidence limited situations will be a more explicit and transparent process of giving public health advice, where lack of sound evidence can be as important to report as good evidence. Public health decisions are always taken under some degree of uncertainty. To handle ignorance, evidence, judgments and uncertainties systematically in a given situation will improve the quality of the public health advice and hopefully pave the way for improved health for the population.

Keywords: Evidence-based medicine, Communicable diseases, Public health, Guideline, Consensus.

CONTACT DETAILS:
Frode Forland, MD, DPH, Senior Expert EBM/HTA, Scientific Advice Unit, European Centre for Disease Prevention and Control, Tomtebodavägen 11A, 171 83 Stockholm, Sweden, frode.forland@ecdc.europa.eu, http://www.ecdc.europa.eu

Keynote Plenary Session: Is infectious disease eradication feasible in the 21st Century?

The eradication of smallpox

David L. Heymann, M.D.

ABSTRACT
Smallpox was certified eradicated in 1980 after a successful strategy of surveillance (search) and containment (ring vaccination) and unprecedented global collaboration; and a year before the identification of HIV. Since 1984, however, it is understood that smallpox vaccination is a risk for those with HIV infection, and that eradication was fortuitously accomplished before the worldwide spread of HIV. Because smallpox vaccine also protected against other orthopox infections, there was concern that human monkeypox might replace smallpox in those unvaccinated after eradication. Though studies of the epidemiology of human monkeypox in the early 1980s were reassuring, there has been a recent surge in cases, suggesting that transmission of the monkeypox virus may be changing; and continued outbreak investigation and surveillance are required.

Added to concerns around these naturally occurring events are intelligence reports, from many countries, that have suggested that the variola virus – the cause of smallpox - may be in illicit laboratories outside the two WHO Collaborating Centres where virus was consolidated after eradication. These concerns, amplified by the fact that human populations are no longer being vaccinated against smallpox, have led to a research programme to develop safer smallpox vaccines, antivirals effective against the variola virus, and simple and specific diagnostic tests that could be used in the event of a deliberately-caused smallpox outbreak. Lessons learned from smallpox eradication have been useful in informing efforts to eradicate other infectious diseases such as polio and Guinea worm.

PLENARY SESSIONS **ABSTRACTS**

Keynote Plenary Session: Is infectious disease eradication feasible in the 21st Century?

Polio elimination in Europe: Strategies to prevent re-emergence

Speaker to be confirmed!

ABSTRACT:

To be published during session!

Keynote Plenary Session: Is infectious disease eradication feasible in the 21st Century?

TB elimination: the seemingly impossible quest

Martien W. Borgdorff

AFFILIATIONS:

Department of Clinical Epidemiology, Biostatistics and Bioinformatics, Academic Medical Center, University of Amsterdam

ABSTRACT

The reduction to zero of the prevalence of an infectious disease in its human or animal host(s) has been defined as eradication if it occurs globally and as elimination if it is limited to a geographic area. Tuberculosis elimination has been defined as a reduction of TB incidence below 1 per million. The most recently reported TB notification rate in the EU was 16.7/100,000, a factor 167 above the elimination target, although some member states are closer to elimination than others. Member states with notification rates below 20/100,000 tend to report large fractions of foreign-born patients and among native patients large fractions aged over 65 years.

TB incidence is determined by three factors: (1) rapid progression after recent transmission within a geographical area, (2) endogenous reactivation of latent tuberculous infection, and (3) importation of disease and recent and remote infection from abroad. The influence of these factors will be illustrated using molecular epidemiological and scenario studies from The Netherlands, which within the EU has advanced more than the average towards TB elimination. In The Netherlands TB services are being centralized in order to maintain expertise on a relatively rare disease, without jeopardizing access to services.

With current rates of decline using currently available tools TB elimination is decades away in the EU/EEA. Acceleration of TB elimination requires new tools, including an effective vaccine, better predictors of reactivation, and shorter regimens for preventive therapy and TB treatment. Moreover, given that in 17/27 EU countries over 20% of TB cases are foreign-born, support to global TB control is advocated.

PARALLEL SESSION **ABSTRACTS**

ESCAIDE

PARALLEL SESSION **ABSTRACTS**

20100237 Oral Influenza 1

Keywords: H1N1, Influenza, Outbreak, Mathematical models

Outbreak of influenza A 2009 H1N1 virus in a Military Spanish semi-closed facility, May 2009

Elga Mayo Montero (1, 2), E. Ballester-Orcal (2), Piñeyroa Sierra A (2), F. Morilla-García (3), J. Donado-Campos (4),

AFFILIATIONS:
1. Spanish Field Epidemiology Training Program (PEAC), Madrid, SPAIN
2. Institute of Preventive Medicine "Ramón y Cajal" Ministry of Defense, Madrid, SPAIN
3. Universidad Nacional de Educación a Distancia, Madrid, SPAIN
4. National Centre of Epidemiology, Carlos III Institute of Public Health, Madrid, SPAIN.

BACKGROUND:
On May 19, 2009 were reported 21 cases of respiratory tract infections in the Engineering Military Academy (EMA), Madrid. Recruits belonging to EMA are organized in Instruction Cycles (IC). We describe the outbreak and estimate transmission parameters of this novel virus in a semi-closed community.

METHODS:
Questionnaire, blood sample and throat swabs were collected during the outbreak. Probable case (PC) definition: since May 1 recruits in EMA with respiratory symptoms and positive RT-PCR or contact with a confirmed case. Dynamic "SEIR" models were used for estimating transmission parameters.

RESULTS:
81 PCs were identified among 1464 staff and students 84% men, age range 18-31. Out of 52 samples collected, 31 were positive for A/California/7/2009 virus. Most reported symptoms: cough, malaise, rhinorrhea and fever. Neither travel to a risk area nor previous contact with confirmed cases were reported. All cases presented mild illness and fully recovered. The Attack Rate (AR) was 12.42% and 15.85% and 19.23% AR for IC 3 and 2 respectively. PCs received oseltamivir and were isolated in a separate building. Assuming a single index case, two SEIR models were fitted to estimate Basic Reproduction Number (Ro) adjusting the model to: a) the peak of the outbreak (Ro=23.94 for IC3; 9.73 for IC2; 6.81 for the total), b) the epidemic curve using least squares (Ro=27.80 for IC3; 13.43 for IC2; 10.61 for the total).

CONCLUSIONS:
This outbreak was the first evidence of community transmission of influenza A H1N1 in Spain without known source of infection. The rapid and extensive spread of virus in this outbreak might be influenced by the characteristics of the semi-closed population. Transmission parameters are very different from those observed in open communities.

PRESENTED BY: DR MAYO MONTERO

20100248 Oral Influenza 1

Keywords: Pandemic, Influenza, H1N1, Public Health Policy

An Integrated Results Approach to Informing Public Health Policy for Pandemic H1N1

Laura Rosella, Julie Foisy, Camille Achonu, Ruth Sanderson, Natasha Crowcroft

AFFILIATIONS:
1. Ontario Agency for Health Protection and Promotion
2. Dalla Lana School of Public Health, University of Toronto
3. Laboratory Medicine and Pathobiology, University of Toronto

BACKGROUND:
Since the identification of pH1N1 influenza in April 2009, the Ontario Agency for Health Protection and Promotion (OAHPP) has led the scientific response to the pandemic in Ontario, Canada. The objective is to describe how multiple studies undertaken as part of the pH1N1 outbreak were used to inform public health policy in Ontario, Canada.

METHODS:
OAHPP undertook multiple studies with several objectives. A prospective seroprevalence study was carried out to assess the extent of community transmission of pH1N1 in Ontario following the 'first wave' and to determine risk factors for disease. A case-control study using laboratory, clinical and self-reported data was developed to identify risk factors for severe illness including the clinical spectrum of illness in severe patients and to determine the effectiveness of antivirals for reducing pH1N1 illness. An existing household telephone survey was used to assess attitudes and behaviours related to vaccine uptake throughout the pandemic including predictors of uptake, vaccination status, and reasons for declining vaccination.

RESULTS:
Results from these multiple study approaches were used to guide pH1N1 vaccine policy. The seroprevalence study results helped recognize priority groups by ascertaining characteristics most associated with infection. The case-control study results were used to identify priority groups for vaccine and early interventions by detecting factors most associated with severe pH1N1 illness including the effectiveness of treatment options. Finally, the telephone survey described predictors of vaccine uptake including socio-demographic factors to aid in the delivery of future campaigns.

CONCLUSIONS:
Multiple study approaches were successful in addressing the different aspects required to respond effectively, including identifying risk factors for pH1N1 and severe pH1N1 illness. Integrated research is a useful way to develop public health policy more effectively.

PRESENTED BY: DR NATASHA CROWCROFT

20100179 Oral Influenza 1

Keywords: Influenza, household transmission, risk factors, hand hygiene

Behavioural risk factors for influenza transmission in households.

Cornelius Remschmidt (1), M. Luchtenberg (1), P. Stoecker (1), T. Suess (1), S. Schink (1), B. Schweiger (2), W. Haas (1), S. Buda (1), U. Buchholz (1)

AFFILIATIONS:
1. Department of Infectious Disease Epidemiology, Robert Koch Institute, Berlin, Germany
2. National Reference Centre for Influenza, Robert Koch Institute, Berlin, Germany

BACKGROUND:
Household transmission plays a major role in the spread of influenza virus but behavioural risk factors for transmission remain largely uncharacterised. We explored risk factors for household transmission which may contribute to public health recommendations.

METHODS:
During the influenza seasons 2008/09 and 2009/10 we interviewed household contacts of a laboratory confirmed index case about clinical symptoms, duration and type of contact with the index case as well as hygiene practices. An influenza-like illness (ILI) was defined by the presence of fever plus cough, sore throat, or both.

RESULTS:
We recruited 549 household contacts of 231 index patients, including 127 (23.1%) children aged less than 14 years. Median age of index cases was 13 years (interquartile range (IQR): 8-30), median age of household contacts was 36 years (IQR: 14-44). Overall, ILI attack rate was 11.3% (62/549) and decreased significantly with age. Preliminary results showed an increased risk among household contacts who slept in the same room with an index patient (relative risk (RR) 2.1, CI 1.3-3.5), who helped an index case at least 3 times a day in washing or dressing (RR 2.6, CI 1.3-5.1) or who spent more than 8 hours per day in close contact to an index patient (RR 1.64, CI 1.01-2.67). Variables coding for increased exposure through indirect contact, for example touching potentially contaminated items, such as bed linen or towels of the index case, or reduced hand-hygiene, were not significantly associated with ILI.

CONCLUSIONS:
Reducing close contact to and sleeping separately from infected cases are two measures easy to implement that may reduce the risk of influenza transmission in households. In contrast, indirect contact does not seem to contribute substantially to transmission of influenza.

PRESENTED BY: DR CORNELIUS REMSCHMIDT

20100059 Oral Influenza 1

Keywords: influenza virus, H1N1 subtype; disease outbreaks; population surveillance; sentinel surveillance; Wales

Impact of media coverage on the surveillance of 2009 pandemic influenza A (H1N1) in Wales, April–December 2009.

Keramarou Maria (1, 2), Cottrell S (2), Evans MRh (2, 3), Moore C (4), Stiff RhE (2, 3), Elliott C (2), Thomas DRh (2), Lyons M (5), Salmon RL (2)

AFFILIATIONS:
1. European Programme on Intervention Epidemiology Training (EPIET)
2. Communicable Disease Surveillance Centre, Public Health Wales, Cardiff, United Kingdom
3. Department of Primary Care and Public Health, Cardiff University, United Kingdom
4. Public Health Wales Microbiology, Cardiff, United Kingdom
5. Health Protection Services, Public Health Wales, Cardiff, United Kingdom

BACKGROUND:
During the 2009 influenza A(H1N1) pandemic in Wales, two waves of ILI consultation rates were recorded. We aimed to describe the differences between these two waves in order to understand the influence of media during the pandemic in Wales.

METHODS:
Data were collected from a number of independent sources: daily GP consultation rate for ILI from an automated all-Wales GP surveillance system; positivity rate for 2009 A(H1N1) influenza from community virology samples collected via the Welsh GP sentinel scheme; and number of hospitalisations per week from all hospitals in Wales. Media enquires received by Public Health Wales about the influenza pandemic were monitored through the pandemic.

RESULTS:
A first rise in the ILI consultation rate was recorded in week 26-34. This wave peaked in week 30 at 160 consultations/100,000 practice population. Positivity rate for the 2009 influenza A(H1N1) strain did not exceed 25%, a total of 44 hospitalizations were recorded. A second rise in the ILI consultation rate followed in weeks 37-52, peaking in week 43 at 85 consultations/100,000 practise population. Positivity rate was almost 60% and 379 hospitalizations were recorded. The highest peak in media coverage was recorded in week 18 followed by a marked decrease. Media enquires started again in week 26 and peaked in week 30.

CONCLUSIONS:
The first ILI consultation wave in Wales had a lower proportion of confirmed influenza infections and less hospital admissions compared to the second. The results suggest that the high peak in ILI consultations seen during the first wave was probably caused by the media hyperactivity rather than influenza virus circulating in the community.

PRESENTED BY: MISS MARIA KERAMAROU

PARALLEL SESSION **ABSTRACTS**

20100175 Oral Influenza 1

Keywords: Influenza A Virus, H1N1 Subtype, Australia, Schools, Epidemiology, Population Surveillance, Disease Outbreaks

Epidemiology of Victoria (Australia)'s first 1,000 pandemic (H1N1) 2009 influenza cases: the role of youth through schools in transmission

James E. FIELDING (1) (3), I. BERGERI (2), N. HIGGINS (1), E. S. MCBRYDE (1) (4), J. MEAGHER (1), R. MORAN (1), M. E. HELLARD (2), R. A. LESTER (1)

AFFILIATIONS:
1. Victorian Government Department of Health, Melbourne, Victoria, Australia;
2. Burnet Institute, Melbourne, Victoria, Australia
3. Victorian Infectious Diseases Reference Laboratory, North Melbourne, Victoria, Australia
4. The Royal Melbourne Hospital, Parkville

BACKGROUND:

In May 2009, Victoria became the focus of global attention as one of the first regions of the southern hemisphere to experience influenza A(H1N1)v. With few identified imported cases, the epidemic spread through communities with an estimated reproduction ratio from to 2.4 to 1.6. Victoria was the first state in Australia to identify local transmission of the virus.

METHODS:

A retrospective case series study of the first 1,000 laboratory-confirmed cases notified to the Department of Health between 20 May and 5 June 2009, with an emphasis on schools, was conducted to better understand the explosive nature of the outbreak and to describe the epidemiology of the introduction of pandemic (H1N1) 2009 influenza in Victoria.

RESULTS:

Most cases (78%) in the first 19 days were under the age of 20 years. The hospitalisation rate was 2% but no deaths were reported. The median incubation period was 4 days. Nearly 7,000 cases and contacts were followed up for oseltamivir treatment or prophylaxis. Two-thirds of cases were school age (5-17 years), with cases appearing first in schools along a northern metropolitan corridor and then fanning across the north-western periphery of the metropolitan area. One school accounted for nearly 8% of the cases. In this school, the student population is drawn from across the Melbourne area and introduction of the infection to another school population occurred after a common social event.

CONCLUSIONS:

This study confirms the role of youth and highlights a likely role of schools, especially one particular school in the amplification of pandemic (H1N1)v 2009 influenza in Victoria. The limited school closures policy appeared to have minimal impact and will need to be refined to better inform future pandemic response.

PRESENTED BY: DR ISABEL BERGERI

20100134 Oral Food- and water-borne diseases

Keywords: Campylobacter, Salmonella, incidence, faecal sample test, Wales

Have faecal positivity rates for Campylobacter and Salmonella changed? Analysis of faecal tests results from Welsh laboratories, 1998–2008

Janusz Janiec (1, 2), Evans MR (2, 3), Roberts ME (2), Thomas DRh (2)

AFFILIATIONS:
1. European Programme on Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control, Stockholm, Sweden
2. Communicable Diseases Surveillance Centre, Public Health Wales, Cardiff, UK
3. Departament of Primary Care and Public Health, Cardiff University, Cardiff, UK

BACKGROUND:

The number of reported gastrointestinal infections depends on the number of faecal sample tests requested and positivity rates. Changes in testing patterns over time may lead to surveillance artefacts, which are difficult to identify without laboratory denominator data. We describe recent trends in testing in Wales, and investigate variation in positivity rates (PR) for Campylobacter and Salmonella.

METHODS:

We extracted data on all faecal samples tested by Welsh microbiology laboratories from 1996 to 2008. We calculated annual test numbers and the incidence of new patient episodes (defined as a positive sample from a patient without a positive result in the previous 90 days) and PR for Campylobacter and Salmonella (number of patient episodes divided by number of tests).

RESULTS:

Valid yearly data were available from 9 out of 13 laboratories from 1998. Number of tests steadily increased from 45,186 (1998) to 69,022 (2008). Salmonella episodes dropped from 1015 in 1998 to 459 in 2008. Number of Campylobacter episodes was 2802 in 1998 and 2756 in 2008 ranging between 2144 and 2842 episodes per year. The proportion of community vs. hospital samples changed from 1.24 to 0.98 respectively. The PR decreased from 2.2/100 tests in 1998 to 0.7 in 2008 for Salmonella and for Campylobacter from 6.2 to 4.0 respectively.

CONCLUSIONS:

The substantial decline in Salmonella incidence and the relatively stable incidence of Campylobacter incidence appear to be genuine as they are not explained by changes in faecal sampling over time. Routine surveillance may actually underestimate the changes since the overall number of faecal tests has increased. However, the surveillance data may also be distorted by the increased proportion of samples from hospital rather than community patients.

PRESENTED BY: DR JANUSZ JANIEC

20100207 Oral Food- and water-borne diseases

Keywords: Campylobacter, foodborne outbreaks, chicken, liver, pâté

A recipe for disaster: Outbreaks of campylobacteriosis associated with poultry liver pâté in England and Wales

Christine L. Little, F. J. Gormley, N. Rawal, J. F. Richardson

AFFILIATIONS:
Department of Gastrointestinal, Emerging and Zoonotic Infections, Health Protection Agency, Centre for Infections, London NW9 5EQ, UK

BACKGROUND:
Campylobacter remains the most common cause of bacterial gastroenteritis in the UK. While outbreak exposures may differ to those of sporadic infections, they provide essential source attribution information and support public health and intervention strategies. Following a further increase in reported Campylobacter cases in 2009 (57,326), the frequency of general outbreaks of Campylobacter infection in England and Wales were reviewed along with transmission routes and implicated food vehicles.

METHODS:
A minimum outbreaks dataset in England and Wales is collected by the Health Protection Agency using a standardised questionnaire; outbreaks reported from 1992 to 2009 were analysed.

RESULTS:
In total, 143 outbreaks of campylobacteriosis were reported, 80% (114) of which were foodborne. Overall, 2676 people were affected in the foodborne outbreaks with 21 hospitalized. Most were linked to food service establishments (64%, 73/114) associated with functions held at hotels (88%) and restaurants (54%). Poultry meat (38%, 43/114) was the most commonly reported vehicle of infection, of which poultry liver pâté (58%, 25/43), and the undercooking of, was strongly associated with this pathogen (68%) Outbreaks of campylobacteriosis linked to consumption of poultry liver pâté increased from 2007 (74% v 12%, P<0.00001) with a preponderance of these occurring in December (50% v 19%, P=0.013) suggestive of increased consumption outside the home during 'Christmas'.

CONCLUSIONS:
Control of Campylobacter in poultry meat is a major public health strategy for the prevention of campylobacteriosis. As identification of campylobacter outbreaks is rare, the increase in those linked to poultry liver pâté consumption is significant and highlights the hazards associated with inappropriate culinary practices, e.g. undercooking of liver, and suggests that improving catering practice is an important last line of defence in reducing exposure to campylobacter contaminated products.

PRESENTED BY: DR CHRISTINE LITTLE

20100043 Oral Food- and water-borne diseases

Keywords: listeriosis, outbreak, case control study

Food-borne listeriosis, Austria 2009–2010: grocery bills as a tool in outbreak investigation

Juliane Pichler, Rainer Fretz, Ulrich Sagel, Peter Much, Franz Allerberger

AFFILIATIONS:
Austrian Agency for Health and Food Safety

BACKGROUND:
From June 2009 until February 2010, an outbreak of invasive listeriosis affected 25 persons in Austria, 8 in Germany and 1 in the Czech Republic. The source of this outbreak with 8 fatalities was initially identified based solely on epidemiological findings.

METHODS:
Grocery receipts of purchases from 7 patients were collected prospectively during 3 weeks after discharge from hospital and compared for matches. This generated a hypothesis tested by a case control study which revealed Austrian 'Quargel' cheese as the source of infection.

RESULTS:
Nine of the ten patients initially investigated had consumed the product; the tenth provided no answer concerning this food item. Of 22 controls all but two denied having eaten this specific cheese; the remaining two provided no answer concerning this food item. The computed odds ratio was 76.6 (95% confidence interval (CI): 9.3-infinity; P value<0.001).

CONCLUSIONS:
To our knowledge, this was the first outbreak where grocery bills were collected prospectively – after patients' discharge from hospital – and successfully revealed the food consumption patterns of listeriosis patients, indicating sour milk curd cheese 'Quargel' as a possible source for this outbreak, to be tested by analytical epidemiology. As a direct consequence of this outbreak, on 21 April 2010 Austria amended its Food Safety and Consumer Protection Act, allowing health authorities in future to order market withdrawals and recall products even without microbiological proof of their being unsafe.

PRESENTED BY: PROF FRANZ ALLERBERGER

PARALLEL SESSION **ABSTRACTS**

20100041 Oral Food- and water-borne diseases

Keywords: microsporidia, outbreak, foodborne, emerging

First reported foodborne outbreak associated with microsporidia, October 2009, Sweden

Valérie Decraene (1, 2), A-M. Gustavsson (3), A. Hulu (4), M. Lebbad (5), M. Löfdahl (2)

AFFILIATIONS:

1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
2. Department of Epidemiology, Swedish Institute for Infectious Disease Control (SMI), Solna, Sweden
3. Department of Communicable Disease Control and Prevention, Värmland County Council, Sweden
4. Environmental Health Office, Värmland County, Sweden
5. Department of Parasitology, Mycology, Water and Environment, Swedish Institute for Infectious Disease Control (SMI), Solna, Sweden.

BACKGROUND:

In November 2009, more than 100 people reported gastrointestinal symptoms after attending a 1-day conference at a hotel in central Sweden. We initiated an investigation to determine the mode and vehicle of transmission, establish the magnitude of the outbreak, and identify the etiologic agent.

METHODS:

We conducted a retrospective cohort study among conference attendees and hotel staff (N=525) using a web-based questionnaire about symptoms and food history. Cases were defined as individuals who ate at the hotel on 23.10.2009 and developed one or more of the following symptoms: diarrhoea, vomiting, abdominal pain, nausea, fever or muscle pains. Food-specific attack rates (AR), relative risks (RR) and 95% confidence intervals (95%CI) were calculated. Stool specimens were examined for enteropathogens and an environmental inspection was carried out to investigate food handling practices.

RESULTS:

Overall, 450/525 (86%) people completed the questionnaire and 135 cases were identified (AR=30%). The median incubation time was 9 days (range 0-21 days). The consumption of cheese rolls (RR=4.1, 95%CI 1.4–12.2) and salad (RR=2.1, 95%CI 1.1–4) were associated with illness. Both the cheese rolls and salad contained pre-packaged, pre-washed cucumber slices. The microsporidian Enterocytozoon bieneusi was identified in stool samples from 8/11 cases. All seven genotyped samples were genotype C. No other parasites, bacteria or viruses were detected. Besides the use of pre-washed produce, the environmental investigation did not identify any areas of concern.

CONCLUSIONS:

The most likely vehicle of transmission was cucumber, thus highlighting the importance of thoroughly washing ready-to-eat vegetables. Although no foodborne outbreaks of E. bieneusi have previously been reported, microsporidia may be an under-reported cause of gastrointestinal outbreaks and should be investigated as potential causative agents when no other organisms are identified.

PRESENTED BY: DR VALÉRIE DECRAENE

20100120 Oral Food- and water-borne diseases

Keywords: S. Montevideo, food supplement, RASFF-notification

Side effects of the Rapid Alert System for Food and Feed (RASFF): Tying a dietary food supplement to an outbreak of Salmonella Montevideo, Germany, 2010

Petra Stöcker (1, 2), B. Rosner (2), M. Kirchner (3), D. Werber (2), A. Reinecke (4), H. Wichmann-Schauer (4), C. Frank (2)

AFFILIATIONS:

1. Postgraduate Training for Applied Epidemiology (PAE, German FETP)
2. Robert Koch Institute, Dept. Infectious Disease Epidemiology, Berlin, Germany
3. Governmental Institute of Public Health of Lower Saxony, Hannover, Germany
4. Federal Institute for Risk Assessment, Berlin, Germany

BACKGROUND:

Between January and May 2010, 26 Salmonella (S.) Montevideo infections were notified among adult women in Germany (vs.11 infections in men) representing a 2.5fold increase over previous years. Cases peaked in April. In March, the Rapid Alert System for Food and Feed (RASFF) alerted of S. Montevideo in a food supplement marketed to menopausal women. The product was produced and distributed in Germany by a tele-shopping company, but under a Dutch label. We launched an investigation to identify the role of the supplement in this outbreak.

METHODS:

A case-control study among women was conducted, focusing on supplement consumption. Cases were >20 years of age with laboratory confirmed S. Montevideo, notified in weeks 12-17 (secondary household cases excluded). Controls aged 20-70 years were randomly drawn from population registries. A questionnaire was administered by telephone. We used exact logistic regression to calculate Odds ratios (OR).

RESULTS:

We included 11 cases and 44 controls (mean age 54.5 and 53.5 years, respectively) from 7 states: 4 cases (36%) reported consumption of food supplement before symptom onset, none of the controls. Supplement-intake was strongly associated with being a case (OR= 24.6, CI 95%: 2.4 –253.2). One consumer became infected 4 weeks after product recall.

CONCLUSIONS:

Our epidemiological investigation supports the hypothesis of the food supplement as a vehicle for S. Montevideo infections – the first time that a RASFF notification could be connected to a nation- wide human disease outbreak in Germany. Supplement consumption does not explain the increase entirely, leaving the possibility of more vehicles in this outbreak. RASFF notification and subsequent recall, though apparently imperfect, likely prevented more S. Montevideo infections due to this long-shelf-life product.

PRESENTED BY: MRS PETRA STÖCKER

20100170 Oral Zoonoses 1

Keywords: outbreaks, novel methodology, case-case design, epidemiology

The serotype case-case design – a direct comparison of a novel methodology with a case-control study in a national Salmonella Enteritidis PT14b outbreak in England and Wales

Dominik Zenner (1, 2), Kulsum Janmohamed (1), Chris Lane (1), Chris Little (1), Andre Charlett (1), Bob Adak (1), Dilys Morgan (1)

AFFILIATIONS:
1. Centre for Infections, Health Protection Agency
2. London School of Hygiene and Tropical Medicine

BACKGROUND:
Analytical studies are used to identify the cause of infectious disease outbreaks and inform public health action. Societal and technological changes together with resource constraints have made it increasingly difficult to employ conventional case-control studies. We examined the advantages and disadvantages of using the case-case method against the conventional case-control method during a national outbreak investigation of Salmonella Enteritidis PT 14b (SE14b) in 2009 to validate this approach.

METHODS:
Two groups were used for comparison with sporadic cases of SE14b that occurred between September to December 2009, (1) all non-Enteritidis Salmonella cases occurring during the same time period, and (2) a systematically selected population-based group (healthy controls). Cases, control-cases and controls were interviewed using a standardised exposure questionnaire, information analysed in single and multi-variable analyses and findings compared.

RESULTS:
Symptomatic infection with SE14b was significantly associated with eating in oriental restaurants (OR 35.8, CI 4.4-290.9) and eating eggs away from home, (OR 13.8, CI 1.5-124.5) in the case-case study. Findings from the case-control study identified the same risk factors: oriental restaurants (OR 4.5, CI 1.6-12.6) and eggs (OR 7.7, CI 1.6-37.1). Our findings were supported by microbiological findings of SE14b in stool samples and eggs from a specific chicken flock in a Spanish farm.

CONCLUSIONS:
We found that the case-case design is a feasible, quick and inexpensive alternative to conventional study designs leading to comparable results, potentially minimising recall bias and making use of already interviewed cases with available subtyping results. It is a promising tool for future investigations.

PRESENTED BY: DR DOMINIK ZENNER

20100126 Oral Zoonoses 1

Keywords: Disease outbreaks*/prevention and control; France/epidemiology; Meat products; Molecular epidemiology; Salmonella infections/epidemiology*

Nationwide outbreak of Salmonella enterica serotype 4,12:i:- infections in France, linked to dried pork sausage, March – May 2010

A. Bone (1, 2), H. Noel (1), S. Le Hello (3), N. Pihier (4), C. Danan (5), M. E. Raguenaud (6), S. Salah (4), H. Bellali (1,7), V. Vaillant (1), F. X. Weill (3), N. Jourdan-Da Silva (1)

AFFILIATIONS:
1. Institut de veille sanitaire (InVS), St Maurice, France
2. EPIET, European Programme for Intervention Epidemiology, ECDC, Stockholm, Sweden
3. Institut Pasteur, Centre National de Référence des Salmonella, Paris, France
4. Direction générale de l'alimentation, Mission des urgences sanitaires, Paris, France
5. Agence nationale de sécurité sanitaire, Laboratoire de sécurité des aliments, Maisons Alfort, France
6. Cellule de l'InVS en régions Limousin et Poitou-Charentes, France
7. Profet – Programme de formation à l'épidémiologie de terrain, InVS, St Maurice, France

BACKGROUND:
A nationwide outbreak of Salmonella enterica serotype 4,12:i:- (one of several emerging monophasic variants of the serovar Typhimurium) was detected in May 2010 in France. An investigation was launched to determine the outbreak's extent and identify the vehicle of transmission.

METHODS:
A case was defined as a person resident in France with S. enterica serotype 4,12:i:- isolated from stool or blood in 2010 and typed by the National Reference Centre for Salmonella. An epidemic case was a case with a specific profile on Multilocus Variable Number of Tandem Repeats Analysis (MLVA); cases with a different MLVA profile were considered sporadic. Cases were interviewed using a semi-structured questionnaire. The outbreak was described by time, place and person. Associations were examined between relevant exposure variables and being an epidemic compared to a sporadic case (OR with 95%CI). Environmental investigations were undertaken, including use of supermarket loyalty cards, to trace the source.

RESULTS:
Of 128 cases reported to date, 54 have been identified as epidemic and 40 sporadic. Comparison of the 36 epidemic and 21 sporadic cases interviewed indicated that dried pork sausage (OR 5.5, 95%CI 1.03-59.6) and shopping at supermarket A (OR 5.7, 95%CI 1.5-21.9) were associated with being an epidemic case. Loyalty card data of 11 epidemic cases using their card during the three weeks before symptom onset revealed all had bought the same type and brand of sausage. Salmonella species were isolated from a melee used to make this sausage in February 2010, although later quality controls conformed.

CONCLUSIONS:
Investigations indicated that one brand of dried pork sausage from supermarket A was the likely source, enabling the withdrawal/recall of suspected batches, and the prevention of further infections.

PRESENTED BY: DR ANGIE BONE

PARALLEL SESSION **ABSTRACTS**

20100069 Oral Zoonoses 1

Keywords: Q fever, evidence-based, public health

Evidence-based practice in public health: Risk assessment on Q fever under an ongoing outbreak

A. Jansen, F. Forland, H. de Carvalho Gomes, H. Nokleby, A-B. Escriva, J. Takkinen, D. Coulombier, J. Giesecke

AFFILIATIONS:
ECDC, Stockholm, Sweden

BACKGROUND:
With reference to the ongoing Q fever outbreak in the Netherlands, we tested if an evidence-based approach, comparable to the methodology used in clinical medicine, is appropriate for giving general public health advice on Q fever.

METHODS:
The assessment was performed according to the principles of evidence-based methodologies. Articles were retrieved from bibliographic databases. Studies were categorised, and evidence tables including data on type and size, outcome, strengths, and limitations of studies were compiled. The results were discussed with an expert panel.

RESULTS:
The risk of collecting blood from an asymptomatic donor experiencing bacteraemia was estimated to be around 3 per 10,000 donors. Therefore, in outbreak situations, screening of donors/blood should be considered. About 2 % of acute cases develop into chronic Q fever. An Australian whole cell vaccine should be considered for use in risk groups. Evidence on Q fever in pregnancy is very limited, and there is need for further research. The risk of airborne spread of Coxiella burnetii from the Netherlands is highest in areas close (<5km) to outbreak sources.

CONCLUSIONS:
By systematically assessing the evidence on several questions about Q Fever, we were able to draw some new conclusions. The most striking finding was the lack of sound scientific evidence behind some standard treatment regimes for Q fever in pregnancy. We found it difficult to grade the included studies with the known evidence-based grading systems. There is need to develop new methods for grading evidence from different sources in the field of public health. We conclude that an evidence-based approach is feasible for giving public health advice. Criteria to define indications for in-depth evidence-based assessments should be developed.

PRESENTED BY: DR ANDREAS JANSEN

20100321 Oral Zoonoses 1

Keywords: Q Fever/epidemiology; Agricultural Workers' Diseases/epidemiology; Occupational Diseases/epidemiology; Antibodies, Bacterial/blood

Q fever in culling workers before and after animal culling in the Netherlands, 2010

Jane Whelan (1, 2), B. Schimmer (1), P. M Schneeberger (3), J.Meekelenkamp (3), A. IJff (4), W. van der Hoek (1), M. Robert – Du Ry van Beest Holle (1).

AFFILIATIONS:
1. Centre for Infectious Disease Control, National Institute for Public Health and the Environment, RIVM, Bilthoven, the Netherlands.
2. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden.
3. Jeroen Bosch Ziekenhuis, 's-Hertogenbosch, the Netherlands.
4. ArboUnie, Occupational health, Utrecht, the Netherlands

BACKGROUND:
Over 2,300 human cases of Q fever occurred in the Netherlands in 2009. To prevent spread of the causative bacterium, Coxiella burnetii, from infected animals to humans, 62,000 pregnant goats and sheep were culled on 89 commercial dairy farms from January to May 2010. Nationally, more than 500 workers were involved in the cull. Eleven culling workers were notified with Q fever in 2010. We determined incidence of C. burnetii infection among culling workers due to their occupational exposure.

METHODS:
This cohort study included cullers, veterinarians, scanners, and others. A serum sample was requested from study participants in December 2009 (pre-cull) and May 2010 (post-cull). Seropositivity was defined as IgG and/or IgM positive (ELISA). A questionnaire investigating symptoms, nature and duration of occupational exposure (classified as high, moderate, low), adoption of protective/hygiene measures (masks, gloves, handwashing etc., classified as complete/incomplete), and other risk factors (demographics, medical history, other animal contact) was sent to participants in May 2010, in order to calculate univariate relative risk of exposures.

RESULTS:
Median age was 47 years (range 19-67), 97% male. Seropositivity pre-cull was 13% (58/453). Of those providing a pre- and post-cull sample (n=282/453, 62%), 246 were seronegative pre-cull. The proportion of seroconverters (becoming IgG and/or IgM positive post-cull) was 17% (43/246). Among seroconverters, 30% complained of fever or rigours and at least one other symptom; 80% of symptomatic seroconverters sought medical attention. High (versus low) intensity of occupational exposure was a risk for seroconversion (RR=6.3,95%CI:1.57-25.5). Risk associated with complete (versus incomplete) adoption of protective/hygiene measures was RR=1.29(95%CI:0.68-2.46).

CONCLUSIONS:
This unique study shows a high risk of symptomatic seroconversion among culling workers. Further protective measures including vaccination should be considered in this group.

PRESENTED BY: DR JANE WHELAN

20100324 Oral Zoonoses 1

Keywords: Hantavirus, PUUVI, PUUV

Different seasons – different risk factors for Puumala virus infection in Germany

Kilic A (1, 2), Piechotowski I. (2), Winter C. (2), Pfaff G. (2), Brockmann S. O. (2)

AFFILIATIONS:

1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
2. Baden Württemberg State Health Office, District of Stuttgart Government, Stuttgart, Germany

BACKGROUND:

In spring/summer 2007, Baden-Württemberg experienced the largest Puumala virus (PUUV) epidemic in Western Europe so far, with more than 1000 cases. During January-February 2010, notifications doubled compared to the same time period in 2007, even exceeding the aggregated January-February case counts for the previous five years. We conducted a survey in order to identify the driving factors of this increase.

METHODS:

Persons with notified laboratory-confirmed PUUV infections that fulfilled the German surveillance case definition with onset of symptoms between 01-01-2010 and 28-02-2010 in Baden-Württemberg were interviewed with the standardized questionnaire from 2007. A case-case design was used to compare exposures in winter 2010 and spring/summer 2007. We calculated odds ratios (OR) with 95% confidence intervals (CI).

RESULTS:

In the 2010 study period, 85/105 (81%) cases responded to the interview. Median age was 44 years and 64% were male. Hospital admission was reported by 58%. Winter 2010 cases were more likely to have cleaned a room in their home than cases in spring 2007 (OR=2.3; 95%CI 1.4-3.9). 2010 cases were less likely to have observed small rodents and their droppings (OR=0.3; 95%CI 0.2-0.5) or to have stored firewood at home (OR=0.5; 95%CI 0.3-0.8) and less likely to have visited a forest (OR=0.4; 95%CI 0.3-0.7) compared to 2007 cases.

CONCLUSIONS:

High rodent population and higher number of days with snow cover in 2009/10 winter season may have led to an increased invasion of rodents into houses. Rodent control measures in the home environment and protection from dust by facemasks when cleaning seldom-used rooms might potentially prevent PUUV infection during winter months. This recommendation was communicated to the public by a press release. Monitoring rodent population is planned.

PRESENTED BY: MR ALPER KILIC

20100063 Oral Outbreaks 1

Keywords: waterborne outbreak, acute gastroenteritis, Rotavirus, Norovirus

Waterborne outbreak of acute gastroenteritis in city of Mengeš, Slovenia, March – April 2010

Veronika Učakar (1, 2), E. Grilc (1), I. Jeraj (1)

AFFILIATIONS:

1. National Institute of Public Health, Slovenia (IVZ), Communicable Disease Centre
2. European Programme for Intervention Epidemiology training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden

BACKGROUND:

In April 2010, an outbreak of acute gastroenteritis occurred in city of Mengeš, with 52 cases reported by local physicians. Repair works conducted in the drinking water supply system led to contamination with sewage water on 31/03-01/04/2010, affecting ~3000 residents. Our aim was to assess the extent of the outbreak, identify its source, and initiate appropriate control measures.

METHODS:

We conducted a retrospective cohort study. Questionnaires were sent to 160 randomly selected households (20% of affected population). A case was a resident of Mengeš developing either diarrhoea, vomiting or abdominal pain between 31/03-07/04/2010. We computed relative risks (RR) with their 95% confidence intervals (95%CI).

RESULTS:

We identified a total of 65 cases among 208 individual respondents (overall attack rate 31.3%). A clear peak in the number of cases (01/04/2010) suggested a point source. Residents consuming unboiled tap water were 4.8 times (95%CI 0.7-32.7) more likely to become ill than non-exposed. Drinking unboiled tap water (RR=3.1; 95%CI 1.5-6.5), brushing teeth (RR=3.1; 95%CI 1.2-8.1), and eating fruits and vegetables washed with unboiled tap water (RR=2.3; 95%CI 1.2-4.3) was associated with gastroenteritis. There was a dose-response relationship between the volume of unboiled tap water consumed and the attack rate among residents. Norovirus and Rotavirus were detected in water samples as well as in stool samples of cases.

CONCLUSIONS:

Our results suggest that the vehicle of the outbreak was contaminated drinking water from the water system. The water supply company advised residents to temporarily boil tap water. Because similar problems with the water supply system had continuously occurred in the past, authorities are considering building a new supply system.

PRESENTED BY: MS VERONIKA UČAKAR

PARALLEL SESSION **ABSTRACTS**

20100302 Oral Outbreaks 1

Keywords: Non-tuberculosis mycobacteria, mycobacterium abscessus, cutaneous mycobacteriosis, water quality, outbreak investigation

Cluster of cutaneous mycobacteria in a school in Rome, school year 2009–2010

Elisabeth Eva Kanitz (1, 2), Sinagra J. L. (3), Cerocchi C. (4), Prignano G. (5), Bonadonna L. (1), Briancesco R. (1), Paradiso R. (1), Tortoli E. (6), Capitanio B. (3), F. D'Ancona (1)

AFFILIATIONS:
1. Istituto Superiore di Sanità, Rome, Italy
2. European Programme of Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control, Stockholm, Sweden
3. Pediatric Dermatology Department, San Gallicano IRCCS, Rome, Italy
4. Local Health Authorities (ASL Roma C), Rome, Italy
5. Laboratory of Microbiology, Dermatology Department, San Gallicano IRCCS, Rome, Italy
6. Regional Reference Center for Mycobacteria, Microbiology and Virology Laboratory, Careggi University Hospital, Florence, Italy

BACKGROUND:
On February 10th, a dermatology hospital in Rome notified seven cases of Non-tuberculosis mycobacteria (NTM) in children attending the same school with a swimming pool. An epidemiological investigation was initiated to describe the cluster and prevent further cases.

METHODS:
A case was a person attending the school in 2009-2010, with skin lesions based on clinical examination (suspect), histopathology results of skin biopsies (probable), and positive culture (confirmed). To identify new cases, we screened students aged three to ten years for skin lesions between March-May 2010, and collected information on swimming pool use. Cases' parents were interviewed. Environmental samples were collected from school and swimming pool.

RESULTS:
Until June 2010, 18 cases were identified (two confirmed, six probable, ten suspect) among 514 primary school children (3,5%). All cases (six boys, 12 girls) attended the swimming pool between October 2009 – March 2010. None had an underlying health condition. Culture was positive for Mycobacterium chelonae complex (Group III, M. abscessus). Attack rate for swimming pool use was 12,9% (18/139). No cases were reported among students not frequenting the swimming pool. Environmental samples were positive for NTM but could not identify M. abscessus. The swimming pool was treated in April 2010 following WHO-guidelines for recreational waters. No cases were reported thereafter.

CONCLUSIONS:
We report on the second largest cluster of cutanous M. abscessus suspected to be related to a swimming pool. No specific guidelines exist on prevention of NTM, which are not included among water quality indicators in Italy. Furthermore, difficulties in diagnosis, characterization, and environmental investigation hinder the establishment of a strong epidemiological correlation between exposure to the swimming pool and disease among children.

PRESENTED BY: MRS ELISABETH EVA KANITZ

20100372 Oral Outbreaks 1

Keywords: Disease Outbreaks; Students; Young Adult; Mumps/epidemiology; Risk Factors; Mumps Vaccine; Vaccination/*utilization; Netherlands/epidemiology

Burden of disease and risk factors for mumps in an outbreak affecting students in the Netherlands, December 2009 – June 2010

Jane Whelan (1, 2), K. Greenland (1, 2), E. Fanoy (3, 1), M. Borgert (4), K. Hulshof (5), K Yap (5), H. Melker (1), S. Hahne (1).

AFFILIATIONS:
1. Centre for Infectious Disease Control, National Institute for Public Health and the Environment, RIVM, Bilthoven, the Netherlands.
2. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden.
3. Municipal Health Service (MHS) "Midden-Nederland", Zeist, the Netherlands.
4. Municipal Health Service (MHS) Utrecht, the Netherlands.
5. Municipal Health Service (MHS), "Zuid-Holland West", Zoetermeer, the Netherlands.

BACKGROUND:
Since December 2009, an outbreak of mumps has been ongoing in the Netherlands. Most cases were students from two municipal health regions. Some cases implicated a four-day student party in a student corporation in Leiden in February 2010 as the possible source of infection. We assessed the burden of mumps in the student population and described risk factors for symptomatic infection.

METHODS:
We conducted a cohort study among members of student corporations in Leiden, Delft and Utrecht (n=5500) using an online questionnaire. Questions pertained to the environment (party attendance, nature of party-contacts, accommodation), individual behaviour (smoking, drinking, sporting activities), and vaccination status. The outcome was physician confirmed or self-reported mumps. Associations between exposures and the outcome were explored using relative risk and multiple logistic regression.

RESULTS:
Overall, 18% (989/5500) responded to the survey; 75% were female. Students with a past history/unknown mumps status (n=43) were excluded. The overall attack rate (AR) was 13.2% (125/946). The median age was 21 (range 18-26), and 69% (n=653) were female. Among those with known vaccination status, 98% (825/842) were vaccinated at least once. Half of all cases (61/125) attended the party, and 35 (28%) occurred within one incubation period (12-25 days) after the party. The risk of disease associated with party attendance (adjusted for age, gender and vaccination status) was OR=42.1 (95% CI: 9.9-178.7).

CONCLUSIONS:
High levels of vaccination did not prevent an outbreak of mumps in this student population. Attendance at the four-day party was strongly associated with mumps disease. In depth analysis of party-related risk factors is ongoing.

PRESENTED BY: DR JANE WHELAN

20100269 Oral Outbreaks 1

Keywords: outbreak, pruritus, dermatitis, Dermanyssus gallinae

Outbreak of dermatitis caused by Dermanyssus gallinae at the Nursing School of the University Hospital (CHU) of Martinique, March 2010

Martina Escher (1), Christophe Cazette (2), Alexandre Renard (2), Nicole Desbois (3), Jeannette Niang (2), Marie Barrau (1), Claudine Suivant (1), Martine Ledrans1

AFFILIATIONS:
1. InVS- Cellule Interrégionale d'Epidémiologie Antilles Guyane
2. EPIET
3. Service de Santé au Travail du CHU de Fort de France
4. Laboratoire de Parasitologie-Mycologie-Immunologie du CHU de Fort de France

BACKGROUND:
An episode of dermatitis among second year students of the CHU nursing school was reported on 16-03-2010 to the hospital's Occupational Health Service. Preliminary investigation revealed that these students' classroom was infested by Dermanyssus gallinae, an avian haematophagus mite, which may adopt man as a temporary host. An abandoned nest located next to a window was identified as source and destroyed and the room disinfested. An epidemiological investigation was carried out in order to describe the outbreak.

METHODS:
A retrospective cohort study was performed among the 89 students and 4 teachers attending the class from 01-03 to 17-03-2010. Personal data and information on symptoms and exposure were collected with an self-administered standardised questionnaire. A case was defined as a person who developed pruritus in the period 01-17 of March.

RESULTS:
Eighty-nine persons (95.7%) replied of whom 21, all female, met the case definition (attack rate 23.6%). Besides pruritus the symptoms more frequently reported were painful bites (8 cases), maculae and skin rash (7 cases). Symptoms appeared mainly on arms and trunk and had a mean duration of 6 days (range 1-14). Among the respondents 28% declared to have seen a mite next to/on them. Attack rate was significantly higher ($p<0.05$) among women (28.4%), among those seated next to the windows (78.6%) and among those having seen a mite (68.2%).

CONCLUSIONS:
This is the first outbreak caused by Dermanyssus gallinae documented in Martinique. To prevent similar events or the transmission of other and more severe zoonoses from birds to humans (i.e. Cryptococcus neoformans) it is imperative to undertake action to avoid birds nesting, in particular in hospitals and health care institutes where persons are more prone to be immunodeficient.

PRESENTED BY: MISS MARTINA ESCHER

20100278 Oral Outbreaks 1

Keywords: measles outbreak, developing countries

High Attack Rates and low Case-Fatality Ratio in a measles outbreak, Malabo district, Equatorial Guinea 2008–2009.

Sara Santos (1), C. Savulescu (1), J. Ebale (2), J. Milan (2), G. Bibang (2), JE. Echevarría (3), V. Sima (2), MV Martinez (1), F. Simon (1), C. Martín (2), V. Herrero (4), R. Garces (4), A. Vargas (5), A. Benito (5), J. Cano (5), P. Ncogo(5)

AFFILIATIONS:
1. National Centre of Epidemiology, Instituto de Salud Carlos III, Madrid
2. Equatorial Guinea, Ministry of Health
3. Nacional Centre of Microbiology, Instituto de Salud Carlos III, Madrid
4. Cooperación Cubana de Guinea Ecuatorial
5. National Centre of Tropical Medicine, Instituto de Salud Carlos III, Madrid

BACKGROUND:
Equatorial Guinea was affected by a measles outbreak with over 3000 case registered by the surveillance system in 2008-2009. An investigation aimed at measuring the outbreak-associated morbidity and mortality.

METHODS:
We conducted a two-stage cluster sampling survey among children <15 years old, living in Malabo district, between April'08 and January'09. We selected 30 clusters among city neighbourhoods and surrounding villages as primary sample unit. Households represented the secondary sample unit. A questionnaire collected data on sociodemographic, clinical and epidemiological characteristics. Cases were defined as rush and fever and at least one of: cough, choriza, conjunctivitis. When more than one case/household was identified, we assumed a secondary household transmission. Measles-related deaths were defined as cases that died the first month after symptoms onset. Attack rates (AR), secondary attack rates (SAR), mortality rate (MR), case-fatality ratio (CFR) and their confidence interval 95% (95%CI) were estimated.

RESULTS:
We recruited 1300 children from 26 clusters, including 140 measles cases. The overall AR was 10.7% (95%CI: 6.7-14.9). The highest AR was recorded in the 1-4 years group: 22.9% (95%CI: 14.4-31.4). Among cases, 99 (70.7%) developed complications. A total of 111 (80%) received medical assistance and 23 (16.4%) attended traditional medicine practices. We identified 2.8 cases/household and a SAR of 4.2%. Estimated MR was 0.8/1000 (95%CI: 0-2.4/1000) and CFR was 0.71% (95%CI: 0-2.3).

CONCLUSIONS:
Results showed ARs higher than surveillance data, while MR and CFR were lower than expected according to reported by WHO/AFRO region. High use of health services could have been the reason for the low CFR. We recommended to: improve the measles vaccination coverage, introduce laboratory diagnosis and strengthen the integrated surveillance system in order to avoid further outbreaks

PRESENTED BY: MISS SARA SANTOS

PARALLEL SESSION **ABSTRACTS**

20100205 Oral Antimicrobial resistance

Keywords: Prevalence, Hospitals, Anti-bacterial agents, Antibiotic resistance

Surveillance of antibiotic consumption in hospitals in Norway

Janne Møller-Stray, H. M. Eriksen

AFFILIATIONS:
Norwegian Institute of Public Health, Department of Infectious Disease Epidemiology

BACKGROUND:
The Norwegian Institute of Public Health (NIPH) administrates annually two mandatory prevalence surveys of health care associated infections for hospitals. In 2009 a new optional module on surveillance of antibiotic consumption was introduced. The objectives were to provide feedback to individual hospitals on their antibiotic consumption, and to enable them to compare their results with other hospitals

METHODS:
We conducted three surveys (May and November 2009, and June 2010) registering the number of patients receiving systemic antibiotics on a given day. We aimed to include all patients hospitalised at 8am of the survey day in all except psychiatric wards. Hospitals could opt to only include selected wards. We collected information on ward-type, dose, type and administration route of antibiotics, classification as treatment or prophylaxis, and indication. Hospital staff entered the data in a designated web tool. This generated automatic reports to the hospitals. In addition we calculated further results at the NIPH, like prescription frequency and range by hospital.

RESULTS:
A total of 9/54 hospitals participated in May 2009, 12 in November 2009 and June 2010, respectively. The proportion of prescriptions was 32.1% (range 6.9%-50.0%) in May 2009, 27.0% (range 3.3%-57.1%) in November 2009, and 27.9% (range 17.9%-40.0%) in June 2010. Cefotaxime was the most commonly prescribed antibiotic (10.3%, range 0.0%-29.5%), followed by Penicillin (7.0%, range 0.0%-26.1%). The most prevalent indication for treatment was lower respiratory tract infection (26.1%; range 0.0%-47.5%), followed by urinary tract infection (15.7%, range 0.0%-100%).

CONCLUSIONS:
This new survey allows individual hospitals to see their own results and compare them with the overall antibiotic consumption. This might improve compliance with antibiotic guidelines and increase awareness about antibiotic resistance.

PRESENTED BY: MISS JANNE MØLLER-STRAY

20100013 Oral Antimicrobial resistance

Keywords: Influenza A Virus, H1N1 Subtype; Oseltamivir; Drug Resistance; Risk Factors; Immunocompromised Host

Oseltamivir resistant 2009 H1N1 pandemic influenza virus infection in England and Scotland, 2009–2010

Laurence Calatayud (1, 2), A. Lackenby (1), A. Reynolds (3), J. McMenamin (3), S. Miah (1), N. Phin (1), R. Pebody (1)

AFFILIATIONS:
1. Health Protection Agency, Centre for Infections, London, United Kingdom
2. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Control, Stockholm, Sweden
3. Health Protection Scotland, NHS National Services Scotland

BACKGROUND:
Since the emergence of the 2009 H1N1 pandemic influenza virus, antivirals drugs have been widely used to limit the transmission of the virus and mitigate the infection amongst vulnerable individuals. Although the pandemic virus was initially sensitive to oseltamivir, by 28/4/2010 285 resistant cases had been reported worldwide. The emergence of a resistant strain may have significant implications for the clinical and public health management of pandemic influenza cases.

METHODS:
A case-control study was performed to determine the clinical characteristics of cases and risk factors associated with oseltamivir resistance to inform antiviral drug policy. The study population included persons hospitalised with confirmed pandemic influenza infection in England and Scotland and tested for antiviral susceptibility between 1/4/2009-30/4/2010. A case had an oseltamivir-resistant virus infection, a control an oseltamivir-sensitive infection. All oseltamivir-resistant and a convenient sample of 10% of the oseltamivir-sensitive cases with available clinical information were included.

RESULTS:
A total of 3513 hospitalised H1N1 cases were tested for antiviral susceptibility; of those 35 (1%) were resistant to oseltamivir. Information was collected from 35 cases and 346 controls. Median age of cases was 53, with 60% immunocompromised; for 29/31 (80%) cases a sensitive pandemic virus was isolated before oseltamivir treatment. After adjusting for age and gender, cases remained more likely to be immunocompromised than controls ($p<0.001$). Cases were at higher risk of developing respiratory complications compared to controls ($p<0.001$).

CONCLUSIONS:
Selective drug pressure seems to have been the cause of development of the oseltamivir-resistant strain especially among immunocompromised. The results suggest monitoring antiviral resistance is important particularly amongst immunocompromised to minimise the risk of treatment failure. Influenza vaccination remains a major prevention measure to protect these vulnerable patients.

PRESENTED BY: MISS LAURENCE CALATAYUD

20100363 Oral Antimicrobial resistance

Keywords: Critical care, Infection control

A program for audit of antimicrobial resistance and compliance to treatment guidelines in the intensive care unit.

Greger Fransson (1), Hans Åhlfeldt (1), Sten Walther (2), Daniel Karlsson (1), Håkan Hanberger (3)

AFFILIATIONS:
1. Dpt of Biomedical engineering, medical informatics, Linkoping University, Sweden
2. Dpt of Medical and Health Sciences, Linkoping University, Sweden
3. Dpt of Clinical and Experimental Medicine, Linkoping University, Sweden

BACKGROUND:
Antimicrobial resistance is a growing concern that complicates treatment and influences patient outcome. The purpose of this work was to develop and test the feasibility of a system for continuous audit of resistance and compliance to treatment guidelines.

METHODS:
Records from ICU patients (including i.e. reason of admission, illness severity score, interventions and nursing workload, adverse events, outcome in the ICU) were collected in the Swedish Intensive Care Registry (SIR). Mortality data was added weekly for each episode of care (EOC). A web service was developed for individual collection of results from microbiological cultures and analyses for each EOC. Development of the web service included a detailed and cumbersome translation of laboratory specific nomenclatures for samples, cultures, microbials and methods.

RESULTS:
Bacteriological data from 15 laboratories were merged with its respective EOC in SIR yielding data on patient-specific bacteriology and microbial susceptibility. Trends in microbial resistance among alert pathogens were examined. Resistance patterns were analyzed to assess the appropriateness of National guidelines for the treatment of pneumonia in the ICU showing 86 % possible accuracy with suggested treatment for community acquired and 82 % for hospital acquired disease.

CONCLUSIONS:
Microbial findings matched with reason of ICU admission can be used to validate or update national guidelines for proper antibiotic treatment. This program may be developed to an early warning system for antibiotic resistance in intensive care.

PRESENTED BY: DR GREGER FRANSSON

20100033 Oral Antimicrobial resistance

Keywords: Control program, DOTS Plus, MDR TB

Multi-drug resistant Tuberculosis (MDR TB) Control program in Nepal

Jaranit Kaewkungwal, Pongrama Ramasoota, Pratap Singhasivanon

AFFILIATIONS:
Faculty of Tropical Medicine Mahidol University, Thailand

BACKGROUND:
Multi-drug resistant (MDR) tuberculosis is defined as disease caused by Mycobacterium tuberculosis with resistance to atleast two antitubercular drugs isoniazid and rifampicin. Recent surveillance data have revealed that prevalence of the drug resistant tuberculosis has risen to the highest rate ever recorded in the history. Drug resistant tuberculosis generally arises through the selection of mutated strains by inadequate therapy.

METHODS:
The Control program on Multi-drug resistant Tuberculosis (MDR TB) in Nepal was reviewed by taking secondary information from the National Tuberculosis Program and available publication and report .

RESULTS:
In Nepal, MDR TB management programme was started in September 2005. MDR TB patient registration categories in Nepal include: MDR TB with culture and drug sensitivity positive, smear positive CAT2 failure, CAT1 failure with culture and drug sensitivity positive and MDR TB household contact with culture and drug sensitivity positive. MDR TB management services are available from all five Regions of the country through 11 treatment centers and 43 sub treatment centers. National Tuberculosis centre offers fully supervised standard regimen for treatment of MDR TB. By 2009 NTP registered 681 MDR TB cases for treatment. The largest number of MDR TB cases registered belong to failures of CAT2 (90.9%) followed by CAT1 failures with culture and DST positive cases (4.8%). The largest number and proportion of MDRTB patients belong to 15-54 years with almost half of the registered patients in age group 15-34 years.

CONCLUSIONS:
The ultimate strategy to control MDR-TB is one that implements comprehensive approach incorporating treatment of MDR-TB based upon principles closely related to those of its general DOTS strategy for TB control.

PRESENTED BY: MR SUJAN BABU MARAHATTA

PARALLEL SESSION **ABSTRACTS**

20100340 Oral Antimicrobial resistance

Keywords: Infection Control (IC), Education

Prevention and Control of Healthcare Associated Infections in EU: the need for common curriculum and training programmes for Infection Control/Hospital Hygiene Professionals.

Silvio Brusaferro (1), F. Coiz (1), BD. Cookson (2), T. Cooper (3), J. Fabry (4), R. Gallagher (5), P. Hartemann (6), S. Kalenic (7), K. Mannerquist (8), W. Popp (9), G. Privitera (10), C. Ruef (11), P. Viale (12), E. Fabbro (1), CV. Santos (13), C. Suete

AFFILIATIONS:
1. University of Udine, Udine, Italy
2. Health Protection Agency, London, United Kingdom
3. Infection Prevention Society, London, United Kingdom
4. Université Claude Bernard, Lyon, France
5. Royal College of Nursing, London, United Kingdom
6. University of Nancy, Nancy, France
7. University of Zagreb, Zagreb, Croatia
8. Swedish Institute for Infectious Disease Control, Stockholm, Sweden
9. University Hospital Essen, Essen, Germany
10. University of Pisa, Pisa, Italy
11. University Hospital Zurich, Zurich, Switzerland
12. University of Bologna, Bologna, Italy
13. ECDC, European Centre for Disease Prevention and Control, Stockholm, Sweden

BACKGROUND:

Following EU council recommendations of 9 June 2009 on patient safety, including the prevention and control of healthcare associated infections (HCAIs), the European Centre for Disease Prevention and Control commissioned the project "TRaining in Infection Control in Europe" (TRICE) to produce a guidance document defining features and competences required to develop a common Infection Control (IC)/Hospital Hygiene (HH) Professional Training Programme across Europe. This report shows some preliminary results of a survey on national requirements for IC/HH Professionals (ICHHP) in EU, and their training needs.

METHODS:

A questionnaire focused on the current training of ICHHPs was submitted to European Member States and candidate countries representatives. The questionnaire was partially based on the previous IPSE (Improving Patient Safety in Europe) questionnaire (2006). All 30 contacted countries completed and returned the questionnaire.

RESULTS:

A significant diversity was found. Few countries 4/30 (12.3%) lack the IC Team definition within their national programme, regulations, professional body or other recommendations; 46.7% (14/30) reported a job description for ICHH doctors and 66.7% (20/30) for ICHH nurses. Countries reporting any national curriculum or programme for ICHH training for doctors were 33.3% (10/30) at national and 26.7% (8/30) at professional level; for nurses the value were 40.0 % (12/30) and 26.7% (8/30) respectively. 15 out of 30 (50%) countries have no official recognition of the degree of "Infection Control" for doctors and 13 out of 30 (43,3%) have no recognition of this for nurses. Presence of continuous education for IC/HH doctors and nurses is absent respectively in 46.7% (14/30) and 33.3% (10/30).

CONCLUSIONS:

A European curriculum for training ICHHP is necessary to improve consistency of this practice across the EU.

PRESENTED BY: MR FRANCESCO COIZ

20100229 Oral Tuberculosis

Keywords: tuberculosis, incidence, interferon-gamma release assay, latent tuberculosis infection, contact tracing

Incidence of tuberculosis and usage of preventive treatment in TB case contacts in Hesse, Germany, 2008–10

Steffen Geis (1, 2, 3), G. Bettge-Weller (1), U. Goetsch (4), O. Bellinger (4), P. Ansorg (5), A.M. Hauri (1)

AFFILIATIONS:
1. Hesse State Health Office, Department for Health Protection, Dillenburg, Germany
2. Postgraduate Training in Applied Epidemiology (PAE), Department for Infectious Disease Epidemiology, Robert Koch-Institute, Berlin, Germany
3. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
4. Public Health Authority of Frankfurt/Main, Germany
5. Public Health Authority of Lahn-Dill-District, Germany

BACKGROUND:

German national recommendations for tuberculosis (TB) control advocate the use of interferon-gamma release assays (IGRA) for close contacts of TB cases. Due to their increased risk of latent tuberculosis infection and progression to clinical TB age-specific preventive treatment (PT) is recommended. However, evidence that positive IGRA-results are prognostic for developing TB is still scarce. Our study aimed to measure TB-incidence among IGRA-positive contacts in the first year after exposure and to describe usage of PT in nine Hessian counties (reported TB-incidence in 2008: 8.4 cases/100,000 population).

METHODS:

We included all contact persons who were IGRA tested from January 2008 to March 2009. We used standardized questionnaires to collect data on demographics, medical history and exposure patterns. IGRA-positive contacts were followed-up for one year; we obtained additional data on PT and TB development. TB was defined as clinically apparent disease requiring treatment. Data on PT was stratified for age according to recommendations in national guidelines. We calculated TB-incidence rate as number of new cases per 100 person-years (PY).

RESULTS:

Of 715 tested contacts, 176 (24.6%) were IGRA-positive. Three of 151 IGRA-positive contacts without complete PT developed TB at two, six and nine months following diagnosis of the index case (TB-incidence rate: 2.4 cases/100PY [95% confidence interval: 0.5–6.9/100PY]). None on PT developed TB. PT was initiated in 75.0% (6/8) of IGRA-positive contacts <15 years of age. All six completed treatment. Among contacts aged ≥15 years 17.9% (30/168) started PT with a compliance of 63.3% (19/30).

CONCLUSIONS:

IGRA-positive contacts without PT are at high risk for TB progression. Usage of PT was low in our study. We therefore recommend conducting further studies to investigate the reasons for this low usage.

PRESENTED BY: DR STEFFEN GEIS

20100122 Oral Tuberculosis

Keywords: latent tuberculosis infection, contact tracing

Tuberculosis contact tracing varies among local public health departments in Lower Saxony, Germany

Alexandra Hofmann (1, 2, 4), J. Dreesman (2), K. Alpers (3), B. Hauer (3), D. Wagner (2)

AFFILIATIONS:
1. Postgraduate Training for Applied Epidemiology (PAE), Robert Koch Institute, Berlin, Germany
2. Governmental Institute of Public Health of Lower Saxony, Hannover, Germany
3. Robert Koch-Institute, Berlin, Germany
4. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden

BACKGROUND:

In 2007, the German recommendations for tuberculosis contact tracing (TCT) were updated, introducing the Interferon Gamma Release Assay (IGRA). A stepwise diagnostic approach for persons aged 14 to 50 years is now recommended to detect latent tuberculosis infection (LTBI): using initially the Tuberculin Skin Test (TST) followed by an IGRA, if the TST is positive. This study aims to investigate the approach used and the implementation of the recommendation at the local public health departments (LPHD) in Lower Saxony.

METHODS:

We asked persons responsible for TCT at LPHDs in Lower Saxony to complete a pretested, self-administered questionnaire. It included questions on: procedures during TCT using exemplary case scenarios; diagnostic tests applied and number of contact persons and infected contacts identified in 2009. We performed a descriptive analysis and tested the association between following the recommendations and the district's population size, urbanity and the LPHD's staff size using Fishers-Exact-Test.

RESULTS:

Overall 43/46 (96%) LPHD completed the questionnaire. Sixteen (37%) LPHD perform the investigation of contacts according to the recommendations. Eleven (26%) use TST and IGRA, although not according to the recommendations. Two use solely TST, 10 solely IGRA and 4 use solely Chest-X-Rays. There was no association between the adherence to recommendations and the investigated external factors. For 279 tuberculosis cases, TCT was initiated. A total of 14,525 contact persons were identified (on average 52 per tuberculosis case). Among those 394 (2.7%) LTBIs and 35 (0.2%) secondary active tuberculosis cases were found.

CONCLUSIONS:

Although recommendations for TCT exist, the procedures differ substantially between districts, independently from population size or LPHD's staff size. To achieve consistent procedures and equal quality, training and supporting tools are needed.

PRESENTED BY: MRS ALEXANDRA HOFMANN

20100181 Oral Tuberculosis

Keywords: Migration, Tuberculosis, Epidemiology, Molecular methods

Migrants and TB transmission to local populations: evidence from molecular epidemiology

Andreas Sandgren (1), G. Sotgiu (2), P. Castiglia (2), A. Piana (2), E. Huitric (1), G. B. Migliori (3), D. Manissero (1).

AFFILIATIONS:
1. Scientific Advice Unit, European Centre for Disease Prevention and Control, Stockholm, Sweden.
2. Hygiene and Preventive Medicine Institute, University of Sassari, Sassari, Italy.
3. WHO Collaborating Centre for TB and Lung Diseases, Fondazione S. Maugeri, Care and Research Institute, Tradate, Italy.

BACKGROUND:

The burden of tuberculosis (TB) is greater in poor countries, but even within wealthy countries, deprived areas tend to have higher TB incidence. The TB control programmes of many low-burden countries are often perceived to be challenged by migration from high-burden countries. The aim of this study was to elucidate to what extent the increased immigration to developed countries impact the risk of TB among local populations, highlighting the role of molecular epidemiology in undertaking such studies.

METHODS:

A systematic review of literature published on the topic migration and TB transmission was performed. We searched PubMed and EMBASE databases to identify studies conducted from January 1998 to December 2008. Formal meta-analytic techniques could not be applied for a comparative analysis because the studies identified used highly heterogeneous methods and measures.

RESULTS:

The search yielded 9 population-based molecular epidemiological studies covering 15,073 patients of which 48% were foreign-born. The incidence of TB significantly increased during the study period and the proportion of foreign-born with TB increased. However, the proportion of clustered isolates was low (mean 30.3%) among both local and foreign-born population, and the ratio of clusters with mixed local and foreign-born patients was ranging from 1.8% to 32.8%, thus demonstrating low levels of cross-transmission from the immigrant to the local population.

CONCLUSIONS:

This systematic review provides evidence that immigration did not appear to have the significant influence on the TB situation among local populations as has been claimed. The low proportion of native cases attributable to transmission from a foreign-born source did not support the perception that TB control programmes were hampered by migration from high-incidence countries.

PRESENTED BY: DR ANDREAS SANDGREN

PARALLEL SESSION **ABSTRACTS**

20100335 Oral Tuberculosis

Keywords: Tuberculosis, Portugal

Recent birth cohorts still at risk of tuberculosis in Portugal

Delphine Sauvageot (1–2), António Fonseca Antunes (3), Carlos Orta-Gomes (2), José Luis Castanheira (2)

AFFILIATIONS:
1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
2. Epidemiology and Statistics department, Direcção-Geral da Saúde, Lisboa, Portugal
3. National Tuberculosis Programme, Direcção-Geral da Saúde, Lisboa, Portugal

BACKGROUND:
Portugal was a highly endemic country for tuberculosis until 1998. In 2009, 85% of tuberculosis cases were Portugal natives. Due to the latent nature of Mycobacterium Tuberculosis infection, individuals exposed and infected in the past may be developing tuberculosis today. In order to assess if current tuberculosis cases result from old infection reactivation or from recent infection, we measured the risk of developing tuberculosis by birth cohorts.

METHODS:
Notifications from the statutory tuberculosis reporting system were retrospectively analysed. A tuberculosis case was defined as any patient who started anti-tuberculosis treatment in a Portuguese pulmonary diseases centre. For the years 1990, 2000 and 2009, age specific incidences (/100,000 populations) were calculated and aggregated by 10-year birth cohorts starting with 1935.

RESULTS:
Overall incidences were 67, 43 and 24/100,000 in 1990, 2000 and 2009, respectively. This decreasing trend in incidences was observed in cohorts from 1935 to 1974. For the cohort 1975-1984, incidence was 25/100,000 in 1990 then similarly to older cohorts, reached 45/100,000 in 2000 and 34/100,000 in 2009. For the youngest cohort (1985-1994), incidence was 6/100,000 in 2000 and rose to 20/100,000 in 2009.

CONCLUSIONS:
Over the past 10 years, incidences of developing tuberculosis decreased in all 10-year birth cohorts except in the youngest. This may reflect different age-related exposures. However, current incidences in the youngest suggest that transmission continues to occur and point against reactivation of long-time infection. Actions to control tuberculosis, as passive case finding and contact tracing, need to be strengthened in all age groups but additional efforts to characterise the youngest birth cohorts affected and tailor specific control measures accordingly need to be undertaken.

PRESENTED BY: MISS DELPHINE SAUVAGEOT

0100371 Oral Tuberculosis

Keywords: Tuberculosis control, treatment outcome

Tuberculosis control in Portugal and treatment success. Explanatory dimensions of treatment outcome and its predictive ability.

Inês Mendes (1), T. Briz (2), C. Nunes(2)

AFFILIATIONS:
1. Escola Nacional de Saúde Publica, Universidade Nova de Lisboa, Portugal
2. CIESP, Escola Nacional de Saúde Publica and CMDT- LA/IHM, Universidade Nova de Lisboa, Portugal

BACKGROUND:
Despite the high commitment in good strategies for tuberculosis control worldwide, this is still a serious Public Health problem, with global estimates of 9,4 million new cases in 2008 and 1,8 million deaths each year. The poor understanding of the barriers and facilitators to treatment success is a major obstacle to find effective solutions to improve the quality of tuberculosis programs. This study tries to contribute to the timely identification of patients with predictive profiles of unsuccessful treatment outcomes, through the initial identification of their characteristics probably affecting treatment outcome, found on the basis of an epidemiological and statistical model and independently of care providers' beliefs.

METHODS:
A case-control study was conducted for the population of cases notified to the National Program for Tuberculosis Control (n=24 491), between 2000-2007. Predictive factors for unsuccessful outcome were assessed in univariate and multivariate analyses, using a significance level of 5%; a logistic regression was used to estimate the odds-ratio of unsuccessful, as compared to successful outcome, for several factors identified in the literature and to which data were available.

RESULTS:
Alcohol abuse (OR=2,889), tobacco (OR= 2,913), patient´s foreign origin (OR=3,910), homelessness (OR=3,919), HIV co-infection (OR=5,173), interruption (OR=60,615) or unsuccessful outcome in the previous treatment (OR=67,345) and treatment duration below 165 days (OR=1930,133) were identified as predictive of unsuccessful outcomes. A low treatment duration proved to be the most powerful factor affecting treatment outcome.

CONCLUSIONS:
Results suggest that a foreign-born patient, smoker and alcohol abuser, who has had a previous treatment for tuberculosis and is co-infected with HIV is very likely to have an unsuccessful outcome. Therefore, specific, patient-centered strategies should be taken to prevent treatment failure.

PRESENTED BY: DR INÊS MENDES

20100057 Oral Contribution of modelling to applied epidemiology

Keywords: Salmonella; pig; control; cost effectiveness; public health

Modelling control strategies for Salmonella in pigs and pork

Filipa M. Baptista (1, 2), T. Halasa (3), L. Alban (4), L. R. Nielsen (1)

AFFILIATIONS:

1. Department of Large Animal Sciences, Faculty of Life Sciences, University of Copenhagen, Grønnegårdsvej 8, DK-1870 Frederiksberg C, Denmark
2. CIISA, Faculdade de Medicina Veterinária, TULisbon, Av. da Universidade Técnica, 1300-477 Lisboa, Portugal
3. Technical University of Denmark, the Veterinary Institute, Bülowsvej 27, 1790 Copenhagen V, Denmark
4. Danish Agricultural & Food Council, Axelborg, Axeltorv 3, DK-1609, Copenhagen, Denmark

BACKGROUND:

Salmonellosis is one of the most frequently reported food-borne zoonoses. Pork is considered to be a significant source and reduction targets for Salmonella in pigs/pork are in the pipeline. This study aimed at evaluating cost-effectiveness of different control strategies.

METHODS:

A stochastic simulation model was used to evaluate food safety and economic consequences of different control scenarios, including herd and abattoir interventions. The epidemiological module simulated Salmonella carcass prevalence after chilling for different scenarios, in different abattoir sizes. Abattoir sizes were classified based on the average number of pigs slaughtered, on each day: small (6,000 pigs). The economic model was used to estimate the additional costs per pig related to each control scenario. Cost-effectiveness analysis was used to compare the costs of the different scenarios with their expected effectiveness. Danish surveillance data were used to provide input to the models. In Denmark, Salmonella carcass prevalence is already at a low level (1.0-1.5%) but a further reduction is aimed for.

RESULTS:

On average, small abattoirs presented lower Salmonella carcass prevalence as a result of lower Salmonella input (small: 0.96%, medium: 1.17%, large: 1.29%). Abattoir interventions were more effective than herd interventions to further reduce Salmonella carcass prevalence. Cost-effectiveness of abattoir interventions changed with abattoir size. On average, abattoir interventions in smaller abattoirs presented a higher cost and hence a lower cost-effectiveness (small: €0.56, medium: €0.22, large: €0.17 per pig).

CONCLUSIONS:

This model provides a flexible framework that can be adjusted to country-specific scenarios, accounting for the herd and abattoir structure. Moreover, this model contributes towards more cost-effective control of Salmonella in pigs and pork and thereby to the improvement of public health.

PRESENTED BY: DR FILIPA BAPTISTA

20100052 Oral Contribution of modelling to applied epidemiology

Keywords: computer simulation, epidemiology, mathematical models, infectious diseases

Simulation environment of infectious diseases

M.A. Gil-Niala (1), F. Morilla-García (1), S. Dormido-Canto (1), J. Donado-Campos (2)

AFFILIATIONS:

1. Universidad Nacional de Educación a Distancia, Spain
2. Instituto de Salud Carlos III, Spain

BACKGROUND:

Identification of health problems is one of the functions of the Surveillance System. This identification relies fundamentally on the collection and the analysis of the epidemic information, but it should also rely on simulation scenarios. The epidemiologists could use the simulation to recreate transmission modes and of control of certain diseases. The simulation environment developed in this work was born with the objective of facilitating the formation and the work of epidemiologists in relation to the dynamic aspects that underlie in any transmission.

METHODS:

Two types of dynamic models based on the model of Kermack and McKendrick were chosen. The first of three groups of population: susceptible-infected-recovered. The second of five groups: the previous ones plus latent and carriers. A common interface was defined and programmed in Vensim®. And three spreadsheets were designed in EXCEL to configure the population's characteristic parameters, the specific parameters of the illness and the parameters of the simulation environment.

RESULTS:

The main window of the simulation environment is designed so that at any time the results of the transmission of disease within a population are shown. Initially the results belong to the last configuration simulated, but subsequently are updated based on the changes through the interface. The main window also offers other interesting options especially that which allows you to save different simulations in a spreadsheet in order to analyze and compare in detail.

CONCLUSIONS:

The use of this environment will be useful for: predict the future behaviour of a disease and simulate the influence of different control measures

PRESENTED BY: DR JUAN DE MATA DONADO-CAMPOS

PARALLEL SESSION **ABSTRACTS**

20100149 Oral Contribution of modelling to applied epidemiology

Keywords: Neisseria meningitidis, meningitis, meningococcal, public health surveillance

Space-time cluster analysis and rapid case reporting reduces the time-to-recognition for invasive meningococcal disease – Montreal, Canada, 1995–2008

Ruwan Ratnayake (1, 2), R. Allard (2, 3)

AFFILIATIONS:
1. Canadian Field Epidemiology Program, Public Health Agency of Canada, Ottawa, Canada
2. Direction de santé publique de Montréal, Montreal, Canada
3. Department of Epidemiology, Biostatistics and Occupational Health, McGill University, Montreal, Canada

BACKGROUND:
Invasive meningococcal disease (IMD) is a persistent health threat that causes serious morbidity and mortality. The detection of cases and clusters is critical to arresting transmission. We evaluated the ability of a regional surveillance system to rapidly identify cases and of space-time scan statistics to recognize clustering.

METHODS:
IMD cases from 1995-2008 were selected for analysis. Time intervals between specimen collection and laboratory and physician reporting were calculated. Case detection sensitivity was ascertained using the capture-recapture method to compare cases recorded in the provincial hospitalization database and the surveillance system database. A retrospective scan (for 1992-2008) identified clusters strongly associated by time and place on the basis of serogroup, date of illness and residence. These clusters were compared to those documented in health department records. A simulated prospective scan attempted to detect the retrospectively identified clusters while they were in progress.

RESULTS:
184 IMD cases were reviewed. Within seven days of specimen collection, 89.3% of cases were reported. 91.7% of cases were reported by laboratories and 54.7% by physicians. Case detection sensitivity was 94.3% (95%CI=90.5—97.0). Retrospective scans identified an undocumented serogroup C cluster spanning 27 days (n=4, $p<0.04$) and a documented serogroup B cluster spanning 34 days (n=5, $p<0.02$). Prospective scans detected both clusters while in progress, resulting in reductions in time-to-recognition of 14 and 13 days, respectively.

CONCLUSIONS:
Case reporting is highly sensitive. The high proportion reporting within seven days is timely as it enables chemoprophylaxis administration to contacts to occur within the effective ten-day window. As serogroup-specific space-time scan statistics rapidly detected clusters, their integration into surveillance practice is recommended. The lack of clustering after 1995 likely reflects the coincident decreased incidence of IMD.

PRESENTED BY: MR RUWAN RATNAYAKE

20100314 Oral Contribution of modelling to applied epidemiology

Keywords: West Nile Disease, Risk Maps, Remote Sensing, Horses

Preliminary risk mapping of West Nile Disease in the Veneto Region (North-Eastern Italy)

Paolo Mulatti (1), DJ Rogers (2), T Patregnani (1), F Montarsi (1), S Ravagnan (1), L Bonfanti (1), S Marangon (1)

AFFILIATIONS:
1. Istituto Zooprofilattico Sperimentale delle Venezie, Legnaro (Italy)
2. Department of Zoology, Oxford University, Oxford (UK)

BACKGROUND:
The 2008-2009 West Nile virus (WNV) epidemic in North East Italy has led the public health authorities to build and operate a surveillance based on testing of horses as “sentinels” of the disease. The data collected raised particular interest in mapping areas considered at risk of disease spread. However, the large variety of environmental factors that could influence WNV spread made the creation of risk maps challenging.

METHODS:
In this study, WND risk maps for the Veneto region were produced based on the distribution of the infected horse farms detected in 2008-2009. We included in the study 548 farms (199 positive and 349 negative). For all of them geographical data were available. Temporal Fourier transformed satellite data in the following “channels”: Middle Infrared, Day-time and night-time Land Surface Temperature, Normalised Difference Vegetation Index, Enhanced Vegetation Index were collected for each farm. In the preliminary model data on arthropod vectors and other animal hosts were not included. Mathematical algorithms based on non-linear discriminant analysis, developed by the EDEN LRRS team, were applied to define the relationship between the satellite and disease data. A hundred bootstrap models were performed and the variables were selected in a step-wise inclusion manner to maximize the corrected Akaike Information Criterion (AICc).

RESULTS:
The models identified that the likely key predictor variables for the presence of disease in the Veneto region were related to rainfalls and temperature.

CONCLUSIONS:
Mapping the changes in these variables in the territory of interest could help to predict changing of WNV risk over time. However, further work is needed to improve the model (addition of data on vectors presence/abundance, on animal hosts/reservoirs, etc.) and to obtain more reliable risk maps.

PRESENTED BY: DR PAOLO MULATTI

20100367 Oral Contribution of modelling to applied epidemiology

Keywords: tuberculosis, risk assessment, triage

A tuberculosis triage system based on a dynamic risk assessment model

C Kara-Zaïtri (1), HLG ter Waarbeek (2, 3)

AFFILIATIONS:

1. Independent consultant in health informatics, UK
2. Department of Infectious Diseases, South Limburg Public Health Service
3. Department of Medical Microbiology, Maastricht Infection Centre, Maastricht University Medical Centre (MUMC+), School for Public Health and Primary Care (CAPHRI)

BACKGROUND:

Tuberculosis is a serious, but treatable, infectious disease. Its increasing prevalence in the UK is challenging public health professionals and requiring significant human and physical resources. Influencing factors include high risk groups (new entrants, refugees, homeless people and drug users), education programmes, and multidrug-resistant tuberculosis (MDR-TB). The current prevalence is set to increase further due to changing labour markets, particularly from Eastern Europe where MDR-TB is significant, numbers of foreign tourists and students, returning expats and home-students, plus the new immunosuppressive drugs which increase the risk of TB flaring up in older patients. There is therefore an urgent need for a dynamic risk assessment model for prioritising intervention commensurate with patient-specific mitigation programmes.

METHODS:

The methodologies adopted for the development of the dynamic risk assessment are based on comprehensive literature reviews, in-depth interviews, and Delphi sessions with groups of TB public health consultants. The structured model developed integrates clinical and public health requirements for detection, management and prevention of TB during the entire pathway.

RESULTS:

The risk management model developed consists of four attributes namely Confirmation of Diagnosis (e.g. microbiology, clinical symptoms and histology), Spread (e.g. contacts and contextual setting), Management (e.g. communication, accommodation, access) and Treatment (motivation to benefit from anti-TB therapy) assessed over time and using four quasi-probabilistic ratings defined by consensus in the Delphi sessions.

CONCLUSIONS:

Results from trials in simulation sessions covering a wide range of scenarios assessed over the entire patient pathway are encouraging. They have readily demonstrated the usefulness of the model for prioritising work, enhancing communication between the various TB services, providing objective means for measuring outcome indicators, strengthening public health surveillance and therefore informing policy.

PRESENTED BY: MR CHAKIB KARA-ZAÏTRI

20100025 Oral Influenza 2

Keywords: pandemic, influenza, hospitalization, comorbidities, risk factors

Pandemic influenza in Northern Ireland: characteristics of hospitalised patients and risk factors for severe outcomes and death, June 2009 to February 2010

O Sfetcu (1, 2), B Smyth (2), C Kearns (2), J Miskimmons (2)

AFFILIATIONS:

1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden;
2. Public Health Agency, McBrien Building, Northern Ireland, UK

BACKGROUND:

Clinical characteristics and risk factors for severe outcome and death from 2009 influenza A(H1N1) pandemic were not known when the pandemic started. Data on hospitalized patients with pandemic influenza were collected to describe characteristics, associated comorbidities and to identify risk factors for Intensive Care Unit (ICU) admission and death.

METHODS:

Between June 2009 and February 2010, hospitals in Northern Ireland were asked to daily report admissions of confirmed A(H1N1) cases. Details collected were: demography, clinical outcome, and comorbidities. Adjusted odds ratios (aOR) and 95% confidence intervals (CI) for ICU-admission and death were calculated using logistic regression.

RESULTS:

Of 579 hospitalized cases, 50 (8.6%) required ICU-admission, and 16 (2.7%) died. Male/female ratio was 1:1. Males were younger than females with a median age of 15.5 years (range 0-93 years) vs. 21 years (range 0-85 years). Highest age-specific incidence was for children 0 to 4 years (112/100,000 population), accounting for 25% of all hospitalizations. Female patients were two times more likely to require ICU-care if pregnant (RR=2.4 95%CI: 1.1-5.0). In the multivariate analysis, malignancy (aOR=5.3 95%CI: 1.6-17.1), chronic neurological diseases (aOR=4.7 95%CI: 2.1-11.0), and being >18 years (aOR=3.0 95%CI: 1.4-6.4) were associated with ICU-care, and malignancy (aOR=15.4 95%CI: 2.1-113.5), chronic neurological diseases (aOR=12.2 95%CI: 2.7-54.7) and diabetes (aOR=6.8 95%CI: 1.2-39.0) were risk factors for death.

CONCLUSIONS:

The majority of hospitalized patients were children and adolescents, many of them previously healthy. Adult patients were at increase risk to develop severe presentations. Pregnancy significantly contributed to females ICU-admissions. Patients with malignancies or chronic neurological diseases were more likely to develop severe outcomes and die. Monitoring hospitalized inpatients aided identification of vulnerable risk groups, oriented local preventive interventions and helped quantifying health services burden.

PRESENTED BY: DR OTILIA SFETCU

PARALLEL SESSION **ABSTRACTS**

20100029 Oral Influenza 2

Keywords: 2009 pandemic influenza

The relative impact of 2009 pandemic influenza A(H1N1) in the general population compared to seasonal influenza in the Netherlands was most marked among 5–14 year olds.

Arianne B. van Gageldonk-Lafeber (1), Mariëtte Hooiveld (2), Adam Meijer (1), Gé A. Donker (2), Marie-José Veldman-Ariesen (1), Wim van der Hoek (1), and Marianne A. B. van der Sande (1)

AFFILIATIONS:
1. National Institute for Public Health and the Environment (RIVM), Centre for Infectious Disease Control (CIb), Bilthoven, the Netherlands.
2. Netherlands institute of health services research (NIVEL), Utrecht, the Netherlands.

BACKGROUND:
So far most pandemic influenza reports were based on case studies focusing on severe disease. For public health policy it is essential to consider the overall impact of the pandemic, including mild diseases. The aim of our study is to gain insight in the epidemiology of 2009 pandemic influenza in the general population, and to estimate the relative impact of pandemic compared to seasonal influenza.

METHODS:
The relative impact of pandemic influenza in the general population was assessed as the ILI incidence during the pandemic season compared with that during regular seasons. ILI incidences were derived from continuous sentinel surveillance system. The incidence of hospital admissions, based on the mandatory notification of pandemic influenza, was used to relate the impact of severe disease to that in the community.

RESULTS:
The overall incidence of GP-attended ILI was 96 consultations per 10,000 persons. Highest incidences were reported in children and lowest in persons aged >65 years. For 5-14 year olds the incidence during the pandemic was higher than during all preceding seasons. Samples originating from 5-19 year olds were statistically significant more often positive for pandemic influenza A(H1N1) 2009 virus as compared with samples from 0-4 year olds. Moreover, the incidence of hospital admission due to pandemic influenza was highest in the youngest children.

CONCLUSIONS:
Our study showed that, while the absolute incidences of 2009 pandemic influenza were most noticeable among children aged 0-4 years, the relative impact in the community compared to seasonal influenza was most noticeable in healthy children 5-14 years of age.

PRESENTED BY: MRS RIANNE VAN GAGELDONK-LAFEBER

20100178 Oral Influenza 2

Keywords: H1N1, intervention trial, household transmission, face masks, hand hygiene

First results from a household-based study analysing the effectiveness of face masks and hand hygiene to prevent transmission of pandemic (H1N1) 2009 virus.

Thorsten Suess (1), C. Remschmidt (1), A. Nitsche (2), K. Schröder (2), S. Schink (1), W. Haas (1), G. Krause (1), U. Buchholz (1)

AFFILIATIONS:
1. Department of Infectious Disease Epidemiology, Robert Koch Institute, Berlin, Germany
2. Centre for Biological Safety, Division of Highly Pathogenic Microorganisms, Robert Koch Institute, Germany

BACKGROUND:
Use of face masks (in households) and in particular intensified hand hygiene (in general) have been part of the recommendations of many countries to prevent infection with (H1N1) 2009 influenza virus (pIV) on the personal level. However, the effectiveness of these measures were explored only by few studies, and none was published with pIV at its focus.

METHODS:
In autumn 2009 we recruited households with laboratory confirmed index patients and cluster-randomised them into one of three intervention arms (i) use of surgical face-masks, (ii) use of surgical masks and alcohol based hand rub, (iii) control group. During a follow up period of 7 days after the index' illness onset we visited each household every two days for the collection of respiratory samples from all household members. Samples were analysed by real-time RT-PCR for pIV. For comparison between groups we used a Chi-square statistic.

RESULTS:
41 index patients and their 106 household contacts were randomised to one of the intervention arms. Median age was 8 years (interquartile range-IQR: 5-10) for index patients, and 34.5 years (IQR: 17-41) for household contacts. 16 (15%) out of 106 household contacts became laboratory confirmed secondary cases. Secondary attack rate was highest in the control group (22% (8/36)) followed by the face masks group (13% (4/30)) and the face masks & hand hygiene group (10% (4/40)) (p-value = 0.32).

CONCLUSIONS:
Although point estimates and ranking of the results of the intervention arms are plausible, due to small sample size this study was unable to detect statistically significant differences in the effectiveness of interventions for the prevention of infection with pIV. The study will be repeated in the influenza season 2010/11.

PRESENTED BY: DR THORSTEN SUESS

20100293 Oral Influenza 2

Keywords: International contact tracing, Pandemic Influenza A (H1N1) 2009

Timeliness of international contact tracing among flight passengers for Pandemic Influenza A (H1N1) 2009

C. M. Swaan (1), R. Appels (2)

AFFILIATIONS:
1. Preparedness and Response Unit, Centre for Infectious Disease Control, National Institute for Public Health and the Environment (RIVM), Bilthoven, the Netherlands
2. Municipal Health Service, GGD Kennemerland, Hoofddorp, the Netherlands

BACKGROUND:
During the initial phase of Pandemic Influenza A(H1N1), close contacts of cases were entitled oseltamivir prophylaxis preferably within 48 hours after exposure to prevent infection. Passengers seated on the same row, two rows in front or behind a patient during a flight of ≥ 4 hours were considered close contacts. This study evaluates the timeliness of flight contact tracing (CT) for passengers.

METHODS:
Delay in flight contact identification (CI) was used as proxy for timeliness of CT and defined as days elapsed between flight arrival and contacts details identified from passenger lists. In a retrospective study dates of flight arrival, first day of illness, laboratory diagnosis, CT requests and identification of contacts were collected for CT requests to the RIVM and MHS Kennemerland for flights landed at Schiphol Airport. The chi2 test was used to compare timeliness of CT requests between Dutch and foreign airlines.

RESULTS:
24 requests for CT were identified. Three international requests were declined as ≥5 days had elapsed since arrival. In 17 out of 21 flights, contact details were obtained within 5 days after arrival (81%). The average delay between arrival and CI was 3.9 days (range 2-7). This was mainly caused by delay in diagnosis after arrival (2.6 days, n=13) as most indexes became ill during the day of the flight (15/17). In four flights (19%), contacts were not, or ≥5 days, identified. These CT were all related to foreign airlines (p<0.0001). In only three flights contacts were identified within two days after arrival.

CONCLUSIONS:
CT for Pandemic Influenza A(H1N1) among flight passengers was not successful for timely provision of prophylaxis. Early diagnosis of patients and internationally standardized airline CT procedures are recommended.

PRESENTED BY: MRS CORIEN SWAAN

20100131 Oral Influenza 2

Keywords: Pandemic influenza hospital surveillance

The burden of Pandemic Influenza A (H1N1) 2009 disease in Hospitals and ICUs – results from a new hospital Surveillance, Germany 2009/2010

Cornelia Adlhoch (1, 2), Maria Wadl (2), Michael Behnke (3), Luis Alberto Peña Diaz (3), Jörg Clausmeyer (3) and Tim Eckmanns (2)

AFFILIATIONS:
1. Postgraduate Training for Applied Epidemiology (PAE, German FETP) Robert Koch Institute, Dept. for Infectious Disease Epidemiology, Berlin, Germany and European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden;
2. Robert Koch Institute, Dept. for Infectious Disease Epidemiology, FG32 Surveillance, Berlin, Germany; 3National reference center for Surveillance of Nosocomial Infections, Institute of Hygiene and Environmental Medicine, Charité-University Medicine Berlin, Berlin, Germany

BACKGROUND:
The Robert Koch Institute implemented a nationwide voluntary hospital Pandemic Influenza A (H1N1) 2009 (PI) sentinel-surveillance between week 49/2009 and 13/2010 in Germany. The data were analysed to assess the burden of disease.

METHODS:
A PI-case was an in-patient with PCR-confirmed PI. In hospitals and intensive care units (ICUs), the proportions of PI-associated admissions, PI-associated deaths, and, in ICUs additionally, the proportion of PI-patient days with or without mechanical ventilation were calculated. A Poisson regression model was used to estimate the mean percentage decrease of PI-admissions in hospitals and ICUs, and of PI-patient days in ICUs.

RESULTS:
In participating hospitals 103/159,181 (0.06%) admissions were PI-cases. The mean incidence decreased weekly by 23.5% (95%CI: 19.3-27.5%) during the surveillance period. In ICUs 59 (0.35%) of 16,728 admissions were PI-cases. A mean weekly decrease in incidence by 19.2% (95%CI: 13.6-24.3%) was estimated. In ICUs 1,848 (2.2%) of 85,559 patient days were PI-related. The mean proportion of PI-patient days declined weekly by 11.3% (95%CI: 10.3-12.2%). Mechanical ventilation was necessary in 94.8% PI-related ICU patient days. Eighteen (0.6%) of 2,835 deaths were PI-associated.

CONCLUSIONS:
The surveillance was implemented after the PI-peak in Germany (week 47) which explains the low proportion of PI-related admissions and the decreasing weekly incidences observed. The PI-associated impact on hospitals was low during the surveillance period. Impact was greater in ICUs, where a higher proportion of PI-admissions and a very high ventilation rate were observed. The large fraction of PI-patient days in ICUs with mechanical ventilation reflects the possible severity and burden of PI-disease. Hospital-based surveillance can be used as a flexible tool to obtain information about the burden and severity of infectious diseases. It should be established timely.

PRESENTED BY: DR CORNELIA ADLHOCH

PARALLEL SESSION **ABSTRACTS**

20100374 Oral Vaccine preventable diseases 1

Keywords: daycare centers, vaccination, streptococcus pneumoniae, staphylococcus aureus, resistance, children

Nasal carriership of Streptococcus pneumoniae and Staphylococcus aureus in Streptococcus pneumoniae vaccinated and unvaccinated young children

Nicole HTM Dukers-Muijrers, Ellen Stobberingh, Rick Boesten, Patrick Beisser, Peter Jacobs, Christian JPA Hoebe

AFFILIATIONS:
School of Public Health and Primary Care (CAPHRI) Maastricht University Medical Centre (MUMC+) Public Health Service (GGD) South Limburg

BACKGROUND:
Introduction: Streptococcus pneumoniae (SPn) causes significant morbidity and mortality in children. Current vaccines are effective in preventing invasive disease but vaccination does not fully prevent the nasopharyngeal carriership of SPn and vaccine serotypes are being replaced by non-vaccine serotypes. Here, we assess the dynamic interplay between Staphylococcus aureus (SA) and SPn in children vaccinated and unvaccinated with the heptavalent conjugate vaccin.

METHODS:
Methods: Nasal swabs and questionnaires were obtained from 619 children (aged 0-4 years) in 48 daycare centers in the Netherlands, 2007. Identification of SA and SPn was performed using standard biochemical tests. Antibiotic susceptibility was determined using the disc diffusion method. SPn serotypes were assessed. Logistic regression analyses were done to identify independent risk factors for SPn and SA carriership.

RESULTS:
Results: Overall, 23% of children were (partly or fully) vaccinated. SPn carriership (38%) was unaffected by level of vaccination. Of all SPn carriers, the proportion of nonvaccin serotypes increased from 48% in unvaccinated to 77% in fully vaccinated children (p=0.021). Carriership of SA was 18%. SPn and SA carriership showed an inverse relation (OR: 0,41; p<0.001), irrespective of SPn serotype (vaccin or nonvaccin), antibiotic susceptibility, and SPn vaccination status of the child. SPn and SA resistance to standard antibiotic treatment ranged from zero to 5%.

CONCLUSIONS:
Conclusions: SPn heptavalent vaccination does not reduce nasal carriership of SPn. Vaccin related SPn serotype replacement is a common phenomenon after vaccination. When nasal carriership of SA is detected, there is less often carriership of SPn. In young Dutch children, resistance of SA and SPn to commonly used antibiotics is not absent but uncommon. Results further suggest that SPn vaccinated children are still part of the SPn transmission chain.

PRESENTED BY: DR NICOLE DUKERS-MUIJRERS

20100001 Oral Vaccine preventable diseases 1

Keywords: Hepatitis A, Hepatitis A Antibodies, Incidence, Prevalence, Seroepidemiologic Studies, Vaccination

Hepatitis A in 10 European countries: Assessing susceptibility to inform vaccine policy

Satu Kurkela (1, 2), R. G. Pebody (1), G. Kafatos (1), A. Nardone (1), N. Andrews (1), A. Pistol (3), I. Davidkin (4), R. Vranckx (5), V. Nemecek (6), L. M. Hesketh (1), W. Thierfelder (7), B. Bruzzone (8), A. Griskevicius (9), C. Barbara (10), Z. Sobotová

AFFILIATIONS:
1. Health Protection Agency, Centre for Infections, London, United Kingdom;
2. European Public Health Microbiology Fellowship Programme (EUPHEM), Stockholm, Sweden;
3. National Institute for Research and Development in Microbiology and Immunology, Bucharest, Romania;
4. National Institute for Health and Welfare, Helsinki, Finland;
5. Institute of Public Health, Brussels, Belgium;
6. National Institute of Public Health, Prague, Czech Republic;
7. Robert Koch-Institute, Berlin, Germany;
8. Department of Health Sciences, University of Genova, Genova, Italy;
9. Center for Communicable Diseases and AIDS, Vilnius, Lithuania;
10. St. Luke's Hospital, G' Mangia, Malta;
11. National Laboratory for Poliomyelitis and Viral Hepatitis, Bratislava, Slovakia;
12. National Retrovirus Reference Centre, University of Athens Medical School, Athens, Greece

BACKGROUND:
The age-specific seroprevalence and incidence of hepatitis A virus (HAV) is known to vary geographically. In countries with limited transmission in the general population, WHO recommends vaccination of high-risk groups. In areas with periodic population-wide outbreaks (intermediate endemicity), nationwide immunisation should be considered. Only incomplete and geographically scattered data are available on HAV seroepidemiology in Europe; uncertainties exist about the age-specific susceptibility and average age of infection. We aimed to identify susceptible age groups and degree of transmission to inform HAV vaccination policy in the participating countries: Belgium, Czech Republic, England, Finland, Germany, Italy, Lithuania, Malta, Romania, and Slovakia.

METHODS:
Each country tested sera (n=1854-6748), collected in 1996-2004 either as residues from routine laboratory testing (7/10 countries), or by population-based random sampling (3/10), for total (IgG+IgM) anti-HAV antibodies. The local laboratory results were standardised to common units. Information on reported cases and vaccine policy was collected.

RESULTS:
In age groups <30 and ≥30 years, 41% and 6% respectively were susceptible to HAV in Romania, while 70-94% and 26-71% were susceptible in the other countries. The median age of infection was 10 years in Romania, and 35-56 years in the other countries. Romania showed a particularly high incidence of HAV (152-285/100,000 population) in age group 5-19 years, while the respective rates remained <60/100,000 in the other countries, which reported HAV disease primarily in older risk groups.

CONCLUSIONS:
All countries, except Romania, showed high susceptibility in children and young adults; these countries currently offer HAV vaccination to risk groups. In contrast, Romania showed low susceptibility in adults, and high incidence in children and younger adults. Romania appears an area of intermediate endemicity, and should consider universal immunisation for HAV.

PRESENTED BY: DR SATU KURKELA

20100150 Oral Vaccine preventable diseases 1

Keywords: measles, disease outbreaks, population surveillance

Measles Outbreak Following the Vancouver 2010 Olympic Games, British Columbia, Canada.

Teresa Leung (1, 2), S. Forsting (1), M. Smythe (1), P. Daly (1, 3), J. Sandhu (1, 3), R. Gustafson (1, 3)

AFFILIATIONS:

1. Office of the Chief Medical Health Officer, Vancouver Coastal Health, Vancouver, Canada
2. Canadian Field Epidemiology Program, Public Health Agency of Canada, Ottawa, Canada
3. School of Population and Public Health, University of British Columbia, Vancouver, Canada

BACKGROUND:

In March 2010, several cases of measles were identified in Vancouver Coastal Health (VCH), Canada, the hosting health jurisdiction of the Vancouver Winter Olympic Games (February 12-28) where athletes, officials and visitors from over 80 countries gathered. The last locally-acquired case in VCH was in 2007. As endemic measles has been eliminated in Canada, an investigation was initiated to characterize the outbreak and implement prevention and control measures.

METHODS:

Cases with symptoms compatible with measles and/or laboratory confirmation, identified among VCH residents through routine surveillance and contact tracing, were interviewed by public health nurses using a standardized report form.

RESULTS:

As of June 29, 2010, a total of 22 confirmed cases were identified with isolates from two distinct genotypes, indicating two separate introductions of the virus. Symptom onset dates ranged from March 7 to May 21. The median age was 28 years (range 6 months to 63 years). Over 50% of cases were diagnosed in an acute care facility. The majority (n=20) were unimmunized, partially immunized (one dose), or had unknown immunization history. No source of infection was identified among initial cases; however, during the exposure period, most reported attending large gatherings including ticketed and non-ticketed Olympic events. Secondary household and health care transmission occurred, as well as a low level of community transmission, which subsequently led to a province-wide outbreak.

CONCLUSIONS:

The index cases in this outbreak were likely exposed to visitors from measles endemic countries during the Olympic Games. While mass gatherings may facilitate transmission of communicable diseases, this outbreak highlights the importance of robust routine surveillance post-event, particularly for events of short duration and diseases with long incubation periods and reporting delays.

PRESENTED BY: MISS TERESA LEUNG

20100251 Oral Vaccine preventable diseases 1

Keywords: mumps vaccine effectiveness

Mumps vaccine effectiveness in the Netherlands, 2008.

Bianca Snijders (1), E. van Lier (1), J. van de Kassteele (2), E. Fanoy (3), W. Ruijs (3, 4), F. Hulshof (3), A. Blauwhof (3), R. van Binnendijk (1), H. Boot (1), H. de Melker (1), S. Hahné (1)

AFFILIATIONS:

1. Centre for Infectious Disease Control, National Institute for Public Health and the Environment, Bilthoven, The Netherlands
2. Expertise Centre for Methodology and Information Services, National Institute for Public Health and the Environment, Bilthoven, The Netherlands
3. Municipal Health Service, Midden Nederland, Zeeland, Eemland and Rivierenland, The Netherlands
4. Department of Primary and Community Care, Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands

BACKGROUND:

We aimed to estimate mumps vaccine effectiveness based on a large genotype D mumps outbreak in the Netherlands between August 2007 and May 2009.

METHODS:

We performed a cross-sectional study in primary schools, collecting the child's vaccination status, occurrence of self-reported mumps, date of onset, complications, and information on household members. The relative risk (RR) was estimated as attack rate (AR) in vaccinated versus unvaccinated schoolchildren using multilevel Poisson regression. The VE unconditional-on-exposure (VEuoe) was estimated as 1-RR. To estimate the VE conditional-on-exposure (VEcoe) we calculated secondary attack rates (SAR) among household contacts where the participant (schoolchild) was the index case (VEcoe= 1-(SAR vaccinated household members / SAR unvaccinated household members)). The VE against infectiousness (VEi) was estimated as 1-(SAR vaccinated index case / SAR unvaccinated index case).

RESULTS:

We received 1175 questionnaires from eight primary schools (response: 67%; school range vaccination coverage 34%–93%). The AR for self-reported mumps was 17% (n=203; school range 1.5%–51.3%). The estimated VEuoe among schoolchildren for one or two doses of MMR was 95% (95% CI 92%–97%). Age, school vaccination coverage and the number of mumps cases in the household were neither confounders nor effect modifiers. The estimated VEcoe among household contacts aged 4–12 years was 62% (95% confidence interval (CI): minus 3%–86%; SAR vaccinated household contacts:27%; SAR unvaccinated household contacts:72%). The estimated VEi among all household contacts born after 1978 was 62% (95%CI minus 9%–86%; SAR vaccinated index:19%; SAR unvaccinated index:49%).

CONCLUSIONS:

Routine childhood MMR vaccination offered adequate protection against mumps among schoolchildren during the outbreak in 2007-2009 in the Netherlands. The relatively low vaccine effectiveness of the mumps-component in high exposure settings is of remaining concern. Reasons for this vaccine failure needs further study.

PRESENTED BY: DR BIANCA SNIJDERS

PARALLEL SESSION **ABSTRACTS**

20100373 Oral Vaccine preventable diseases 1

Keywords: Pandemic Influenza, Vaccine, Attitudes, Telephone Survey

Attitudes and practice of the Portuguese population towards vaccination against pandemic influenza virus

Eleonora Paixão (1), B. Nunes (1), M. J. Branco (1)

AFFILIATIONS:
1. Departamento de Epidemiologia, Instituto Nacional de Saúde Dr. Ricardo Jorge

BACKGROUND:
Due to the occurrence of pandemic influenza, the European Medicines Agency (EMEA) and the European Commission approved a monovalent vaccine. Vaccination intended to protect the most vulnerable citizens, as well as to reduce the likelihood of serious cases. In Portugal, the vaccination campaign began on October 26, 2009 and three target groups have been defined to arrange priorities according to the probability of developing complications after the infection, the importance of functions developed by people and the availability of vaccines. This study aims to characterize the attitudes and practices of vaccination against pandemic influenza in the Portuguese population.

METHODS:
This cross-sectional descriptive study, consisted of a telephone interview survey conducted to households of the ECOS panel. This panel has 1078 households, randomly selected, stratified by mainland regions (NUTsII) and contactable by landline and mobile phone. One person with ≥18 years was interviewed by household. Results were weighted by number of households per region and according to sex and age population distribution.

RESULTS:
The response rate was 90%. Vaccine coverage was 4.3% (CI95%: 2.3-4.8). Only 13.5% of the respondents declared to belong to one of the target groups, but the majority (84.6%) of them were not vaccinate. The main reasons for refusing were "lack of confidence in the vaccine safety" (46.7%) and "low risk of getting ill from influenza" (39.9%). Half of the respondents referred that nothing would change their decision to be immunized against pandemic influenza.

CONCLUSIONS:
The majority of Portuguese population refuse to vaccinate mainly due to lack of confidence in the vaccine safety and efficacy. For future vaccination campaigns an effort to further clarification and reinforcement of the protective effect of the vaccine should be done.

PRESENTED BY: MRS ELEONORA PAIXÃO

20100320 Oral HIV – STI

Keywords: HIV AIDS mortality Europe mortality causes of deaths

HIV-AIDS mortality surveillance and mortality statistics in the ART era: large discrepancies call for improving national data systems in Europe

Isabelle Giraudon (1), M. Díez (2), L. Wiessing (1), G. Likatavicius (3, 4), J. Matias (1), J. Vicente (1)

AFFILIATIONS:
1. European Monitoring Centre for Drug and Drug Addiction, Lisbon, Portugal
2. Secretaría del Plan Nacional sobre el Sida- Centro Nacional de Epidemiología, Madrid, Spain
3. EuroHIV, Institut de Veille Sanitaire, Saint Maurice, France
4. European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden

BACKGROUND:
In the antiretroviral therapy (ART) era in Europe, HIV/AIDS in most cases should not be fatal if timely and properly treated. Mortality is therefore an essential indicator for monitoring and action related to HIV/AIDS.

METHODS:
We compare for the 27 European Union Member States (EU27) and from 1994 to 2006, numbers of deaths among AIDS cases through surveillance data (EuroHIV) against numbers through general mortality statistics (Eurostat) based on death certificates with underlying cause of death 'AIDS (HIV disease)', coded B20-B24 according to the 10th International Classification of Diseases.

RESULTS:
Fewer deaths are reported through surveillance and the discrepancy between both sources is increasing. In 1997, the ratio of EuroHIV over Eurostat deaths was 88% (6545/7418) in 17 countries with available data. This compared to 43% (2103/4845) in 2006 in the EU27, with major variation across countries (28-176% in the 14 countries with 20 or more deaths through Eurostat). Based on Eurostat, standardized mortality rate was 1/100000 inhabitants (0-6.8/100000) in 2006 in the EU27, with 75% of the deaths in Spain, Italy, France and Portugal. Mortality decreased sharply after ART, but with a clear delay in Portugal, and increased between 2004 and 2006 in the Baltic countries.

CONCLUSIONS:
Changes in mortality patterns in the ART era and differences in case definition between sources cannot fully explain the discrepancies between sources and even less so across countries. This suggests underestimation due to underreporting, underdiagnosis and coding problems. In Europe and in some countries in particular, this calls for urgently validating and improving data completeness through further linkage and comparison of mortality statistics and surveillance data as recommended by the ECDC network for HIV/AIDS surveillance and a WHO-Europe consultation.

PRESENTED BY: MRS ISABELLE GIRAUDON

20100168 Oral HIV – STI

Keywords: Chlamydia, behaviour, reward, matched pair analysis

Should young people be paid for getting tested? A national comparative study to evaluate patient financial incentives for chlamydia screening.

Dominik Zenner (1, 3), Darko Molinar (1), Tom Nichols (1), Johanna Riha (1), Paula Baraitser (2), Mary Macintosh (2), Anthony Nardone (1)

AFFILIATIONS:
1. Health Protection Agency, Centre for Infections, London, UK
2. National Chlamydia Screening Programme, Health Protection Agency, Centre for Infections, London, UK
3. Department of Health Services Research and Policy, London School of Hygiene and Tropical Medicine, UK

BACKGROUND:
Patient financial incentives (PFIs) to increase chlamydia screening coverage rates are widely used in England, but there is scarce evidence of their effectiveness. The aim of this study was to describe PFIs used in England and to evaluate their impact on coverage and positivity rate.

METHODS:
Primary care trusts (PCTs, local units of the National Health Service in England) were compared in a matched observational study. PCTs in England that had used PFIs between 1/1/2007 and 30/6/2009 were matched with PCTs that had not used incentives by socio-economic supergroup and initial chlamydia screening coverage. Percentage point differences in chlamydia screening coverage and positivity changes before and during the incentive period were compared between matched PCT pairs using linear regression to adjust for matching and potential PCT level confounders.

RESULTS:
Sixty-five patient financial incentive schemes were described. Prize draw and voucher schemes were analysed (n=42) and had a small but significant positive effect on average coverage differences (0.43%, p<0.03), more pronounced in females (0.73%) than males (0.14%, p=0.002). The average difference for voucher schemes (2.35%) was larger than for prize draws (0.16%, p<0.0001). Positivity rates were not significantly affected by financial incentives (p=0.8).

CONCLUSIONS:
Vouchers, but not prize draws, had a significant effect in increasing chlamydia screening coverage. PFIs increased coverage more in females than males but had no impact on reported positivity rates. These observational findings are not fully controlled for the impact of health promotion activities on coverage over and above the incentive. These findings support current recommendations not to use prize draws to promote chlamydia screening but further research is needed to evaluate the full impact of using vouchers.

PRESENTED BY: DR DOMINIK ZENNER

20100290 Oral HIV – STI

Keywords: HIV infections/diagnosis; Community Health Services; Feasibility Studies; Risk factors

Feasibility of an outreach program of HIV rapid testing among marginalized people living in Rome, Italy.

Paola Scognamiglio (1), G. Chiaradia (1), MR. Sciarrone (1), MR. Capobianchi (1), E. Rossi (2), M. Barra (2), I. De Vincentiis (2), M. Zaccarelli (1), V. Puro (1), L. Ceccarini (2), G. Ippolito (1), E. Girardi (1)

AFFILIATIONS:
1. National Institute of Infectious Diseases L. Spallanzani, Rome, Italy
2. Fondazione "Villa Maraini" Onlus, Rome, Italy

BACKGROUND:
HIV rapid testing technology represents an opportunity to facilitate early HIV diagnosis in population at high risk for HIV infection with poor access to care. Aim of this study was to evaluate the feasibility of an outreach HIV rapid testing program in Rome.

METHODS:
The study was conducted within a street-based HIV risk reduction program run by a NGO among marginalized people (drug users, sex workers, homeless, immigrants) living in Rome. Between February and July 2010,each individual attending to the mobile unit was offered an anonymous HIV rapid test (VIKIA HIV®1/2), providing a finger-prick blood sample and filling out a questionnaire while waiting. People already HIV diagnosed or aged <18yy were excluded. Individuals with a reactive result were referred to a specialized outpatient unit for confirmatory testing and medical care.

RESULTS:
We have approached 711 individuals: 12 were excluded because already HIV diagnosed; 699 were offered a rapid HIV testing and 231 refused. The most common reason for refusal was a recent test (52%); only four individuals declared they didn't trust rapid test. We tested 468 persons (67%) with a median age of 34 years: 67.9% male, 33.5% immigrants, 38% IVDU and 43% never HIV tested. 5/468 (1.1%) had a preliminary positive result: 4 men (3 IVDU; 1 homeless) and 1 female IVDU. Only one male IVDU attended the outpatient unit and was confirmed as HIV infected.

CONCLUSIONS:
Our study showed an high acceptance rate of HIV rapid test . In 43% of cases this opportunity represented the first approach to HIV testing but the high proportion of failure to return for confirmatory test underlies the difficulty to link to care intravenous drug users.

PRESENTED BY: DR PAOLA SCOGNAMIGLIO

PARALLEL SESSION **ABSTRACTS**

20100216 Oral HIV – STI

Keywords: HIV-Seroprevalence, Sentinel Surveillance, Prostitution, Transsexualism

HIV prevalence in male and transsexual sex workers in Madrid, Spain, 2000–2009

Martín Mengel (1,2), A. Barrasa (1,2), J. del Romero (3), J. Castilla (4)

AFFILIATIONS:
1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control, Stockholm, Sweden
2. National Centre for Epidemiology, Instituto de Salud Carlos III, Madrid, Spain
3. Centro Sanitario Sandoval, Madrid, Spain
4. Public Health Institute of Navarre, Spain

BACKGROUND:
HIV surveillance on risk groups in Spain is conducted via 20 sentinel sites distributed throughout the country. The few existing studies on male and transsexual sex workers suggest their particular vulnerability to HIV infection. The sentinel centre in Madrid has broad experience in voluntary, anonymous testing and counselling of these populations. We aimed to describe the HIV prevalence and characteristics of male and transsexual sex workers voluntarily testing in Madrid between 2000-2009 in order to provide useful information for developing tailored interventions.

METHODS:
We selected all male and transsexual sex workers voluntarily testing for HIV at first visit. Healthcare workers collected information on age, gender of clients for sex work and country of origin in a standardized questionnaire. Proportions were compared using chi-square test and means using Student's t-test.

RESULTS:
Between 2000-2009, 248 males and 81 transsexuals were tested. Transsexuals were older than males (29 vs. 26 years old, p<0.001). Among males, 212 (84%) had sex with men only, 34 (14%) with women only and 2 (1%) with both. Most sex workers came from Latin-America (transsexuals: 93%; males: 75%). HIV prevalence was 35% in transsexuals and 19% in male sex workers with male clients (p=0.006). No sex worker with female clients tested positive. Overall, HIV prevalence decreased from 25% (2000) to 9% (2004), but increased again to 13% (2009).

CONCLUSIONS:
We found an alarmingly high HIV-prevalence, rising since 2004, in transsexuals and males with male clients, compared to zero-prevalence in males with female clients. Further studies are needed to investigate practices and risk-behaviour that make these groups so vulnerable. In addition, special prevention and testing programmes need to be designed adapted to transsexual and male sex workers.

PRESENTED BY: MR MARTIN MENGEL

20100090 Oral HIV – STI

Keywords: methadone maintenance treatment, injecting drug use, HIV-screening, HIV-prevalence, HIV-treatment, rural-urban differences

HIV-treatment and -screening of substitution clients in rural and urban areas in Germany – not always in line with existing guidelines

Heiko J. Jahn (1), T. Wörmann (1), L. Pruefer-Kraemer (2), A. Kraemer (1)

AFFILIATIONS:
1. Dept. of Public Health Medicine, School of Public Health, University of Bielefeld, Germany
2. Travel Clinic, Bielefeld, Germany

BACKGROUND:
In Germany, around 72,000 injecting drug users are receiving substitution treatment (ST). ST is considered to be effective in reducing illicit drug use, prevents new HIV-, HBV- and HCV-infections and is suitable to provide health care for ST clients. Aims of this study were to analyse quantitative and qualitative features in health care for HIV-positive clients in Germany and to examine respective rural vs. urban differences.

METHODS:
ST providing practitioners in Germany were interviewed by means of a standardised questionnaire in 2007. Amongst others, the following data were collected: number of ST-clients, sort of substitute drugs, HIV-testing intervals, prevalence of HIV and other infectious diseases and knowledge about HIV medication regimes for HIV-positive ST-clients.

RESULTS:
Data of 249 practitioners caring for 10,535 ST-clients were analysed. The HIV-prevalence was 5.9%. At the beginning of ST, about one-third of the clients have not been tested for HIV by the practitioners. 26.7% of the practitioners stated that they test their ST-clients for HIV only at the beginning of ST. Significant differences were found between rural and urban health care in terms of knowledge about HIV-treatment, availability of HIV-specific health care facilities and the existence of HIV-treatment quality circles.

CONCLUSIONS:
There is potential to improve the screening practice for infectious diseases, especially for HIV, during ST. According to the current guidelines for ST, all clients should be screened for drug-associated infections at the beginning of ST to enable adequate medical care and, if clients are tested positive for any of these infections, to prevent further transmission. Rural HIV health care for ST clients should be improved in terms of better networking between ST providing practitioners and HIV-specialized health care providers.

PRESENTED BY: MR HEIKO J JAHN

20100096 Oral Influenza 3

Keywords: Influenza A Virus, H1N1 Subtype; Mortality; Risk Factors; Antiviral Agents; Chronic Disease; Age Groups

Factors associated with fatal outcome of 2009 pandemic influenza (H1N1) infections in Germany

Hendrik Wilking (1, 2, 3), Silke Buda (1), Elena von der Lippe (4), Doris Altmann (1), Gérard Krause (1), Tim Eckmanns (1), Walter Haas (1)

AFFILIATIONS:
1. Department for Infectious Disease Epidemiology, Robert Koch Institute, Berlin, Germany
2. Postgraduate Training for Applied Epidemiology (PAE), Berlin, Germany
3. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
4. Department of Epidemiology and Health Reporting, Robert Koch Institute, Berlin, Germany

BACKGROUND:
Since the appearance of the first cases of 2009 pandemic influenza (H1N1) in April 2009 extensive community transmission occurred in Germany especially during the autumn months. Our aim was to assess risk factors associated with fatal outcome in order to improve recommendations for the prevention of fatalities related to influenza infections.

METHODS:
We analysed all laboratory confirmed infections with pandemic influenza notified to the Robert Koch Institute (RKI) between April 29, 2009 and June 14, 2010. Our main outcome measures were: number of deaths, age-specific case fatality (CF), time from symptom onset to start of antiviral treatment and prevalence of underlying conditions.

RESULTS:
During the study period, 256 lab-confirmed fatal cases were notified, resulting in an overall mortality of 0.31/100,000 inhabitants. CF was highest in patients aged ≥60 years (OR 5.4; 95% CI: 3.86-7.56). Both CF and its association to older age increased over the study period. The median delay between onset of disease and antiviral treatment was significantly longer among fatal cases (4 days) than among non-fatal cases (2 days; p<0.001). Among fatal cases underlying chronic medical conditions (particularly immunosuppression, diabetes, and respiratory diseases) were more prevalent than among the general population (RR 10.0; 95% CI 6.7-15.0).

CONCLUSIONS:
Variations in the disease reporting by physicians, changes in the control strategies of the disease and modifications in reimbursement policies for diagnostic tests during the study period could have led to biased results and have to be considered in the interpretation. Our results suggest that early treatment might have had an impact on the incidence of fatal cases. Targeted interventions in the presented risk groups might be an option to prevent fatalities in future influenza waves.

PRESENTED BY: DR HENDRIK WILKING

20100305 Oral Influenza 3

Keywords: Clinical manifestations, pandemic influenza, acute respiratory infection

Clinical and laboratory characteristics of hospitalized patients with influenza A/H1N1 2009 and other acute respiratory infections: A prospective case-control study

Benedikt Greutélaers (1, 2, 3), Matthias Nachtnebel (1, 2, 3), Gerd Falkenhorst (3), Brunhilde Schweiger (4), Christian Träder (5), Wiebke Hellenbrand (3), Ole Wichmann (3)

AFFILIATIONS:
1. Postgraduate Training for Applied Epidemiology (PAE, German FETP), Robert Koch Institute, Berlin, Germany
2. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
3. Robert Koch Institute, Department for Infectious Disease Epidemiology, Berlin, Germany
4. Robert Koch Institute, National Reference Center for Influenza, Berlin, Germany
5. Vivantes Auguste Viktoria Hospital Berlin, Germany

BACKGROUND:
We compared clinical and laboratory manifestations of and risk factors for acute respiratory infections (ARI) in hospitalized patients positive and negative for pandemic influenza A/H1N1 2009 (pH1N1) to identify differences relevant to diagnosis and treatment.

METHODS:
Patients aged 18-65 years with ARI ((fever or other systemic signs AND cough or sore throat) OR respiratory infection diagnosed by a physician)) admitted to 10 hospitals in Berlin from week 50-2009 to week 14-2010 were recruited. All consenting patients were interviewed with a standardized questionnaire. Laboratory and radiological findings were abstracted from patient records. pH1N1 was confirmed by PCR (naso-pharyngeal swabs) and serology in paired sera. pH1N1-positive ARI-patients were compared to pH1N1-negative ARI-patients using multiple logistic regression models.

RESULTS:
Of 176 ARI-patients, 27 (15%) patients were pH1N1-positive (67% male, median 44 years) and 149 pH1N1-negative (62% male, median 47 years). Prevalence of underlying chronic diseases or body mass index did not differ significantly between these groups. When comparing pH1N1-positive to pH1N1-negative ARI-patients in logistic regression models adjusted for admission week and any underlying chronic disease, pH1N1-positive patients less frequently had radiological signs of pneumonia (19% vs. 45%; OR=0.3, 95%CI 0.1-0.9) and leukocytosis (37% vs. 64%; OR=0.4, 95%CI 0.1-0.9) and more often had thrombocytopenia (30% vs. 9%; OR=3.4, 95%CI 1.1-11.0) and sore throat (52% vs. 27%; OR=2.7, 95%CI 1.1-6.9) than pH1N1-negative ARI-patients.

CONCLUSIONS:
Our results suggest that a combination of clinical and laboratory parameters may be helpful in distinguishing pH1N1-infection from other causes of ARI. .Should these findings be substantiated in more extensive studies, they may be useful to guide further diagnostic testing and early treatment decisions prior to pathogen confirmation in hospitalized ARI-patients.

PRESENTED BY: MR BENEDIKT GREUTÉLAERS

PARALLEL SESSION **ABSTRACTS**

20100240 Oral Influenza 3

Keywords: pandemic influenza H1N1, serology, serosurvey, seroprevalence

Estimates of the seroprevalence and attack rates of pandemic influenza in the Netherlands determined using a serosurvey on a random sample of the Dutch population

Anneke (A) Steens (1), S. W. Waaijenborg (1), J. Wallinga, J. Reimerink (1), M. van der Lubben (1), I. Friesema (1), A. Westerhof (1), A. Meijer (1), M. Robert-Du Ry van Beest Holle (1), J. van Beek (1), J. Bakker (1), I. Zutt (1), M. Koopmans (1), M. van der Sande (1), M. van Boven (1)

AFFILIATIONS:

1. National Institute for Public Health and the Environment (RIVM), Centre for Infectious Disease Control (CIb), epidemiology and surveillance unit, Bilthoven, the Netherlands

BACKGROUND:

Initial serological data related to the 2009 influenza pandemic have been published from opportunistic sampling frames. Although these studies have value because of their timeliness and economic use of resources, such data are also susceptible to bias. We therefore performed a pre-pandemic (September 2009) and post-pandemic (April 2010) serosurvey on a random sample of the Dutch population aged 1-75 years. We aimed to estimate age-specific attack rates of pandemic influenza infection, and the percentage of subclinical infections in the seropositive population.

METHODS:

Age-stratified random samples were drawn from 37 municipalities semi-randomly selected from all around the Netherlands. Individuals were invited to fill-in a questionnaire and to donate a blood-sample. Haemagglutination inhibition (HI) assay with A/California/7/2009 (H1N1) antigen and calibrated using an international standard was used to determine the presence of antibodies against the 2009 pandemic influenza virus.

RESULTS:

The pre- and post-pandemic surveys contained 367 and 1026 complete serum–questionnaire combinations, respectively. In both surveys, the response rate was ~11%. Preliminary analyses showed that age-specific seasonal influenza 2008/2009 vaccine coverage and the prevalence of chronic disease was similar between surveys. Preliminary results of the HI showed a seroprevalence (defined as an antibody titer of ≥ 1:40) of 7% (95%CI 4-10%) in the pre-pandemic sample (similar for younger and older age groups) and 25% (95%CI 17-33%) and 6% (95%CI 4-9%) in unvaccinated individuals aged respectively < 40 and ≥ 40 years in the post-pandemic sample. Detailed analyses are ongoing.

CONCLUSIONS:

These preliminary data suggest that only younger individuals seroconverted during the recent pandemic. The results extend our understanding of pandemic influenza A(H1N1) attack rates and immunity profiles in different age groups.

PRESENTED BY: MS ANNEKE STEENS

20100009 Oral Influenza 3

Keywords: Influenza A Virus, H1N1 Subtype, Streptococcus pneumoniae, Streptococcus pyogenes, Staphylococcus aureus

Risk factors and outcome associated with concurrent invasive bacterial infections in laboratory confirmed pandemic (H1N1) 2009 influenza cases in England, 2009–2010

Marie-Amélie Degail (1, 2), Andrew Grant (1), Theresa Lamagni (1), Colin Campbell (1), Neill Keppie (1), Pauline Kaye (1), Angela Kearns (1), Androulla Efstratiou 1, Barry Cookson 1, Joanna Ellis (1), Alison Bermingham (1), Alan Johnson (1), Elizabeth Sheridan (1), Robert George (1), Barry Eva

AFFILIATIONS:

1. Health Protection Agency, London, United Kingdom
2. European Programme for Intervention Epidemiology Training, EPIET European Centre for Disease Prevention and Control, Stockholm, Sweden

BACKGROUND:

Reports have suggested the presence of concurrent bacterial infections (CBI) in 0-9% of hospitalised pandemic H1N1 cases (PHC) and in 4-55% of fatal PHC. We investigated prevalence, risk factors and outcome associated with CBI in PHC in England to inform public health interventions.

METHODS:

We conducted a retrospective cohort study of confirmed PHC reported between 26/04/09-08/02/10 to identify CBI due to invasive Streptococcus pneumoniae, Staphylococcus aureus, and Streptococcus pyogenes diagnosed two weeks prior to or after laboratory confirmed influenza using probabilistic matching of five datasets. The first wave occurred between 26/04/2009-30/08/2009, the second between 31/08/2009-08/02/2010. Multivariable logistic regression models with CBI as an outcome and as an exposure were built to identify independent predictors of developing CBI and clinical impact of CBI.

RESULTS:

Among 20,336 confirmed H1N1 cases reported, 2,653 (13.0%) were hospitalised and 336 (1.7%) fatal. We identified 76 cases of CBI (0.4%). Twenty-four (0.9%) of the hospitalised and 16 (4.8%) of the fatal H1N1 cases had CBI. Thirty nine cases were due to S. pneumoniae, 34 to S. aureus, and 3 to S. pyogenes. Adjusted for age, sex and date of onset, developing CBI was less likely in hospitalised cases receiving antiviral treatment within 48h (p=0.024). Adjusted on demographics, date on influenza onset, and known risk factors for each outcome, PHC with CBI, were 1.6 times more likely to be hospitalised (p=0.06), 6 times more likely to be admitted to ICU (p=0.04), and 4 times more likely to die (p=0.29).

CONCLUSIONS:

The prevalence of CBI in confirmed PHC in England is close to that found in other countries and increases with severity. CBI in PHC is an indication for severe outcome. Hospitalised cases who received early antiviral treatment were less likely to develop a CBI.

PRESENTED BY: MISS MARIE-AMELIE DEGAIL

20100110 Oral Influenza 3

Keywords: Influenza, Influenza vaccine, vaccine effectiveness, prevention & control, multicentre studies, case control studies, disease outbreaks.

Estimates of pandemic influenza vaccine effectiveness in Europe, 2009–10: results of the I-MOVE multicentre case-control study

Esther Kissling (1), M. Valenciano (1), J. M. Cohen (2), B. Oroszi (3), A. S. Barret (4,5), C. Rizzo (6), B. Nunes (7), D. Pitigoi (8, 9), A. Larrauri (10), A. Mosnier (2), J. K. Horvath (3), J. O'Donnell (4), A. Bella (6), R. Guiomar (7), E. Lupulescu (9), C. Savulescu (1, 10)

AFFILIATIONS:
1. EpiConcept, Paris, France
2. Réseau des GROG/Open Rome, Paris, France
3. National Center for Epidemiology, Budapest, Hungary
4. Health Protection Surveillance Centre, Dublin, Ireland
5. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control, Stockholm, Sweden
6. National Centre for Epidemiology, Surveillance and Health Promotion, Istituto Superiore di Sanità, Roma, Italy
7. Instituto Nacional de Saúde Dr Ricardo Jorge, Lisbon, Portugal
8. Cantacuzino Institute, National Institute of Research – Development for Microbiology and Immunology, Bucharest, Romania
9. Universitatea de Medicina si Farmacie Carol Davila, Bucharest, Romania
10. National Centre for Epidemiology, Instituto de Salud Carlos III, Madrid, Spain
11. European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden

BACKGROUND:

As part of the I-MOVE (Influenza Monitoring Vaccine Effectiveness in Europe) project, we undertook a multicentre case-control study based on sentinel practitioner surveillance networks in seven European countries to estimate 2009/10 pandemic influenza vaccine effectiveness (PIVE) against medically-attended influenza-like illness (ILI) laboratory-confirmed as pandemic influenza A(H1N1) (pH1N1).

METHODS:

Using systematic sampling, practitioners swabbed ILI patients within 8 days of symptom onset. We included those patients meeting the European ILI case definition with onset of symptoms › 14 days after start of national pandemic vaccination campaigns. We compared ILI pH1N1 cases to influenza laboratory-negative controls. Vaccination corresponded to › 14 days between receiving a dose of vaccine and symptom onset. Using logistic regression with study-site as fixed effect we calculated PIVE adjusting for potential confounding factors (age-group, sex, month of onset, chronic diseases and related hospitalisations, smoking, seasonal influenza vaccinations and number of practitioner visits in the previous year). We conducted analyses excluding individuals with missing values (ME) and using multiple imputation (MI) with chained equations to estimate missing values.

RESULTS:

The ME (N=1502) adjusted PIVE was 66.0% (95% CI 23.9 – 84.8) overall, 71.3% (95% CI 29.1 – 88.4) in the ‹ 65 years and 70.2% (95% CI 19.4 – 89.0) in those without chronic disease. The MI (N=2902) adjusted PIVE was 71.9% (95% CI 45.6-85.5), 78.4% (95% CI 54.4 – 89.8) and 72.9 (95% CI 39.8-87.8) respectively.

CONCLUSIONS:

The results suggest good protection from the pandemic monovalent vaccines against medically-attended pH1N1 across Europe. The start of vaccination campaigns around or after peak influenza incidence coupled with overall low vaccination coverage limited power for stratified analysis. We need to verify in the 2010/11 season if trivalent vaccines provide similar effectiveness.

PRESENTED BY: MR BRUNO CIANCIO

20100250 Oral Novel methodological approaches to outbreak investigations and surveillance

Keywords: Mortality, surveillance, pandemics, public health, influenza A virus

Timely monitoring of excess mortality during the 2009 pandemic: Results from the EURO-MOMO pilot project

Kåre Mølbak on behalf of all EURO-MOMO partners

AFFILIATIONS:
Department of Epidemiology, Statens Serum Institut, Copenhagen S, Denmark

BACKGROUND:

Timely vital statistics are usually not available in health crises including pandemic influenza or extreme environmental conditions. The objective of EURO-MOMO is to develop a coordinated approach to real-time mortality monitoring across Europe. In response to the 2009 H1N1 influenza pandemic, we implemented timely mortality monitoring in a pilot project including data from 13 countries.

METHODS:

Countries acquired mortality data from national death registries which were analysed in a Poisson regression model with number of weekly deaths as dependent variable and the time series decomposed with a trend and seasonal component and adjustment for country-specific delays in reporting. Each week, national data outputs were submitted to the project hub. Further pooled analysis using the same algorithm as the countries was carried out for countries that provided age-specific numbers of weekly deaths.

RESULTS:

This system allowed us to monitor excess mortality during the autumn wave of the 2009 pandemic. Excess mortality did not reach levels normally seen during seasonal influenza epidemics, when mainly senior citizens die. However, in an analysis pooled over participating countries, we observed a modest rise in excess mortality in the 5-14 years old and young adults. This rise occurred before seasonal influenza usually peaks, and was concomitant to increase in transmission of influenza A H1N1.

CONCLUSIONS:

Despite different attributes of national death registration systems, timely mortality monitoring is feasible across different European countries. The results corroborated the overall impression of a mild pandemic, although the mortality monitoring system was sensitive enough to indicate classical patterns of pandemic influenza, including increases of mortality out-of-season and shifts in age-related excess mortality. It remains important to monitor mortality to follow the transition from pandemic to seasonal influenza.

PRESENTED BY: DR KÅRE MØLBAK

PARALLEL SESSION **ABSTRACTS**

20100316 Oral Novel methodological approaches to outbreak investigations and surveillance

Keywords: Population surveillance; Influenza, Human; Disease outbreaks (Pandemic); Hospitalization

Surveillance of Influenza-Associated Hospitalisations during the 2009 Influenza Pandemic in Denmark: the Hidden Burden on the Young

Katarina Widgren (1, 2), Jens Nielsen (2), Kåre Mølbak (2)

AFFILIATIONS:
1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
2. Department of Epidemiology, Statens Serum Institut (SSI), Copenhagen, Denmark

BACKGROUND:
Due to the 2009 influenza A(H1N1) pandemic, influenza surveillance in Denmark was complemented with a system monitoring potentially influenza-associated hospitalisations in order to assess the severity of the disease.

METHODS:
We used national administrative data from the automatic reporting of all hospital contacts in Denmark (population 5.5 million). Hospitalisations linked to ICD-codes for potentially influenza-associated conditions (influenza, viral and bacterial pneumonia, respiratory distress, and febrile convulsions) were aggregated by week and four age groups. Weekly counts of influenza-associated hospitalisations were plotted to follow the course of the pandemic. We accumulated the counts of influenza-associated hospitalisation over influenza seasons (week 30 to week 15, the following year). The risk for being admitted with an influenza-associated condition in this season (2009/10) was compared to the previous five seasons (2004/05-2008/09) using binary regression

RESULTS:
Influenza-associated hospitalisations peaked in week 47, 2009. By week 15, 2010, the overall cumulative count was 38 273 compared to 35 662 in previous seasons (p=0.28). Hospitalisations of 5-24 year-olds peaked in week 46 with 170 hospitalisations, corresponding to 5.2 times (95%CI 3.99-6.75) the normal count for that week. Overall, this group had 1.6 times (95%CI 1.50-1.78) higher risk for influenza-associated hospitalisations compared to previous seasons, whereas the other three age groups had risks ratios of 1.0-1.1.

CONCLUSIONS:
This unparalleled surveillance system showed no overall excess in influenza-associated hospitalizations during the pandemic season. However, there was a disproportionately large impact on 5-24 year-olds, compatible with the signature features of the first few waves of the 20th century pandemics. This system provided new information on the impact of the influenza in time to advice health-care planning and to help identify target groups for influenza vaccination the coming season.

PRESENTED BY: DR KATARINA WIDGREN

20100151 Oral Novel methodological approaches to outbreak investigations and surveillance

Keywords: Social network analysis, sexually transmitted infections, outbreak, social venues, syphilis

The use of social network analysis in a syphilis outbreak in a large Canadian urban centre

Holly D'Angelo-Scott (1), J. Cutler (1), D. Friedman (2), A. Hendriks (2)

AFFILIATIONS:
1. Canadian Field Epidemiology Program, Public Health Agency of Canada, Ottawa, Canada
2. Ottawa Public Health, Ottawa, Canada

BACKGROUND:
Infectious syphilis rates have been increasing in Canada, with outbreaks reported in large urban centres. In one large Canadian urban centre, the number of reported infectious syphilis cases increased 29% from 2008 to 2009. During the first quarter of 2010, there were 17 reported cases, more than double the 7 cases reported for the first quarter of 2009. To aid in the development of targeted health promotion and screening strategies, a social networking approach was used to identify key venues where sexual partners met.

METHODS:
Demographic, infection stage, symptoms, behavioural social factors, and sexual partner data from cases were gathered from the notifiable disease reporting system and case files. Using an enhanced surveillance questionnaire, type of sexual partner, obligatory sex, and specific social venues for partner contact were also collected from a subset of the cases. Two social networks were constructed using Pajek (version 1.27) software: (1) a sexual network of infectious syphilis cases and sexual partners, and (2) a sexual partner – venue (place) network of infectious syphilis cases, sexual partners, and venues where sexual partners were typically met.

RESULTS:
The inclusion of venue (place) in a network model produced a greater number of "connected" cases with the resultant number of clusters in the network reduced from 55 to 45 and the number of cases and sexual contacts in the largest cluster increased from 19 to 53. Findings were similar when social network analysis was restricted to cases that completed the enhanced surveillance questionnaire.

CONCLUSIONS:
The use of social network analysis identified specific venues associated with an increased likelihood of sexual partner contact, providing key locations for increased sexual health messaging and targeted screening.

PRESENTED BY: MS HOLLY D'ANGELO-SCOTT

20100101 Oral Novel methodological approaches to outbreak investigations and surveillance

Keywords: chikungunya and dengue, rapid assessment, surveillance, SWOT analysis

Rapid assessment of the enhanced chikungunya and dengue surveillance in mainland France in 2010, using SWOT analysis.

Anoek Backx (1, 2), F. Jourdain (3), Y. Souarès (4)

AFFILIATIONS:
1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
2. South Interregional Unit for Epidemiology (CIRE Sud) of French Institute for Public Health Surveillance (InVS), Marseilles, France
3. General Directorate of Health (DGS), Paris, France
4. Department of Infectious Diseases (DMI), InVS, St. Maurice, France

BACKGROUND:
Chikungunya and dengue viruses can be transmitted by Aedes albopictus, established in southern regions of France since 2004. Following the 2005-2006 chikungunya epidemic in La Réunion, mainland France implemented a multidisciplinary surveillance and risk management plan. This includes epidemiological surveillance by nationwide notification of confirmed cases of chikungunya and dengue, and, in districts with vector-establishment, by enhanced surveillance of suspected cases during the vector-activity season. As vector range expands, more districts must integrate this enhanced system. Consequently existing procedures and tools required standardisation and development. We describe how priority issues were identified and standardized.

METHODS:
A multidisciplinary group of experts and professionals, including regional stakeholders, were asked in January 2010 to identify, in writing and subsequent one-day discussion, Strengths, Weaknesses, Opportunities and Threats (SWOT) of the enhanced surveillance system. Against identified Strengths and Opportunities, all topics listed as Weaknesses and Threats were prioritised according to the urgent need for their improvement and feasibility to do so in a short time-frame.

RESULTS:
The issues thus identified and prioritised concerned essentially: insufficient uniformity of tools and procedures for information sharing, diagnostic capacity, distribution and transportation of samples to reference laboratories, and increased workload for the vector control services.

CONCLUSIONS:
The SWOT analysis proved to be an efficient tool to capitalise on existing strengths and opportunities and to identify and prioritise long existing weaknesses of and threats to a surveillance system through consensus and support by all stakeholders. This allowed for standardisation, improvement and development of procedures and tools between January and the start of the surveillance in May. This method is not intended to replace comprehensive surveillance evaluation, but merits consideration for rapid assessment and implementation of improvements.

PRESENTED BY: MS ANOEK BACKX

20100212 Oral Novel methodological approaches to outbreak investigations and surveillance

Keywords: HIV, Homosexuality Male, Sexually Transmitted Diseases, Australia, Epidemiology, Population Surveillance

A surveillance network on BBVs and STIs using record linkage: findings and lessons learned after 3 years of implementation in Victoria, Australia

BERGERI Isabel (1), EL-HAYEK C. (1), GOLLER J. L. (1), GUY R. (1), WHITE B. (4), FAIRLEY C. K. (3), LESLEY D. (5), GOLD J. (1), LIM M. (12), CLIFT P. (6), STOOVE M. (1), HELLARD M. E. (1)

AFFILIATIONS:
1. Centre for Epidemiology and Population Health, Burnet Institute, Melbourne, Victoria, Australia
2. Department of Epidemiology and Preventative Medicine, Monash University, Victoria, Australia
3. Melbourne Sexual Health Centre, Carlton, Victoria, Australia
4. School of Population Health, University of Melbourne, Victoria, Australia
5. Victorian Infectious Diseases Reference Laboratory, Melbourne, Victoria, Australia
6. Communicable Disease Prevention & Control Unit Victorian Government Department of Human Services

BACKGROUND:
The Victorian Primary Care Network for Sentinel Surveillance on BBVs and STIs (VPCNSS) was established to provide a comprehensive system for HIV, syphilis, chlamydia surveillance in Victoria. The VPCNSS was designed to compliment passive surveillance and provide estimates of time trends in testing and risk behaviours as well as incidence and prevalence of these infections.

METHODS:
VPCNSS, established in April 2006, created a network for each of the infection based on clinics seeing a high case load of the main population groups at risk: men who have sex with men (MSM), young people. VPCNSS uses a linked sentinel surveillance methodology to link two data sets: individual behavioural risk and demographic information with STIs tests results. Any patient over 16 years who got tested in a sentinel site for those STIs was eligible.

RESULTS:
Between April 2006 and June 2009 data were received for 147,728 tests and 117,543 questionnaires, providing an response rate of 89%, 66%, and 81% for HIV, syphilis, and chlamydia networks respectively. As an example of the VPCNSS potential for enhanced data interpretation, syphilis incidence among MSM was quantifiable (2.9 per 100 PY) as well as was the difference according to HIV status: 4.3 per 100 PY in HIV positive MSM (95%CI 3.5-5.1), compared to 2.1 per 100 PY (95%CI 1.7-2.6) in HIV negative MSM.

CONCLUSIONS:
Combining behavioural and testing data among clinic populations, the VPCNSS provided timely information about HIV incidence and transmission risk in priority populations, helping to inform prevention activities in Australia. As data builds over time, individually linked information across multiple STIs in the VCPNSS will provide estimates of the contribution of both risk behaviours and concurrent infections to STI transmission.

PRESENTED BY: DR ISABEL BERGERI

PARALLEL SESSION **ABSTRACTS**

20100337 Oral Intervention & International health

Keywords: case-based Surveillance, supplemental immunization activities

Analysis of measles case-based surveillance data in Nigeria from 2006 to 2009

Dr. Mohammed Abdulaziz (1), Dr. Patrick Ngukup (1), Dr. E.A Abanida (2), Prof. Kabir Sabitu (3)

AFFILIATIONS:
1. Nigerian Field Epidemiology and Laboratory Training Program, Abuja, Nigeria
2. National Primary Health Care Development Agency (NPHCDA) Gimbiya Street, Abuja, Nigeria
3. Department of community medicine, Ahmadu Bello University Zaria, Kaduna, Nigeria

BACKGROUND:
Measles is a priority vaccine preventable disease with a case fatality rate in epidemics up to 10%. In 2004 and 2005 in Nigeria, the numbers of reported suspected measles cases were 32,990 and 98,447 cases and 648 and 2,746 deaths respectively. Nigeria adopted the case-based surveillance after the first measles Supplemental Immunization Activities (SIA) in 2005. We described the demographic characteristics and vaccination status of measles cases and the trend of cases, to provide background information for the measles SIA planned in 2011.

METHODS:
The national case based measles surveillance data from 2006 to 2009 were analyzed using Epi Info version 3.3.2.

RESULTS:
During the study period, 27,251 suspected measles cases were reported (4,460 laboratory confirmed, 9,348 epidemiologically linked and 11,003 IgM negative cases). From 2005 to 2006 a drop from over 90,000 suspected cases to < 500 and a decrease of mortality from over 2,500 deaths in 2005 to < 50 deaths were observed. Of the 5,812 confirmed cases with records of place of residence, 3,969 (68%) lived in the rural areas. Of the 8,957 that had age record 7,024 (78%) were < 5 years. 52% of the suspected cases had never been vaccinated. The Northern region of Nigeria with the lowest routine vaccination coverage accounted for the majority of cases and death.

CONCLUSIONS:
The SIA resulted in a significant drop in measles burden in Nigeria. Most confirmed cases of measles had occurred in the rural areas, among < 5 years who had never been vaccinated against measles. We recommend the 2011 SIA should target children < 5 years, furthermore the implementation in the rural areas should be properly supervised. Routine immunization should be strengthened in Northern Nigeria.

PRESENTED BY: DR ABDULAZIZ MOHAMMED

20100264 Oral Intervention & International health

Keywords: Clustered-LQAS; Polio eradication; Nigeria; vaccination coverage; monitoring

Clustered-LQAS: a pragmatic tool to timely assess vaccination coverage. The example of Polio in Northern Nigeria, November 2009

Katie Greenland (1, 2), M. Rondy (1, 2), A. Chevez (5), N. Sadozai (4), A. Gasasira (5), E.A. Abanida (3), M.A. Pate (3), O. Ronveaux (6), H. Okayasu (3), B. Pedalino (2,7), L. Pezzoli (8)

AFFILIATIONS:
1. Epidemiology & Surveillance Unit, Centre for Infectious Disease Control, National Institute of Public Health and the Environment, Bilthoven, the Netherlands
2. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
3. NPHCDA, Nigeria
4. Research and Product Development, Global Polio Eradication Initiative, WHO Geneva
5. WHO, Nigeria
6. Expanded Programme on Immunization, World Health Organization, Geneva
7. French Institute for Public Health Surveillance (InVS), St Maurice, France
8. Epidemiology Consultant for WHO, Geneva, Switzerland

BACKGROUND:
Poliomyelitis eradication strategy in Nigeria includes high vaccination coverage of Oral Poliovirus Vaccine (OPV) delivered to children aged 0-59 months during Immunisation Plus Days (IPDs). We piloted Clustered Lot Quality Assurance Sampling (Clustered-LQAS) with multiple vaccination coverage thresholds to evaluate OPV coverage of the November 2009 IPDs round in five Northern Nigeria states with ongoing wild poliovirus transmission.

METHODS:
In each state we selected four local government areas (LGAs) as lots. LQAS classified lots as with acceptable or unacceptable vaccination coverage thresholds based on the number of unvaccinated individuals found. We used three decision thresholds to classify OPV coverage: 75-90%, 55-70% and 35-50%. We sampled six clusters of 10 children in each lot, assessing retrospectively the potential time-saving benefits of sampling only four or five clusters of 10 children to assess 90% and 70% coverage targets.

RESULTS:
We accepted two LGAs with vaccination coverage above 75%. Of the remaining 18 LGAs rejected, 11 also failed to reach 70% coverage, of which four failed to reach 50%. The average time taken to complete a lot was 10 hours. By using the incremental sample size approach and stopping sampling when a decision was reached, we could have classified lots in 3.3, 6.6 and 7.3 hours on average for the 90, 70 and 50% targets respectively.

CONCLUSIONS:
Clustered-LQAS was feasible and useful to assess OPV coverage in Northern Nigeria. The multi-threshold approach provided useful information on the variation of IPD vaccination coverage. The additional use of incremental sample sizes makes clustered-LQAS a very timely tool to implement corrective actions in insufficiently covered areas.

PRESENTED BY: MISS KATIE GREENLAND

20100138 Oral Intervention & International health

Keywords: earthquake, population size, unmet needs, cluster survey, systematic counting

Aftermath of the Haiti earthquake: population estimates and basic needs in a defined area of Port au Prince, February 2010

Grazia M. Caleo (1, 3), G. Francois (2), L. Sabard (2), L. Sury (2), K. Porten (3), F. Luquero (3)

AFFILIATIONS:
1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden.
2. Médecin sans Frontières France
3. Epicentre, Paris, France

BACKGROUND:
Five weeks after the earthquake, demographic and health indicators were lacking in Port-au-Prince. Médecin sans Frontières (MSF) was one of the main actors providing health care and covering basic needs in this emergency. MSF set up as well surveillance on mortality and nutrition in order to detect signals of deterioration in areas where primary health care was offered. Beforehand, we conducted a survey to estimate the population and assess the basic needs of one of these areas of Port-au-Prince (Delma24).

METHODS:
Based on geographical subdivisions the target area was divided in three strata. A representative sample was obtained for each stratum using cluster sampling (30 clusters of 30 households). Starting points for the clusters were randomly allocated using spatial sampling. The outcomes were the household composition and the availability of basic needs (sheltering, water and sanitation). In parallel an exhaustive counting was performed to estimate the total number of households.

RESULTS:
A total of 8140 households were counted. Overall, 2700 households were included in the surveys with an average of 5.39 individuals each. We estimated that 43930 individuals (95%CI 42746-45093) were living in Delma24 after the earthquake (9% children under 5y). Overall, 31% of the population was living in the street without shelter and 50% in improvised shelter. On average, a person consumed 3.8 liters of water per day. Moreover, 36% and 53% of the population lacked access to sanitation and soap respectively. These needs differed between strata.

CONCLUSIONS:
This survey provided the first population estimates in a defined area of Port-au-Prince after the earthquake. Moreover, the documented poor living conditions in terms of basic needs supported the MSF interventions in this area.

PRESENTED BY: DR GRAZIA MARTA CALEO

20100381 Oral Intervention & International health

Keywords: Hepatitis C, injecting drug users, recruitment

Is recruitment setting an independent predictor of hepatitis C seroprevalence in studies of injecting drug users?

Rondy M. (1, 2), Wiessing L. (3), Abel-Ollo K. (4), Matheï C. (5), Mathis F. (6), Mravcik V. (7), Norden L. (8), Rosińska M. (9), Scutelniciuc O. (10), Suligoi B. (11), Vallejo F. (12), Kretzschmar M. (1, 13)

AFFILIATIONS:
1. Centre for Infectious Disease Control, National Institute for Public Health and the Environment, The Netherlands.
2. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Diseases Prevention and Control (ECDC), Sweden.
3. European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), Portugal
4. National Institute for Health Development, Estonia
5. Katholieke Universiteit Leuven, Belgium
6. Piedmont Centre for Drug Addiction Epidemiology (OED), Italy
7. National Monitoring Centre for Drugs and Drug Addiction, Czech Republic
8. Karolinska Institutet, Sweden
9. National Institute of Public Health, Poland
10. National Centre of Health Management, Republic of Moldova
11. Istituto Superiore di Sanità, Italy
12. Instituto de Salud Carlos III, Spain
13. Julius Centre for Health Sciences and Primary Care, University Medical Centre Utrecht, The Netherlands

BACKGROUND:
Marked variation in hepatitis C prevalence among injecting drug users (IDUs) is observed across European countries. To better understand these differences, we aimed to identify potential confounders of hepatitis C virus (HCV) antibody prevalence in studies among IDUs.

METHODS:
Individual data sets from 10 studies conducted in 8 countries between 1990 and 2007 were obtained through an EMCDDA collaboration initiative. After merging the data, we conducted a univariate analysis of predictors of HCV seropositivity. We then performed a multilevel analysis using a generalized linear mixed model, with study identifier as random intercept.

RESULTS:
HCV prevalence ranged from 21-86% across the 10 studies which include a median number of 695 IDUs (range 299-1965). Univariate analyses showed significant associations between HCV serostatus and gender (Odds Ratio (OR) females 0.55, 95% Confidence Interval (95%CI) 0.49-0.62), HIV serostatus (OR HIV-positive 4.98, 95%CI 3.86-6.44), duration of injection (OR per year injected 1.16, 95%CI 1.15-1.18), injection in the last month (OR yes 1.42, 95%CI 1.28-1.59) and recruitment setting. HCV seroprevalence was 77% (range between studies 21-60%) among IDUs recruited in drug treatment centres and 43% (53-84%) among those recruited in harm reduction services (OR 0.22, 95%CI 0.20-0.25). When adjusted on the above listed risk factors and corrected for the overall seroprevalence within the study using a multilevel analysis, this association remained significant (adjusted OR 0.58, 95CI 0.49-0.69).

CONCLUSIONS:
Recruitment setting may have a major impact on HCV seroprevalence estimates of IDUs in Europe. However, the association is not well understood. Residual confounding and inclusion of additional risk factors should be further explored. If confirmed, these findings might have important consequences for the discussion about appropriate recruitment methods in surveillance.

PRESENTED BY: MR MARC RONDY

PARALLEL SESSION **ABSTRACTS**

20100288 Oral Intervention & International health

Keywords: LQAS, cluster, vaccination campaign

Clustered-LQAS to assess vaccination coverage: advantages, perspectives, pitfalls ... Lesson learnt from five field experiences, 2007–2010

Rondy M. (1, 2), Greenland K. (1, 2), Conteh I. (3), Tchio R. (4), Boulam D. L. (5), Pedalino B. (2, 6), Lewis R. (7), Ronveaux O. (8), Pezzoli L. (9)

AFFILIATIONS:
1. Centre for Infectious Disease Control, National Institute for Public Health and the Environment, Bilthoven, The Netherlands.
2. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Diseases Prevention and Control (ECDC), Stockholm, Sweden.
3. Expanded Program for Immunization, World Health Organization, Freetown, Sierra Leone
4. Expanded Program for Immunization, Ministry of Health, Yaoundé, Cameroon
5. Polio Eradication Initiative, World Health Organization, Geneva, Switzerland
6. French Institute for Public Health Surveillance (InVS), St Maurice, France
7. Global Alert And Response, World Health Organization, Geneva, Switzerland
8. Expanded Program for Immunization, World Health Organization, Geneva, Switzerland
9. Epidemiology Consultant, Geneva, Switzerland

BACKGROUND:
Clustered-Lot Quality Assurance Sampling (LQAS) has been used to assess vaccination coverage. The cluster-sampling design and the possibility to stop recruitment after a decision value (d) has been reached make it a very timely tool to assess coverage in large areas. It is important to evaluate the effect of clustering on the precision of the assessment in order to highlight the required conditions for its application in the field. We reviewed the methodological appropriateness of clustered-LQAS in different settings to provide recommendations for its future utilization.

METHODS:
We screened protocols and reports used to monitor and evaluate vaccination campaigns in Nigeria, Bolivia, Sierra-Leone and Cameroon for required sample and cluster sizes, coverage target assessed, timing of survey conduction and related planned corrective actions targeting poorly performing areas. The clustered-design effect was computed by referring standard errors of the coverage figure per lot obtained with and without the clustered stage.

RESULTS:
The sample sizes used ranged from 35-60 individuals per lot using cluster sizes of seven or 10 children. Three studies were performed post vaccination campaign to identify areas to mop-up; two during the campaign to guide reinforcement of immunization activities in real time. Two vaccination campaigns with different target populations were assessed concomitantly. Using incremental sample size and stopping sampling when d was reached reduced the survey time by 27%-67%. The clustered design effect ranged from 0.5 to 3 and increased with lower lot vaccination coverage (t-test, $p>0.001$).

CONCLUSIONS:
Clustered-LQAS was useful to assess vaccination coverage in various settings. Stopping sampling when d is reached and using incremental sample sizes are of indisputable added value. Clustered-LQAS design should preferably be used when high coverage is expected.

PRESENTED BY: MR MARC RONDY

20100081 Oral Influenza 4

Keywords: influenzae A(H1N1), vaccination, coverage, France

Low influenza A(H1N1)2009 population and high risk group vaccination coverage during the 2009–2010 pandemic in France

Jean-Paul Guthmann (1), A. Bone (1, 2), J. Nicolau (1), D. Lévy-Bruhl (1)

AFFILIATIONS:
1. Institut de Veille Sanitaire (French Institute for Public Health Surveillance), Saint-Maurice, France
2. EPIET European Programme for Intervention Epidemiology, ECDC, Stockholm

BACKGROUND:
In France, the immunisation campaign against influenza A(H1N1)2009 started on the 20th October 2009. Vaccination was offered free of charge to the entire population. A written invitation to be vaccinated at local immunisation centres was sent to all individuals by the national social security system, according to a pre-defined order of priority. In order to evaluate the effectiveness of the campaign, we estimated overall and specific high risk population vaccination coverage

METHODS:
Individual demographic and vaccination data were entered in a central database containing 64.9 million records. Coverage was defined as the number of persons that received as of May 2010 at least one dose of pandemic vaccine in a specific group over the invited population in that same group.

RESULTS:
Overall pandemic vaccination coverage was 7,9%. Coverage was highest in children 6-23 months old (20.7%), decreased with age reaching 3.1% in the 18-24 years age group, and increased to 5-8% in older adults. Young adult women (25-44 years) were better vaccinated than young adult men (8.2% vs 5.9%, $p<0.001$), whereas males had higher vaccination rates in the 45+ age group (8.2% vs 6.0%, $p<0.001$). Rates in the 23 regions of mainland France were rather uniform, ranging from 6.1% to 12.0% (median= 7.1%). Coverage in pregnant women was 22.7%. Coverage estimates in persons with co-morbidities and comparison with seasonal influenza vaccination coverage is on-going.

CONCLUSIONS:
These low coverage figures, even in high risk groups, confirm that the French population was not very sensitive to key messages delivered by health authorities, and is likely to reflect the controversies about the A(H1N1)2009 vaccines and vaccination strategy. This finding has important implications for the next influenza season and for future pandemics.

PRESENTED BY: DR JEAN-PAUL GUTHMANN

20100089 Oral Influenza 4

Keywords: Influenza vaccine, effectiveness, case-control studies, sentinel surveillance

Estimating Pandemic Influenza Vaccine Effectiveness in the frame of the Spanish Influenza Sentinel Surveillance System, season 2009–2010, Spain

Camelia Savulescu (1, 2), Salvador de Mateo (1, 3), Silvia Jiménez-Jorge (1, 3), Amparo Larrauri (1, 3), the cycEVA Study Team, and the Spanish Influenza Sentinel Surveillance System

AFFILIATIONS:

1. National Centre of Epidemiology, Institute of Public Health Carlos III, Madrid, Spain;
2. EpiConcept, Paris, France;
3. CIBERESP, Institute of Public Health Carlos III, Madrid, Spain

BACKGROUND:

Within the Spanish Influenza Sentinel Surveillance System (SISSS), sentinel physicians report and systematically swab influenza like illnesses (ILI). In the season 2009-10, the peak ILI rate was recorded in the week 46/2009 when pandemic influenza vaccination started. The last positive case was registered in week 8/2010. We estimated pandemic influenza vaccine effectiveness (PIVE) in the frame of SISSS.

METHODS:

We conducted two case-control studies: one included all swabbed ILI patients in the SISSS (SISSS-based study), and the other (cycEVA) included 235 sentinel GPs from seven regions. We restricted the analysis to ILI swabbed between 48/2009 – 8/2010 and with a delay onset-swabbing ‹8 days. Cases were laboratory-confirmed influenza A(H1N1)2009. Controls were ILI testing negative. SISSS collected demographic data, vaccination status, laboratory results, chronic conditions, pregnancy. CycEVA study collected additional data on: previous influenza vaccination, smoking, functional status, hospitalizations, GP visits and obesity. We used logistic regression to calculate adjusted odds ratios (OR) and computed PIVE as (1-OR)*100.

RESULTS:

We included 331 cases and 995 controls in the SISSS-based study and 85 cases and 351 controls in the cycEVA study. We recorded nine vaccine failures in the SISSS-based study and two in cycEVA. The adjusted PIVE in the SISSS-based study was 62% (95% confidence interval (CI): -5; 87) and 75% (95%CI: -293; 98) in cycEVA study. When adjusting only for chronic conditions and pregnancy, the cycEVA PIVE was 64% (95%CI: -225; 96).

CONCLUSIONS:

Our results suggest that pandemic vaccine was protective against laboratory-confirmed influenza A(H1N1)2009. Estimates are limited by the low vaccine coverage and the late start of the vaccination campaign. Routine influenza surveillance with additional collection of confounding variables could be used for rapid estimates of vaccine effectiveness.

PRESENTED BY: DR CAMELIA SAVULESCU

20100196 Oral Influenza 4

Keywords: Influenza vaccine, effectiveness, screening method, sentinel surveillance

Pandemic influenza vaccine effectiveness estimates using the screening method in the frame of Spanish Influenza Surveillance Sentinel System, season 2009–2010

Amparo Larrauri (1, 3), Camelia Savulescu (1, 2), Silvia Jiménez-Jorge (1, 3), Salvador de Mateo (1, 3), and the Spanish Influenza Sentinel Surveillance System

AFFILIATIONS:

1. National Centre of Epidemiology, Institute of Public Health Carlos III, Madrid, Spain; 2 EpiConcept, Paris, France; 3 CIBERESP, Institute of Public Health Carlos III, Madrid, Spain

BACKGROUND:

Influenza vaccine effectiveness has been estimated in Spain since 2001-2002 season, using the screening method with surveillance data provided by Spanish Influenza Surveillance Sentinel System (SISSS). We aimed to estimate the pandemic influenza vaccine effectiveness (PIVE) against clinical and laboratory-confirmed influenza like illness (ILI) in the 2009-2010 season using SISSS data.

METHODS:

We compared the proportion of vaccinated ILI cases and laboratory confirmed influenza cases to the pandemic vaccine coverage (PVC), using Farrington method. PVC in risk groups recommended for vaccination was provided by the Spanish Ministry of Health and PVC of the general population was estimated from sentinel physicians' catchment area.

RESULTS:

The PVC was 16.4% in the risk groups and 10.6% in the general population. Using the risk groups PVC, PIVE by age group with ILI as outcome was 80.38% (95% confidence interval (CI): 57.12; 91.03) for ›64 years and over 88% for age groups 64 years, 54.86% (95% CI: 9.50; 77.49) for under five years and 83.09% (95% CI: 64.07; 92.05) for 15-64 years. The global PIVE against ILI was 83.93% (95% CI: 80.46; 86.79) and against confirmed influenza was 78.34% (95% CI: 60.68; 88.12).

CONCLUSIONS:

Our results suggest a protective effect of the pandemic vaccine against both ILI and laboratory confirmed pandemic influenza A (H1N1) 2009. In spite its limitations, screening method could be useful to give intra-seasonal estimates and to monitor IVE changes over time using only surveillance data.

PRESENTED BY: DR AMPARO LARRAURI

PARALLEL SESSION **ABSTRACTS**

20100310 Oral Influenza 4

Keywords: pandemic, H1N1, seroprevalence, microneutralization

A seroprevalence study of pandemic influenza A H1N1 among Ontarians

Camille Achonu, Marie LaFreniere, Jonathan Gubbay, Laura Rosella, Shelley Deeks, Tony Mazzulli, Anu Rebbapragada, Ian Johnson, Don Willison, Caitlin Johnson, Angela Chiodo, Lily Shi, Jacqueline Willmore, Carmen Yue, Jim Tom, Natasha Crowcroft

AFFILIATIONS:
1. Ontario Agency for Health Protection and Promotion, Toronto, Canada
2. Dalla Lana School of Public Health, University of Toronto, Toronto, Canada
3. Laboratory Medicine and Pathobiology, University of Toronto, Toronto, Canada
4. Ottawa Public Health, Ottawa, Ontario
5. Toronto Public Health, Toronto, Ontario

BACKGROUND:
Seroprevalence studies help us understand transmission and epidemiology of new viruses. The objectives of this study are: To estimate the community prevalence of immunity to pandemic H1N1 before and after the first and second waves in Ontario; and to identify risk factors for infection with pandemic H1N1 influenza.

METHODS:
Residual blood specimens from the public health laboratory were randomly collected from Jan 2009, April 2009, Aug/Sept 2009 and Jan 2010. Additionally, adult Ontario residents who did not travel to Mexico between January 1 and April 30th 2009 were actively recruited and asked to provide a blood sample and complete a questionnaire online in Aug/Sept 2009. Blood samples were tested for pH1N1 antibodies using two methods: haemagglutination inhibition (HAI) and microneutralization.

RESULTS:
Serology was obtained from 1603 residual samples collected from January 2009 to January 2010 and 1024 participants actively recruited between the first and second waves. After the first wave between 5 and 20% of individuals tested positive for antibodies to pH1N1, varying by age and location. After the second wave and the mass vaccination program seropositivity increased to between 40 to 55% across age groups, being highest in the youngest ages. Overall, seropositivity to pH1N1 decreased with increasing age in the first wave and was increased in those receiving the 2008/2009 influenza vaccine (Age-adjusted OR=1.81; 95% CI 1.15-2.86). Seroprevalence estimated by microneutralization was slightly higher due to the increased sensitivity of the test

CONCLUSIONS:
This was the largest mixed-population seroprevalence study undertaken in Canada; results were used to inform several public health policy decisions. A critical analysis is currently underway of the differences in seroprevalence results at the population level comparing microneutralization with HAI.

PRESENTED BY: DR NATASHA CROWCROFT

20100187 Oral Influenza 4

Keywords: Influenza H1N1 virus, Seroprevalence, Haemagglutination-inhibition test

The 2009 pandemic influenza A (H1N1) virus: pre-pandemic cross-reactive antibodies in German adults

Sandra Dudareva (1, 2), B.Schweiger (3), M. Thamm (4), K.Stark (5), G. Krause (5), S. Buda (5), W. Haas (5).

AFFILIATIONS:
1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
2. Postgraduate Training for Applied Epidemiology (PAE, German FETP), Robert Koch-Institute, Germany
3. National Reference Centre for Influenza, Department of infectious diseases, Robert Koch Institute, Germany
4. Department of Epidemiology and Health Reporting, Robert Koch Institute, Germany
5. Department for Infectious Disease Epidemiology, Robert Koch Institute, Germany

BACKGROUND:
In order to assess possible pre-existing immunity in the German adult population to 2009 pandemic influenza A (H1N1) virus (pH1N1) we estimated the pre-pandemic prevalence of cross-reactive antibodies.

METHODS:
We analysed a sub-sample collected between 25th November 2008 and 28th April 2009 trough the German Health Survey for Adults. Cross-reactive antibodies against pH1N1 were detected using a haemagglutination inhibition test (antigen A/California/7/2009). Calculations were standardised by age and sex. Proportions of samples with antibodies at titres ≥1:10, ≥1:40 and geometric mean titres (GMT) were calculated and compared among 6 age groups (18-29, 30-39, 40-49, 50-59, 60-69, ≥70). Association between age and presence of antibodies was estimated with logistic regression and differences in GMT were detected by T-test of logarithmically transformed data.

RESULTS:
Altogether, 845 samples were analysed. Median age was 54 years (range 18-86) and males/females ratio was 0.91. Cross-reactive antibodies at titre ≥1:10 were prevalent in 12.8% and at titre ≥1:40 in 4.8%. The proportion of samples with titre ≥1:40 in age groups 1-6 was 12.5%, 3.1%, 2.3%, 4.2%, 3.5% and 2.5%, respectively. GMT in those aged 18-29 was 7.9 and 5.9 in those aged ≥30 ($p<0.001$). The youngest age group in comparison to all other groups was more likely to have cross-reactive antibodies at titres ≥1:10 and ≥1:40 (OR 2.36 (95%CI: 1.46-3.82), $p<0.001$ and OR 4.3 (95%CI: 2.21-8.41) $p<0.001$, respectively).

CONCLUSIONS:
Before the pandemic, part of the German adult population had pre-existing cross-reactive antibodies towards pH1N1 with higher proportions among the youngest age group. Currently ongoing analysis of immunization history will help to better understand our results. The established baseline and ongoing analysis of post-pandemic sera will allow precise determination of infection rates.

PRESENTED BY: MS SANDRA DUDAREVA

20100272 Oral Surveillance 1

Keywords: surveillance; respiratory disease; influenza

Lessons from Hospital-based Surveillance of Acute Respiratory Infections in Berlin, December 2009 – April 2010

Matthias Nachtnebel (1, 2, 3), B. Greutelaers (1, 2, 3), G. Falkenhorst (1), M. Dehnert (1), P. Joergensen (1), T. Eckmanns (1), B. Schweiger (4), C. Träder (5), O. Wichmann (1), W. Hellenbrand (1)

AFFILIATIONS:
1. Department of Infectious Disease Epidemiology, Robert Koch-Institute, Berlin, Germany
2. Post Graduate Training in Applied Epidemiology, Robert Koch-Institute, Berlin, Germany
3. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
4. National Reference Centre for Influenza, Robert Koch-Institute, Berlin, Germany
5. Vivantes Clinic, Berlin, Germany

BACKGROUND:
Surveillance of severe (S) acute respiratory infections (ARI) in sentinel hospitals is recommended to estimate the burden of severe influenza-cases. We monitored patients admitted with ARI in 9 Berlin hospitals from 7/December/2009 to 12/April/2010. Our objectives were the timely reporting of weekly SARI and pandemic Influenza (H1N1) 2009 (pH1N1) cases and estimation of the proportion of influenza among SARI.

METHODS:
The hospital information-system was screened daily for newly admitted patients aged 18-65 with ARI (fever or other systemic signs and cough or sore throat; OR respiratory infection diagnosed by a physician) and SARI-symptoms (fever, dyspnoea and cough or sore throat). All consenting patients were tested by PCR for influenza-virus-subtypes.

RESULTS:
We identified 413 ARI-cases of which 129 (31%) were SARI. The percentage of SARI among internal medicine admissions decreased from 2.9% (calendar-week 50-2009) to 0.7% (week 13-2010). Of 196 (47%) ARI-patients tested by PCR, 28 (14.3%) were pH1N1-positive. Of these, 16 (57%) met the SARI case-definition. Intensive care (ICU) treatment was necessary for 7/16 (44%) PCR-positive compared to 10/61 (16%) PCR-negative SARI-cases (OR=3.97, 95%CI 1.20-13.14). Delay in swabbing (i.e. >1 day post admission) was more common in PCR-negative than PCR-positive ARI-patients (49% vs. 29%, p=0.048).

CONCLUSIONS:
Although misclassification resulting from failure to obtain or document symptoms in the hospital information-system cannot be ruled out, a high proportion (43%) of PCR-positive pH1N1-patients did not fulfil the SARI case-definition. This high proportion suggests that hospitalized pH1N1-cases did not always present as a severe disease in our setting. Still, pH1N1-associated SARI-cases were more likely to require ICU-treatment compared to non-pH1N1 SARI-cases. Interpretation of SARI-surveillance requires information on proportion of cases with PCR-confirmed influenza; at least when circulation is low.

PRESENTED BY: MR MATTHIAS NACHTNEBEL

20100045 Oral Surveillance 1

Keywords: mortality, infectious diseases

What can the International Classification of Diseases (ICD) tell about mortality due to infectious diseases in Finland?

S. Guedes (1, 2), O. Lyytikäinen (2)

AFFILIATIONS:
1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control, Stockholm, Sweden;
2. National Institute for Health and Welfare (THL), Helsinki, Finland

BACKGROUND:
Cause-of-death statistics are widely used to monitor the general health of populations and therefore are important for planning and setting priorities for disease prevention. Our aim was to describe all-cause and infectious disease (ID) mortality during 1996-2008 and the ICD-codes behind ID-related deaths.

METHODS:
ID mortality was assessed using the International Classification of Diseases, 10th revision (ICD-10) codes listed as primary cause of death on death certificates. Codes requested to the death register consisted of all codes under categories A and B (specific for ID) plus additional ID codes under other ICD categories and related to ID-hospitalizations. Codes were reviewed by ID-specialists. All-cause mortality data was also provided. Descriptive and time series analyses were performed.

RESULTS:
In total 40,329 ID-related deaths occurred during 1996-2008 (average annual mortality rate, 0.58/1,000 population), accounting for 6% of all-cause mortality. ID-related deaths decreased by 64% from 1996 (4,201 deaths) to 2008 (1,528 deaths); highest decrease occurred during 2004-2008. Codes under categories A/B accounted for 12% of ID-related deaths. Four sub-categories represented 85% of these deaths: 43% other bacterial diseases (A30-A49 codes), followed by intestinal infections (A00-A09), tuberculosis (A15-A19) and sequelae of infectious and parasitic diseases (B90-B94), 14% each. Respiratory infections (J00-J99) represented 73% of all deaths in non-A/B category (97% due to pneumonia), followed by genitourinary (N00-N99) digestive (K00-K93) and circulatory system (I-0-I99). Perinatal infections (P00-P96) were rare (range 0-16 deaths/year), mainly bacterial sepsis of the newborn.

CONCLUSIONS:
Studies on ID mortality should take into account other ICD-codes besides the ID-specific A/B categories in order not to underestimate true ID mortality. Awareness of changes in ICD-codes and their usages are essential to avoid data misinterpretations.

PRESENTED BY: MISS SANDRA GUEDES

PARALLEL SESSION **ABSTRACTS**

20100341 Oral Surveillance 1

Keywords: data, quality, monitoring, evaluation

Mapping of the current practices for monitoring and evaluating data quality in surveillance system for communicable diseases in EU/EEA countries

Isabelle Devaux (1), O. Hartberg (2), M. Capdevila (2), K. Khatib (2), R. Reintjes (3), F. Hruba (1), A. Ammon (1)

AFFILIATIONS:
1. European Centre for Disease Prevention and Control, Sweden
2. Matrix Insight, United Kingdom
3. Hamburg University of Applied Sciences, Germany

BACKGROUND:
As part of a project aiming at the development of a tool to measure data quality attributes in Surveillance systems (SS) for communicable diseases, ECDC conducted a survey to map the current practices for monitoring and evaluation (M&E) of data quality in SS of the EU/EEA Member States (MS).

METHODS:
ECDC national surveillance contact points from 30 EU/EEA MS were invited to participate to a telephone survey to describe their practices for M&E of data quality. The interview included 15 questions. Data quality was defined as internal/external completeness and validity. Interview summaries were sent to respondents for verifications and completion.

RESULTS:
Of the 30 EU/EEA Member States, 26 participated in the survey. All respondents but one specified that internal completeness was monitored in at least one of the MS' s surveillance system(s). Management of missing data was performed either by direct follow-up with the data providers in 17/19 countries and/or through automated messages in 3/19 countries. Automatic processes for internal validity are in place in 14/20 countries (combined with human validation in 5 countries). Evaluation of data quality is performed periodically for specific diseases in 16 countries for external completeness (9 countries used capture-recapture method) and 9 countries for external validity. Other attributes used for M&E of data quality are sensitivity representativeness, timeliness.

CONCLUSIONS:
Practices in M&E of data quality across EU/EEA MS have commonalities. However, they are conducted at different frequencies and stages of the data collection process depending of the characteristics of the SS. A tool should facilitate a more common approach to monitor internal quality and support consistent methods for evaluating external completeness and validity of surveillance data.

PRESENTED BY: DR ISABELLE DEVAUX

20100099 Oral Surveillance 1

Keywords: years of life lost, mortality, surveillance, gastrointestinal diseases

Comparing mortality and potential years of life lost among gastrointestinal pathogens using German notification data, 2004–2008

Katja Hille (1), J.Koch (2), M.Dehnert (2), C. Frank (2), J.Müller-Nordhorn (1), D. Altmann (1), K. Stark (2), D. Werber (2)

AFFILIATIONS:
1. Berlin School of Public Health, Charité, Berlin, Germany.
2. Robert Koch Institute, Dept. Infectious Disease Epidemiology, Berlin, Germany.

BACKGROUND:
Most gastrointestinal infectious diseases are mild and self-limiting, but they can also lead to death. Pathogen-specific mortality as indicator of disease severity neglects that different gastrointestinal pathogens cause death at different ages. By contrast, "potential years of life lost" (PYLL), so far underused in infectious disease epidemiology, estimates the average years cut short by premature death, thus weighing deaths among the young higher.

METHODS:
In Germany, death causally related to an acute notifiable gastrointestinal disease is reportable and checked for accuracy of information. Using German surveillance data of the years 2004-2008, we compared annual mortality rates and PYLL, based on statistical life expectancy, among six gastrointestinal pathogens: Campylobacter spp., Listeria monocytogenes, Norovirus, Rotavirus, (nontyphoidal) Salmonella spp., Shiga toxin-producing E. coli (STEC).

RESULTS:
During these five years, the highest annual mortality per 1,000,000 population was registered for salmonellosis (0.55, 225 deaths), followed by listeriosis (0.48, 211 deaths), and Norovirus gastroenteritis (0.46, 192 deaths). Listeriosis accounted for the largest number of PYLL (4245) followed by salmonellosis (2625) and STEC illness (926). When restricting PYLL to working years (15-65), the difference between PYLL of listeriosis (1547) and that of the following illnesses (STEC illness (554) and rotavirus gastoenteritis (473)) became even more pronounced. Routine infectious disease surveillance captures only a fraction of all incident cases, and may suffer from biases, which is why these numbers need to be interpreted with caution.

CONCLUSIONS:
Weighing death by age leads to a different view on the disease burden individual gastrointestinal pathogens cause. Particularly, the public health importance of listeriosis prevention is underscored. PYLL might be a useful complementary parameter for prioritising infectious diseases to rationally allocate limited public health resources.

PRESENTED BY: DR DIRK WERBER

20100328 Oral Surveillance 1

Keywords: gastrointestinal illness, telephone survey, diarrhoea, burden of illness studies

The incidence of acute gastrointestinal illness in Denmark 2009

Luise Müller (1), H. Korsgaard (2), S. Ethelberg (1)

AFFILIATIONS:

1. Department of Epidemiology, Statens Serum Institut, Copenhagen, Denmark
2. Danish Zoonosis Centre, FOOD-DTU, Copenhagen, Denmark

BACKGROUND:

Measuring the disease burden of acute gastrointestinal illness within the population is of importance for preventive strategies. Surveys have in recent years been performed in several countries, but not hitherto in Denmark.

METHODS:

A retrospective cross-sectional telephone survey was conducted in Denmark throughout 2009. Using the Danish population register, a random population sample stratified by gender and age groups was selected and mobile or landline phone numbers found using phone directories. A target sample of 1800 participants was calculated and equal numbers of interviews performed each month using a structured questionnaire. Participants were asked if they had suffered gastrointestinal symptoms within the past 4 weeks and were inquired about symptoms and underlying illness. Participants were excluded if suffering from chronic gastrointestinal diseases. Cases were assigned according to an international case definition, which includes both diarrhoea and vomiting. Incidence rates were calculated within population groups.

RESULTS:

A total of 1853 individuals were included in the study and 198 (10.7%) fulfilled the case-definition; 64% reported diarrhoea, 22% vomiting and 14% both. This corresponds to an overall adjusted incidence rate of 1.4 (95%CI: 1.2-1.6) episodes of acute gastrointestinal illness per person-year. The adjusted incidence rate was 2.3, 1.9 and 0.80 per person-year in the age groups 0-9, 10-39 and 40+ respectively; overall 48% cases were female.

CONCLUSIONS:

The incidence of acute gastrointestinal illness was somewhat higher than what has been found in other comparable countries. There were marked differences in incidence in different age groups; the incidence generally decreased with increasing age. The high incidence warrants further studies into the routes and aetiology of the infections, in particular among children and younger people, in order to develop appropriate public health measures.

PRESENTED BY: DR STEEN ETHELBERG

20100186 Oral Surveillance 1

vaccination, surveillance, pneumonia, health services research

Calculation of vaccine coverage of pneumococcal vaccine using secondary data from ASHIPs: Choice of denominator affects validity of calculated vaccination coverage

Thorsten Rieck, M. Feig, T. Eckmanns, G. Poggensee

AFFILIATIONS:

Robert Koch Institute, Dept. Infectious Disease Epidemiology, Berlin, Germany

BACKGROUND:

Vaccination coverage (VC) of successive doses of a vaccination series can be calculated from secondary data from the German Associations of Statutory Health Insurance Physicians (ASHIPs). ASHIPs' administrative regions are organized per federal state. Four doses of pneumococcal vaccine (PV) are administered according to the vaccination schedule at the age of 2, 3, 4 and 11-14 months. We aimed to investigate the value of different numerators/denominators for VC calculation of PV in Saxony.

METHODS:

VC was calculated in children born January 2008 at the age of 23 months using the following approaches: i) numerator: children receiving PV, external denominator: statistics of statutory health-insured children (n=2517); ii) numerator: children receiving PV having defined childhood check-ups (officially scheduled at age 4-6 weeks and 20-23 months), database-generated denominator (DN): all children having these check-ups (n=794); iii) numerator: children receiving PV having at least one early (age 0-1 month) and late (age 21-23 months) medical consultation, DN: all children having these medical consultations (n=2051).

RESULTS:

VC for the 4-dose course in the three groups was as follows: i) 98.2% (n=2472), 90.7% (n=2282), 78.3% (n=1971), 46.6% (n=1172); ii) 89.8% (n=713), 87.4% (n=694), 77.5% (n=615), 51.3% (n=407); iii) 90.0% (n=1864), 87.3% (n=1790), 76.5% (n=1568), 48.1% (n=987).

CONCLUSIONS:

Approach i) overestimated the first doses and underestimated the last doses: due to patient pseudonymization, follow-up across ASHIPs is impossible and the next dose of a child moving into the ASHIP-Saxony is always classified as 'first' dose. In contrast, children in approaches ii) and iii) are likely to have stayed in the ASHIP-Saxony permanently. However, children attending check-ups can have disproportionately high vaccination coverage due to catch-up vaccinations. Using medical consultations (approach iii), a less biased VC is calculated.

PRESENTED BY: MR THORSTEN RIECK

PARALLEL SESSION **ABSTRACTS**

20100060 Oral Zoonoses 2

Keywords: Coxiella burnetii, veterinarians, cattle, Q fever, zoonosis

Cow fever – High seroprevalence of Coxiella burnetii antibodies in veterinarians associated with obstetric activity on cattle, Germany, 2009

Helen Bernard (1), Stefan Brockmann (2), Niels Kleinkauf (1, 3), Christina Klinc (4), Christiane Wagner-Wiening (2), Klaus Stark (1), Andreas Jansen (1)

AFFILIATIONS:
1. Robert Koch Institute, Berlin, Germany
2. Baden-Wuerttemberg State Health Authority, Stuttgart, Germany
3. Postgraduate Training in Applied Epidemiology (PAE), Berlin, Germany
4. Bavarian Health and Food Safety Authority, Oberschleissheim, Germany

BACKGROUND:
Q fever is a zoonosis caused by Coxiella burnetii (Cb). The clinical picture ranges from asymptomatic infection to severe chronic disease. Little is known about the risk of Cb infection in populations with frequent animal exposure. We investigated factors associated with Cb seropositivity in veterinarians to improve recommendations for early diagnosis and prevention of chronic infections in veterinarians.

METHODS:
Attendants of the 2009 Bavarian Veterinarians Conference completed an exposure questionnaire and provided serum. Sera were tested for Cb phase II IgG antibodies using immunofluorescence testing. We investigated the associations between seropositivity (defined as antibody titres ≥1:16) and exposures using Chi-square test and multivariable logistic regression.

RESULTS:
The 424 participants' median age was 40 (18-74) years, 276 (65%) were female. A total of 162 (38%) were seropositive. Of these, 13 (8%) reported a history of Q fever. Seropositivity was associated with occupational exposure to cattle (adjusted odds ratio (aOR) 3.22; 95% confidence interval (CI) 1.60-6.50) and sheep (2.38; 1.20-4.73), increasing age (1.05/year; 1.02-1.08), and non-occupational exposure to birds (0.34; 0.13-0.90). Among participants with occupational exposure to cattle, the monthly number of performed obstetric activity was associated with seropositivity (aOR 1.14/monthly obstetric activity; 95%CI 1.06-1.22). Unexplained hepatitis (prevalence ratio 2.21; 95%CI 1.51-3.23), pneumonia (1.67; 1.17-2.39), and joint pain (1.36; 1.06-1.75) were more often reported by seropositive participants.

CONCLUSIONS:
The high Cb antibody prevalence in veterinarians implies a high lifetime risk of Q fever for this occupational group. Especially veterinarians frequently performing cattle obstetrics should be counselled on the clinical picture of Q fever and on specific risks. We recommend an assessment of risks, costs and benefits of a screening programme in this occupational setting.

PRESENTED BY: DR HELEN BERNARD

20100222 Oral Zoonoses

Keywords: Cryptosporidium

If you go down to the farm today … Zoonotic transmission of Cryptosporidium at petting farm visits in England and Wales

Fraser J. Gormley (1), Christine L. Little (1), Rachel M. Chalmers (2), Nalini Rawal (1) and Goutam K. Adak (1)

AFFILIATIONS:
1 Department of Gastrointestinal, Emerging and Zoonotic Infections, Health Protection Agency, Centre for Infections, London NW9 5EQ, UK
2 UK Cryptosporidium Reference Unit, Public Health Wales Microbiology ABM, Singleton Hospital, Swansea, SA2 8QA, UK

BACKGROUND:
Cryptosporidium species are coccidian parasites that infect a wide range of farm livestock and are important in human disease, most often affecting children under five years. Infection can be life-threatening in immuno-compromised individuals. Faecal-oral transmission can occur directly through animal-to- and person-to-person routes or indirectly through contaminated food or water. Petting farms are commercial operations at which visitors are encouraged to have hands-on contact with animals therefore in light of the recent publicity of petting farms and Escherichia coli O157 (VTEC O157) in the UK we describe the risk also associated with Cryptosporidium at such settings.

METHODS:
The Health Protection Agency's electronic Foodborne and non-foodborne gastrointestinal Outbreak Surveillance System (eFOSS) collects a minimum outbreak dataset throughout England and Wales through a standardised questionnaire.

RESULTS:
Of 55 outbreaks associated with petting farms reported between 1992 and 2009, 55% (30) were caused by VTEC O157. However, 42% (23) were caused by Cryptosporidium with a total of 1078 people affected and 29 hospitalised. Contributory factors reported in these outbreaks included: direct contact with pre-weaned animals or direct contact with animal faeces (11/23, 48%) and inadequate hand washing facilities (7/23, 30%). Cryptosporidiosis outbreaks occurred more often in springtime (18 vs 5, p=0.0001) in comparison to outbreaks of VTEC O157 occurring more frequently during the summer months (25 vs 5, p<0.00001), highlighting seasonal differences between the two pathogens.

CONCLUSIONS:
Care should be exercised throughout the year, through attention to hygiene and supervision of children when visiting farms. Guidance on the control of VTEC O157 infections for petting farms applies equally to Cryptosporidium. The need for a sound approach to management of hygiene control measures in petting farm settings cannot be overemphasized.

PRESENTED BY: DR FRASER GORMLEY

20100317 Oral Zoonoses 2

Keywords: Campylobacter, broiler batches, broiler carcasses, chicken, survey, prevalence, EU

Analysis of the baseline survey on the prevalence of Campylobacter in broiler batches and on broiler carcasses in the EU, 2008

Frank Boelaert, M. T. da Silva Felício, K. Mulligan, P. Mäkelä

AFFILIATIONS:
European Food Safety Authority, Parma, Italy

BACKGROUND:
In the European Union (EU), campylobacteriosis is the most frequently reported food-borne illness in humans with broiler meat considered to be an important food-borne source. In order to establish baseline and comparable values for all Member States, an EU-wide baseline survey was carried in 2008 out at slaughterhouse level to determine the prevalence of Campylobacter-colonised broiler batches and of Campylobacter-contaminated broiler carcasses.

METHODS:
A total of 10,132 batches sampled from 561 slaughterhouses in 26 European Union Member States (MSs), plus Norway and Switzerland, were included in the survey. From each randomly selected batch pooled caecal contents samples were collected and examined for Campylobacter. From the same batch one carcass was collected after chilling and the neck skin together with the breast skin was examined for the presence of Campylobacter, in addition to the determination of the Campylobacter counts.

RESULTS:
Campylobacter was detected in the batches and on carcasses in all participating countries. The EU prevalence of Campylobacter-colonised batches was 71.2% and that of Campylobacter-contaminated carcasses was 75.8%. The MSs' prevalence ranged from 2.0% to 100.0% and from 4.9% to 100.0%, respectively. The results of the counts of Campylobacter on carcasses showed substantial variation among the countries in contamination levels. About two-thirds of the Campylobacter isolates from the batches as well as from the carcasses were identified as Campylobacter jejuni, while one-third was Campylobacter coli.

CONCLUSIONS:
The Campylobacter baseline figures may be used in the future to follow trends and to evaluate the impact of control and monitoring programmes. The figures also provide useful information for setting reduction and performance objectives and possibly for evaluating some potential intervention methods.

PRESENTED BY: DR FRANK BOELAERT

20100327 Oral Zoonoses 2

Keywords: Salmonella, pigs, breeding pigs, survey, prevalence, EU.

Analysis of the baseline survey on the prevalence of Salmonella in holdings with breeding pigs in the EU, 2008

Giusi Amore, Frank Boelaert, Pia Mäkelä

AFFILIATIONS:
Zoonoses Data Collection Unit, European Food Safety Authority, Parma, Italy

BACKGROUND:
In order to reduce the incidence of human salmonellosis in the European Union (EU), Community legislation foresees the setting of Salmonella reduction targets for food-animal populations including breeding pigs. To set such a target, an EU-wide baseline survey was conducted in 2008 to determine the prevalence of Salmonella in holdings with breeding pigs across Member States (MSs).

METHODS:
Sampling took place between January and December 2008. A total of 1,609 breeding holdings and 3,508 production holdings from 24 EU MSs, plus Norway and Switzerland, were included in the survey. In each randomly selected holding, one fresh voided pooled faecal sample was collected from every 10 randomly chosen pens (or groups or yards) of breeding pigs. All samples were tested for presence of Salmonella and all isolates were serotyped.

RESULTS:
The EU prevalence of Salmonella-positive holdings with breeding pigs was 31.8% and all but one of the 24 participating MSs detected Salmonella in at least one holding. The EU prevalence of Salmonella-positive breeding holdings was 28.7%, varying from 0% to 64.0% among MSs. The EU prevalence of Salmonella-positive production holdings was 33.3%, while the MSs' prevalence varied from 0% to 55.7%. Salmonella Derby and Salmonella Typhimurium were the most frequently isolated serovars in both types of holdings. Salmonella monophasic isolates 4,[5],12:i:- were also found in several MSs.

CONCLUSIONS:
This baseline survey provided comparable estimates of the prevalence of Salmonella-positive holdings with breeding pigs and a description of the distribution of Salmonella serovars, across the EU. In addition to support the setting of the EU Salmonella reduction targets, these results may also be used in the future to follow trends and to evaluate the impact of control programmes.

PRESENTED BY: DR GIUSI AMORE

PARALLEL SESSION **ABSTRACTS**

20100253 Oral Zoonoses 2

Keywords: Salmonella, broiler carcasses, chicken, survey, prevalence, EU

Analysis of the baseline survey on the prevalence of Salmonella on broiler carcasses in the EU, 2008

Maria Teresa da Silva Felício, F. Boelaert, P. Makela

AFFILIATIONS:
European Food Safety Authority, Parma, Italy

BACKGROUND:
In the European Union, salmonellosis is the second most frequently reported food-borne illness in humans. Broiler meat is considered to be an important food-borne source of this human disease. In order to establish baseline and comparable values for all Member States, a European Union-wide baseline survey was carried out at slaughterhouse level to determine the prevalence of Salmonella-contaminated broiler carcasses.

METHODS:
Sampling took place between January and December 2008. A total of 10,035 broiler batches sampled from 561 slaughterhouses in 26 European Union Member States, plus Norway and Switzerland, were included in the survey. From each selected batch one carcass was collected immediately after chilling and the neck skin together with the breast skin was examined for the presence of Salmonella.

RESULTS:
Twenty-two Member States and one non-Member State isolated Salmonella from the broiler carcass samples, with a Community prevalence of Salmonella-contaminated broiler carcasses of 15.7%. This prevalence varied widely among Member States, from 0.0% to 26.6%. However, one Member State had an exceptionally high prevalence of 85.6% with the majority of isolates being Salmonella Infantis. The Community prevalence of Salmonella Enteritidis or Salmonella Typhimurium-contaminated broiler carcasses was 3.6%, varying from 0.0% to 9.6% among Member States. Salmonella Infantis and Salmonella Enteritidis were the two most frequently isolated serovars on broiler carcasses in the EU and accounted for about one-third and one-sixth of the Salmonella isolates, respectively.

CONCLUSIONS:
The Salmonella baseline figures may be used in the future to follow trends and to evaluate the impact of control and monitoring programmes. The figures also provide useful information for setting reduction and performance objectives and possibly for evaluating some potential intervention methods.

PRESENTED BY: MS MARIA FELÍCIO

20100183 Oral Vaccine preventable diseases 2

Keywords: Mumps, outbreak, MMR, student, vaccine effectiveness, Northern Thailand

MMR Vaccine Effectiveness for Preventing Mumps in a Rural School, Northern Thailand, November 2009 – February 2010

Auttakiat Karnjanapiboonwong (1), W. Chaifoo (2), T. Khempet (2), C. Darapong (1), M. Sunantakool (2), P. Thammawijaya (1)

AFFILIATIONS:
1. Field Epidemiology Training Program (FETP), Bureau of Epidemiology, Department of Diseases Control, Nonthaburi, Thailand.
2. Pangmapha Hospital, Ministry of Public Health, Thailand

BACKGROUND:
Incidence rate of mumps in Northern Thailand has increased from 14.1 to 49.6 per 100,000 population during 2007-2009 despite one dose of MMR (Mumps-Measles-Rubella) vaccine administered to grade 1 students nationwide since 1996. In February 2010, a mumps outbreak in a rural school was reported. A study was conducted to describe epidemiological characteristics, and assess coverage and effectiveness of MMR vaccine.

METHODS:
We reviewed surveillance data and medical records, and surveyed students in School A to find mumps cases. A suspected case was a student diagnosed by physician as mumps, parotitis, or sialadinitis at mandibular or sublingual areas during August 2009-February 2010. Serum samples of 2 patients were tested for mumps IgM by ELISA. A retrospective cohort study was conducted to estimate MMR vaccine coverage and effectiveness of preventing mumps among kindergarten and grade 1-6 students.

RESULTS:
A total of 100 suspected cases and 2 confirmed cases of mumps were identified from hospital records. Of those, 94 (92.2%) were in school-age children, 35 (31.9%) were students from School A. In the school A survey, 109 cases (13.8%) were identified among 791 students. The attack rates (ARs) in kindergarten, grade 1-6, and 7-9 students were 38.8%, 9.3%, and 3.4%, respectively. MMR vaccine coverage in School A was 87.8%. ARs in vaccinated students grade 1-6 were 0%, 7.7%, 8.1%, 11.9%, 13.2%, and 22.6%, respectively. Vaccine effectiveness was estimated 73.3% (95%CI= 60.9%-81.7%). No error in the cold-chain and administration of vaccine was found.

CONCLUSIONS:
Single-dose MMR vaccine was 73% effective in preventing mumps with evidence of waning immunity. The findings support a revision of vaccination schedule to give MMR vaccine to kindergarten children with a booster dose in primary school students.

PRESENTED BY: DR AUTTAKIAT KARNJANAPIBOONWONG

20100236 Oral Vaccine preventable diseases 2

Keywords: Population surveillance, Patient acceptance of health care, Papilloma virus infections, Vaccination, Survival analysis, Registries

Determinants for uptake of the HPV routine vaccination among Danish girls: the experience one year into the programme

Katarina Widgren (1, 2), Jacob Simonsen (3), Palle Valentiner-Branth (2), Kåre Mølbak (2)

AFFILIATIONS:
1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
2. Department of Epidemiology, Statens Serum Institut (SSI), Copenhagen, Denmark
3. Department of Epidemiological Research, Statens Serum Institut (SSI), Copenhagen, Denmark

BACKGROUND:

Persisting infection with human papilloma virus (HPV) is a prerequisite for cervical cancer, which causes 175 yearly deaths and substantial morbidity in Denmark. In January 2009, vaccination against HPV for 12 year-old girls was introduced into the Danish childhood vaccination programme. After the first year of the programme we assessed the determinants for uptake of the vaccination among all eligible girls in Denmark in order to evaluate the equity of the programme. The uptake of other vaccinations is 80-90%.

METHODS:

All vaccinations given within the vaccination programme are reported to a central register. We linked this vaccination information to the Danish population register, which holds information on demographic factors. We looked at the coverage and used Cox regression to compare the rates of vaccination between sub-groups in the population, e.g. by number of siblings, age of mother (at the daughter's birth), and country of origin.

RESULTS:

In all, 28 260 of 33 838 (83.5%) eligible girls received at least one vaccination within the programme. Girls with ≥5 siblings had lower vaccination uptake than those without siblings (Hazard Ratio 0.85, 95%CI 0.78-0.93). The uptake was higher if the mother was in the 20-29 age group than if in the 10-19 age group (HR 0.85, 95%CI 0.79-0.91). The highest uptake was found among Danish-born girls with Danish parents, whereas e.g. girls born in other EU/EFTA countries living in Denmark had a lower uptake (HR 0.79, 95%CI 0.72-0.85).

CONCLUSIONS:

The uptake of the HPV-vaccination was high in Denmark and comparable with other vaccinations. However, we identified demographic factors influencing the uptake. Future vaccination awareness campaigns should target the groups in the population with a lower uptake highlighted in this study.

PRESENTED BY: DR KATARINA WIDGREN

20100167 Oral Vaccine preventable diseases 2

Keywords: vaccine, herd immunity, meningococcal disease, trends, seasonality

Trends in Invasive Meningococcal Disease in London between 2000 and 2010 following the introduction of the Meningococcal C conjugated Vaccine

Olivier le Polain de Waroux (1, 2), S. J. Gray (3), E. B. Kaczmarski (3), H. Maguire (1)

AFFILIATIONS:
1. Health Protection Agency (HPA), London Region Epidemiology Unit
2. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
3. HPA, South East London Health Protection Unit (SEL HPU)
4. London borough of Southwark Environmental Health department

BACKGROUND:

The Meningococcal C Conjugated (MCC) vaccine was introduced in London in 2000 in the under 18 year olds. We aimed to explore the temporal trends of Invasive Meningococcal Disease (IMD) in London between 1 January 2000 and 31 March 2010 to estimate the effects of vaccination and explore the trends in non-C meningococcal disease.

METHODS:

We extracted all London IMD cases (including confirmed and non lab-confirmed (probable) cases) from the Enhanced Surveillance of Meningococcal Disease database. These data comprise cases notified by physicians to the local London Health Protection Units and serogroup and serotype information provided by the Meningococcal Reference Unit. Population denominator data were obtained from the Office of National Statistics. Poisson regression models were used to model the trends, controlling for age and seasonality. Akaike Information Criterion was used for model fitting.

RESULTS:

We observed annual seasonality with winter peaks (p-value <0.001). The overall incidence per 100,000 decreased from 10.3 in 2000 to 2.3 in 2009. The incidence of group C declined significantly (Incidence Rate Ratio (IRR) 0.63, p<0.001), more in the vaccinated than in the unvaccinated group (IRR 0.57 vs. IRR 0.74). Significant declines in group B (IRR=0.90 per year, p<0.001) and in probable cases (IRR= 0.88 per year, p<0.001) were also observed. Model fitting was poorer in probable cases with a less marked seasonality (summer plateaus instead of troughs).

CONCLUSIONS:

Our analysis confirms the strong herd immunity effects of the MCC vaccine, probably through reduction of nasal carriage. The results also highlight the general decrease in incidence in other serogroups, suggesting no evidence of capsular replacement following vaccination. Summer patterns in the incidence of probable cases could be due to other pathogens.

PRESENTED BY: DR OLIVIER LE POLAIN

PARALLEL SESSION **ABSTRACTS**

20100267 Oral Vaccine preventable diseases 2

Keywords: vaccine-preventable diseases, immunization strategies, adult vaccination, vaccine coverage

Adult vaccination strategies in Europe – an overview from a VENICE II project

Elisabeth Eva Kanitz (1,2), C. Giambi (1), L. Wu (3), R. Strikas (3), F. D'Ancona (1) and on behalf of the VENICE (Vaccine New Integrated Collaboration Effort) II project gatekeeper group (4)

AFFILIATIONS:
1. Istituto Superiore di Sanità, Rome, Italy
2. European Programme of Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control, Stockholm, Sweden
3. National Vaccine Program Office (NVPO) within the U.S. Department of Health and Human Services, Washington, DC, United States of America
4. The list of gatekeepers is available on VENICE website: http://venice.cineca.org

BACKGROUND:
Vaccination in adults is not well described in Europe. In June-August 2010 the VENICE II project (funded by ECDC) performed a survey in collaboration with the NVPO to gain an overview of vaccination strategies in adults in EU- and EFTA-countries.

METHODS:
In June 2010, VENICE representatives of all 29 EU-/EFTA-countries received an online questionnaire including questions on vaccine schedule, recommendations, funding and coverage in adults for 17 vaccine-preventable diseases.

RESULTS:
Up to date, 27 (93%) countries participated in the survey. The definition of "adults" varied among countries (median lower age threshold 18 years, range 15-25). Preliminary analysis showed that five (19%) countries had a formal comprehensive schedule specifically for adults. Twenty-one countries (78%) recommended tetanus-diphtheria (Td) vaccines for adults in 10-year intervals, and 16/27 (59%) countries offered Td free of charge. Three (11%) countries recommended pertussis and two countries (7%) polio vaccine for all adults as 10-year boosters. Vaccines recommended for specific adult groups include measles-mumps-rubella vaccine, 11 (41%) countries in the context of measles or mumps prevention and 14 (52%) countries specifically for rubella prevention. Vaccinations recommended for groups at increased risk included varicella in 9/27 countries, pneumococcal (16/27), meningococcal (16/27), hepatitis A (12/27), BCG (10/27), and pertussis (3/27) vaccines. None of the surveyed countries routinely computed vaccine coverage in adults, except for influenza in 20/27 countries, hepatitis B vaccine (23/27) and Td-vaccine (5/26). The meaning of "recommended" was not comparable among countries, as this does not always imply public funding.

CONCLUSIONS:
Vaccination strategies for adults varied across Europe. Vaccine coverage data for adults should be collected routinely as is done for children. This survey provides the first steps towards European adult vaccination guidelines.

PRESENTED BY: MRS ELISABETH EVA KANITZ

20100116 Oral Vaccine preventable diseases 2

Keywords: Varicella, Chickenpox Vaccine, Public Health, Sicily

Vaccine Effectiveness in a Large Dynamic Cohort of Children Followed 5 Years After Introduction of Universal Varicella Vaccination in Sicily, Italy – 2003–2007

Emilie Chary (1), M-L. Kürzinger (1), M. Logiudice (2), I. Barberi (3), E. Perinetti (4), P. Saddier (5), T. N. Tran (5), T. Derrough (1).

AFFILIATIONS:
1. Epidemiology, Sanofi Pasteur MSD Corporate, Lyon, France
2. Paediatrician, Palermo, Italy
3. Paediatric Sciences Dipartimento di Scienze Pediatriche, University of Messina, Italy
4. Medical, Sanofi Pasteur MSD Italy, Roma, Italy
5. Epidemiology, Merck Research Laboratories, North Wales, PA, United States

BACKGROUND:
Universal varicella vaccination with a single dose of VARIVAX® (Oka/Merck) was introduced in Sicily, Italy in 2003 and recommended for children 12-23 months and susceptible 12-year-olds. A comprehensive surveillance study was conducted to monitor the incidence rate (IR) of varicella among children and estimate vaccine effectiveness (VE) in routine conditions of use.

METHODS:
Children 0-14 years of age were enrolled and followed on a regular basis from 2003 to 2007 by a random sample of 30 family paediatricians (FP) in Sicily. A surveillance system collected data on varicella vaccination and disease (prospectively from 2005 to 2007 and retrospectively in 2003 and 2004). Study data were actively monitored throughout the surveillance period. IRs of varicella by vaccination status and VE (one minus the ratio of IRs) per year of follow-up since vaccination were estimated.

RESULTS:
A total of 21,508 children were included in the study. Among 8,252 vaccinated children, 22 breakthrough varicella cases were reported. Breakthrough cases were milder than cases in unvaccinated children. Overall IR declined significantly from 87.7/1000 person-years (PY) in 2003 to 9.0/1000 PY in 2007 ($p<0.001$); from 2003 to 2007, IR decreased from 2.9 to 1.4/1000 PY in vaccinated, and from 90.9 to 16.0 in unvaccinated children. VE remained stable at 99.4% (95% CI: 97.1; 99.9) 5 years postvaccination.

CONCLUSIONS:
Only 5 years following the introduction of routine varicella vaccination with VARIVAX®, a ~10-fold decrease in varicella incidence and a high and sustained VE were observed despite incomplete vaccine coverage (~66% in 2007 in 2nd year of life). These data confirm that public health impact of childhood varicella vaccination could be as substantial in Europe as demonstrated in the United States.

PRESENTED BY: PROF IGNAZIO BARBERI

20100299 Oral Surveillance 2

Keywords: Legionella, capture-recapture method

Legionnaires' Disease in Northern Portugal 2004-2008: Completeness of notification systems

Carlos Carvalho (1), I. Andrade (1), J. Dias (1), M. Vieira (1), A. Correia (1)

AFFILIATIONS:

1. Public Health Department, Northern Regional Health Administration, Porto, Portugal

BACKGROUND:

Legionnaires' Disease (LD), an atypic pneumonia caused by Legionella bacteria, is increasingly concerning European Public Health Authorities. In Portugal the Legionnaires' Disease Integrated Epidemiological Surveillance Program (LDP), created in 2004, gathers information from clinical and laboratory notification. This study is an attempt of determining the completeness of each LD data source available in Portugal and estimating the real number of cases occurred in the northern health region (NHR) from 2004 to 2008.

METHODS:

The capture-recapture method was applied using log-linear models. Three LD data sources were used: clinical notification (DDO), laboratory notification (Lab) and hospital discharge databases (GDH). Estimated incidence rates were derived using the NHR average population in the considered period.

RESULTS:

Northern Public Health Department received 127 DDO and 91 laboratory notifications; from the GDH databases 297 cases were retrieved. Log-linear model included one two-way interaction between Lab and DDO. The estimated number of LD cases was 413 (95%CI 385 – 442), corresponding to an annual incidence rate of 23,8 per million. The case-ascertainment was 84%; DDO and Lab system sensitivity was below 43%.

CONCLUSIONS:

Capture-recapture method is an important tool to overcome the undernotification of LD. Using this method the estimated incidence rate was 23,8 cases per million.year (2004-2008), more than three times the reported incidence for the same period in Portugal (7,6 cases per million.year, using DDO and Lab notification sources) and twice the European annual incidence rate (between 10 and 12 new cases per million.year in the last 7 years). Despite low completeness of DDO and Lab notification systems, there was some improvement in their performance from 2006 on. However, better notification is required for effective surveillance, allowing timely intervention for LD control and prevention.

PRESENTED BY: DR CARLOS CARVALHO

20100184 Oral Surveillance 2

Keywords: Salmonella infections/epidemiology, Population surveillance/methods, laboratories, evaluation studies, France/epidemiology

Completeness and representativity of the Salmonella voluntary surveillance system in France, 2008

Paloma Carrillo-Santisteve (1, 2), N. Jourdan-da Silva (1), S. Le Hello (3), MJ. Letort (1), M. Fromage (4), F.-X. Weill (3).

AFFILIATIONS:

1. French Institute for Public Health Surveillance (InVS), Saint Maurice, France
2. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control, Stockholm, Sweden
3. Institut Pasteur, National Reference Centre for Salmonella (NRC), Paris, France
4. French Health Products Safety Agency (AFSSAPS), Saint Denis, France

BACKGROUND:

Surveillance of human salmonellosis in France is based on a voluntary network. Approximately 1,400 medical laboratories send their isolates and their reports to the National Reference Centre for Salmonella (NRC). In 2008, 10,392 cases were reported. We conducted a study to evaluate the completeness and representativity of the Salmonella surveillance system in 2008 in France.

METHODS:

In 2009, the French Health Products Safety Agency (AFSSAPS) carried out a bacteriology quality control survey amongst all medical laboratories in France (n=3,375). Participation in this survey was mandatory. We added questions related to salmonella identification in 2008 to the questionnaire. Every laboratory had a unique anonymous code. We matched the survey data of each laboratory with the data of the NRC database. We carried out a descriptive analysis of Salmonella isolates reported in the AFSSAPS survey and in the NRC database. Using AFSSAPS survey as gold standard we calculated the completeness and representativity of reporting of salmonella isolates in total and by laboratory status (private and hospital-based), laboratory region and laboratory activity (low, 0-2 isolates/year; medium, 3-9 isolates/year; high >10 isolates/year).

RESULTS:

Overall, 3217/3375 (95.3%) laboratories participated to the AFSSAPS survey; the number of laboratory-confirmed cases in 2008 was 15,650. The NRC compiled the 66.4% of these cases. Representativeness differed by laboratory status (79% for hospital-based, 58% private), region (<66% for the south and Brittany region) and activity (75% medium activity laboratories, 62% high).

CONCLUSIONS:

The majority of all Salmonella isolated in French laboratories are documented by the NRC. To improve completeness and representativity, efforts should focus on including more laboratories from Brittany and southern regions and more private laboratories.

PRESENTED BY: DR PALOMA CARRILLO SANTISTEVE

PARALLEL SESSION **ABSTRACTS**

20100018 Oral Surveillance 2

Keywords: pertussis, epidemiology, surveillance

Pertussis in Europe: trends and the need for improved surveillance

Sabrina Bacci (1), S. Glissman (1), H. Bang (1,) M. Muscat (1)

AFFILIATIONS:
1. EUVAC.NET Hub, Department of Epidemiology, Statens Serum Institut, Copenhagen, Denmark

BACKGROUND:
Despite being a vaccine preventable disease for decades, pertussis is still endemic in Europe. We report on trends in incidence of pertussis in Europe in 2003-08 and describe selected epidemiological characteristics for 2008.

METHODS:
EUVAC.NET collected pertussis surveillance data from its participating countries with nationwide mandatory notification systems: 20 countries in 2003-04 and 2007, 22 in 2005, 21 in 2006, 28 in 2008. All cases meeting the case definition for national surveillance were analysed.

RESULTS:
During 2003-08, over 60,000 cases were reported, corresponding to an average annual incidence of 4.0 per 100,000 inhabitants (range: 3.3-4.9). The highest incidences were observed in Norway in 2006 (142.0), and the Netherlands in 2008 (50.3). Infants were mostly affected (33.8 per 100,000); preliminary analysis shows increasing incidence in the 15-19 year-old age-group (from 5.0 in 2003 to 9.3 in 2007). In 2008, 77% (n=16,722) cases were laboratory-confirmed, with large variation between countries (range: 0-100%); 11% (n=2,156) were unvaccinated, 50% (n=10,273) were vaccinated, and in 38% (n=7,779) the vaccination status was unknown.

CONCLUSIONS:
Surveillance data indicates that the incidence of pertussis in Europe is high despite pertussis vaccination. Variation between countries could be explained by different disease epidemiology and heterogeneous surveillance systems including the different extent of laboratory confirmation, and various diagnostic methods used. Indeed, laboratory confirmation is notoriously difficult. Our results also demonstrate the need for improved quality of data that would allow more accurate descriptions of the epidemiology of the disease and comparability between countries. To support quality of diagnosis at country level and enhance surveillance at EU level, EUVAC.NET included a new activity in 2009 aiming to promote standardization of pertussis diagnostic tools.

PRESENTED BY: DR SABRINA BACCI

20100048 Oral Surveillance 2

Keywords: Hemolytic-Uremic Syndrome, Enterohemorrhagic Escherichia coli, Escherichia coli O157, Disease Outbreaks, Epidemiology, Microbiology

An outbreak caused by Sorbitol-fermenting E.coli O157 in Norway in 2009: Are there laboratories unable to detect cases?

Tone Bruun (1, 2), T.-L. Stavnes (1), A. Wester (1), J. Lassen (1), Karin Nygård (1), L. Vold (1)

AFFILIATIONS:
1. Norwegian Institute of Public Health (NIPH)
2. Norwegian Field Epidemiology Training Programme (Nor-FETP)

BACKGROUND:
Enterohaemorrhagic Escherichia coli (EHEC) causes diarrhea in humans and 10% of infected children develop severe disease, Hemolytic-Uremic-Syndrome (HUS). In 2009, Norway experienced a national outbreak caused by sorbitol-fermenting (SF) E.coli O157, a rare variant of EHEC not detected by traditional laboratory methods. Thirteen children were ill, nine developed HUS and one died. Cases were geographically spread, but no cases were detected in Oslo or surroundings. Only four diarrhea-cases were detected. We conducted a laboratory survey on methods for SFO157 detection, to assess whether cases could have remained undetected in certain regions.

METHODS:
In June 2009, we sent questionnaires to all 21 medical-microbiological laboratories in Norway. We collected data on number of stool samples analysed for EHEC during 2004-2008, proportion EHEC-positive by age group, criteria for EHEC analysis and detection methods.

RESULTS:
All laboratories responded. 2006 was a peak year for number of analyses and EHEC-positive results. Mid-Norway had highest incidence of cases 2004-2008, and tested more samples per inhabitant than other regions. They had also most cases during the outbreak. After 2006 almost all laboratories have started testing children with acute gastroenteritis, cases with bloody diarrhoea or HUS for EHEC. Many changed their methodology, and even if methods differ, 19 laboratories are now able to detect other serotypes than the classical O157, including SFO157.

CONCLUSIONS:
Mid-Norway performs most tests and has the highest incidence of EHEC. Because of improvements after an outbreak in 2006, most laboratories today are able to detect a range of EHEC, including SFO157. We therefore believe the geographical distribution of patients in the 2009-outbreak is real. However, testing criteria differ between laboratories and mild infections may have passed unnoticed.

PRESENTED BY: MRS TONE BRUUN

20100224 Oral Surveillance 2

Keywords: Streptococcus agalactiae; epidemiology; population surveillance; Great Britain

Shifting epidemiology of invasive group B streptococcal disease in England

Theresa Lamagni (1), R. Guy (1), A. Efstratiou (1), E. Sheridan (1)

AFFILIATIONS:
1. Health Protection Agency Centre for Infections, London, UK

BACKGROUND:
In light of reported changes in the epidemiology of group B streptococcal (GBS) infection in other countries, surveillance reports were analysed to identify any recent changes in England, Wales and Northern Ireland, countries without universal antenatal screening programmes.

METHODS:
National surveillance data on invasive bacterial infection diagnosed by microbiology laboratories between 1975-2009 were extracted and analysed. Cases of invasive GBS infection were defined through the isolation of GBS from an otherwise sterile site or from a clinical diagnosis of meningitis. Infection rates were calculated from 1990 onwards owing to reduced coverage of earlier surveillance data.

RESULTS:
Between 1975-2009, 26,005 iGBS infection reports were made in England, Wales and Northern Ireland. GBS were isolated from blood culture in 90% of patients and CSF from 6%. Population rates of iGBS infection increased over the past decade, from 1.75 (2000) to 2.93/100,000 (2009). Less than 50% of iGBS infection was diagnosed in adults before 1988 after which the proportion increased to reach 67% by 2000. Rates of early (0-6d) onset disease fluctuated between 1998-2009, ranging from 0.28 to 0.39/1000 live births. In contrast, late (7-90d) onset disease increased steadily between 1998 and 2009 (0.16 to 0.30/1000 live births). The proportion of all early onset sepsis (bacteraemia only) due to GBS increased between 1975-1993 from 21% to 35%, subsequently falling to 19% in 2009. Erythromycin resistance increased substantially after 2001 (5%), with 14% of iGBS isolates in 2009 reported as resistant, 15% in early onset cases.

CONCLUSIONS:
The epidemiology of iGBS disease in the UK has undergone considerable change over the past three decades. The increase in macrolide resistance raises concerns over the second-line agent of choice for treatment and prophylaxis in penicillin-allergic patients.

PRESENTED BY: DR THERESA LAMAGNI

20100079 Oral Molecular epidemiology

Keywords: Hepatitis C, immunity, superinfection, vaccine, cohort

Does Hepatitis C infection confer immunity? Cohort data suggests a subtype specific protection

M. Rondy (1, 2), T.J.W. van de Laar (3, 4), S.M. Bruisten (3, 5), M. Prins (3, 5), M.W. van Ballegooijen (1)

AFFILIATIONS:
1. Centre for Infectious Disease Control, National Institute for Public Health and the Environment, Bilthoven, The Netherlands.
2. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Diseases Prevention and Control (ECDC), Stockholm, Sweden.
3. Cluster of Infectious Diseases, Public Health Service, Amsterdam, The Netherlands.
4. Department of Medical Microbiology and Infection Control, VUmc University Medical Center, Amsterdam, the Netherlands
5. Department of Internal Medicine, Centre for Infection and Immunity Amsterdam (CINIMA), Academic Medical Center, Amsterdam, The Netherlands

BACKGROUND:
Hepatitis C virus (HCV), highly prevalent among injecting drug users (DUs), is classified into seven genotypes. The occurrence of HCV reinfection and superinfection in humans is well-recognised. Conflicting evidence exists on whether a prior HCV infection elicits a (partial) protective immune response upon re-exposure. To explore the dynamics of HCV multiple infection and guide vaccine-development, we investigated the existence of genotype specific protective immunity.

METHODS:
All DUs (n=91) with incident or recent HCV infection participating in the Amsterdam Cohort Study were included and followed-up at a median of 3.1 years (IQR: 0.3-11.2 years). At regular intervals HCV-RNA was determined and the HCV-NS5B region sequenced (436 bp). For each DU, consecutive visits were classified as concordant infections (CI, same genotype) or discordant infections (DI, different genotypes). Incidence rates ratio (DI/CI IRR) of discordant over concordant infections was calculated. Using a permutation test, we compared the observed DI/CI IRR with the expected value in the absence of genotype specific immunity. This expected value was computed by randomly substituting consecutive isolates with sequences from the background genotype distribution (based on seroconversion samples).

RESULTS:
Incidence of new infections was 6.71/100 person-year among the 75 DUs with two or more HCV-RNA positive visits. DI/CI IRR among observed data was 3.86, significantly higher than the expected value in absence of immunity (1.73, $p<0.01$). The genotype distribution in the DU-cohort did not significantly change over time.

CONCLUSIONS:
The higher proportion of discordant consecutive infections among observed data compared to the expected proportion in absence of immunity suggests that protection against subsequent HCV infection with the same genotype can occur. Our study stresses the need for including epitopes of different HCV genotypes in future vaccine developments.

PRESENTED BY: MR MARC RONDY

PARALLEL SESSION **ABSTRACTS**

20100100 Oral Molecular epidemiology

Keywords: Molecular epidemiology, tuberculosis, foreign-born, latent tuberculosis infection

Combining molecular and epidemiological data to study the transmission of tuberculosis in the foreign- and US-born population of Rhode Island

Jessica Vanhomwegen (1, 2), A. Kwara (3), M. Martin (4), F. S. Gillani (3), A. Fontanet (2), P. Mutungi (3), J. Crellin (3), S. Obaro (3), M. Gosciminski (3), E. Carter (3), N. Rastogi (5).

AFFILIATIONS:
1. European Public Health Microbiology Training Programme (EUPHEM), European Center for Disease Prevention and Control (ECDC), Stockholm, Sweden
2. Institut Pasteur, Paris, France
3. Alpert Medical School at Brown University, Providence, USA
4. Rhode Island Department of Health, Providence, USA
5. Institut Pasteur, Pointe-à-Pitre, France

BACKGROUND:
The recent decline in tuberculosis (TB) cases in the US occurred predominantly in the US-born population. In Rhode Island, foreign-born persons account for 65% of incident tuberculosis annually. We investigated the molecular-epidemiological differences between foreign- and US-born TB patients in Rhode Island, in order to identify TB transmission patterns and re-orient TB-control activities.

METHODS:
We obtained demographic and clinical data for 265/327 culture-confirmed TB cases in Rhode Island between 1995 and 2004. Results of two independent genotyping techniques, spoligotyping and 12-loci Mycobacterial Interspersed Repetitive Unit typing, were combined to identify patient isolates sharing identical fingerprinting patterns. These isolates, described as clustered, were defined as resulting from recent transmission. Multivariable logistic regression was performed to identify independent predictors of recent TB transmission.

RESULTS:
Of the 265 patients, 97 (36.6%) were classified in clusters. US-borns (Odds Ratio (OR) 5.8; 95% confidence interval (CI) 2.4-14.2), Hispanics (OR 8.6; 95% CI 3.0-24.7), Asian/Pacific Islanders (OR 6.1; 95% CI 2.0-18.3), and uninsured persons (OR 0.4; 95% CI 0.2-0.9) were more likely to be clustered. Overall, 72.2% of the identified clusters included only individuals originating from the same region. Of the mixed population clusters, reflecting transmission between US- and foreign-borns, 80.0% arose from a foreign-born index case. In addition, mixed clusters involved mostly immigrants staying in the US >5 years (OR 4.0; 95% CI 1.1-14.0).

CONCLUSIONS:
Our data suggests that many incident cases have arisen from reactivation or acquisition of TB infections outside of Rhode Island..Nevertheless, transmission,occurred among the US-born and foreign-born population, as well as between communities, suggesting the need to improve public health interventions in both populations.

PRESENTED BY: MISS JESSICA VANHOMWEGEN

20100118 Oral Molecular epidemiology

Keywords: microarray, Legionella pneumophila, genome analysis

Comparative genome analysis of a large Dutch Legionella pneumophila strain

Ed Yzerman (1), J. Den Boer (1), M. Caspers (2), A. Almal (3), B. Worzel (3), W. Van der Meer (4), R. Montijn (2), F. Schuren (2, 5)

AFFILIATIONS:
1. Regional Public Health Laboratory of Haarlem, Haarlem, the Netherlands.
2. Department of Microbiology, TNO, Zeist, the Netherlands.
3. Genetics Squared, Ann Arbor, MI 48108, USA.
4. Vitens Research, Leeuwarden, the Netherlands

BACKGROUND:
Discrimination between pathogenic and non-pathogenic strains within a bacterial species is currently underexplored. Genomic analyses have clearly shown the enormous variability in genome composition between different strains of a bacterial species. We have used Legionella pneumophila, the causative agent of Legionnaire's disease, to search for genomic markers related to pathogenicity.

METHODS:
During a large surveillance study in The Netherlands well-characterized patient-derived strains and environmental strains were collected. A mixed-genome microarray was used to perform comparative-genome analysis of 257 strains from this collection.

RESULTS:
Microarray analysis indicated that 480 DNA markers (out of in total 3360 markers) showed clear variation in presence between individual strains, and these were selected for further analysis. Unsupervised statistical analysis of these markers showed enormous genomic variation within the species but no correlation with a pathogenic phenotype. We therefore used supervised statistical analysis to identify discriminating markers. Genetic programming was used both to identify predictive markers and to define their interrelationships. A model consisting of five markers was developed that correctly predicted 100% of the pathogenic strains and 62% of the environmental strains. This result was confirmed with a reserved test set not used in creating the model, with a correct prediction of 100% of the pathogenic strains and 69% of the environmental strains.

CONCLUSIONS:
A novel approach for identifying predictive markers enabling discrimination between pathogenic and environmental isolates of L. pneumophila is presented. Out of over 3000 possible markers, five were selected that enabled correct prediction of all pathogenic strains included in this study. This novel approach for identifying predictive markers can be applied to all bacterial species, allowing for better discrimination between strains well equipped to cause human disease and relatively harmless strains.

PRESENTED BY: MR JEROEN DEN BOER

20100121 Oral Molecular epidemiology

Keywords: Legionnaires disease, Geographical information system, cluster detection

Legionella Pneumonia Geographical Information System: a helpful tool in cluster detection

Sjoerd Euser (1), J. Bruin (1), E. Yzerman (1), J. Den Boer (1)

AFFILIATIONS:

1. Regional Public Health Laboratory of Haarlem, Haarlem, the Netherlands.

BACKGROUND:

Legionanires' disease is an airborne infectious disease named after a point-source outbreak of pneumonia among members of the American Legion.

METHODS:

In 2002, a National Legionella Outbreak Detection Programme (NLODP) was installed in the Netherlands, based on the observation that outbreaks of Legionnaires' disease are often preceded and followed by small clusters of solitary cases. Within this programme, all reported Legionnaires' disease patients and their identified potential sources of infection are registered in a central database by the Legionella Source Identification Unit (LSIU). This LSIU is also available to all Municipal Health Services to perform a sampling investigation of potential sources of Legionella infection. During the Legionnaires' disease outbreak in Amsterdam (2006), 31 cases were infected by a badly maintained cooling tower that was only identified as the source of infection after extensive research efforts. This outbreak emphasized the need for more advanced tools to enhance source identification within the NLODP. Geographical information systems are powerful instruments that can be used as visual aids for complex data, both during surveillance efforts and in outbreak situations

RESULTS:

Therefore, we developed a Legionella Pneumonia Geographical Information System (LP-GIS) that provides information on patients (patients characteristics, home address, first day of disease, microbiological diagnosis, isolated genotype from culture), and potential sources of infection (location, historic sampling results, isolated genotype from samples), and which is available for all Municipal Health Services in the Netherlands. With the LP-GIS, all information on patients and potential sources can be visualized at any desired level of geographical detail in one view.

CONCLUSIONS:

The LP-GIS enables the generation and immediate testing of hypotheses on the identification of Legionnaires' disease clusters during surveillance and in outbreak situations.

PRESENTED BY: MR SJOERD EUSER

20100217 Oral Molecular epidemiology

Keywords: bacterial meningitis, microbiological surveillance, epidemic

Microbiological surveillance of the two last 2009 and 2010 meningitis epidemics in Niger

Jean-Marc Collard (1), Z. Maman (2), S. Djibo (1), F. Sidikou (1), B. Issaka (1), P. Nicolas (3), H. Yacouba (2), J. Rocourt (1), J. F. Jusot (1) and M. Rabi (2)

AFFILIATIONS:

1. Centre de Recherche Médicale et Sanitaire (CERMES) – Institut Pasteur International Network, Niamey, Niger
2. Division des Statistiques, de la Surveillance et de la Riposte aux Epidémies (DSSRE), Ministère de la Santé Publique, Niamey, Niger
3. Unité du méningocoque, Centre Collaborateur OMS, Marseille, France

BACKGROUND:

Several different bacteria can cause meningitis but Neisseria meningitidis is one of the most important because of its potential to cause epidemics. The highest burden of meningococcal disease occurs in sub-Saharan Africa among which Niger is a hyperendemic area.

METHODS:

A reinforced national microbiological surveillance system was set up in 2002 in Niger to guide immunization campaigns against circulating meningococcal serogroups and to better understand the epidemiology of bacterial meningitis. This system is based on bacteriological (when possible) and PCR analyses of cerebrospinal fluids (CSF) referred to or collected by CERMES. A set of the selected strains of N. meningitidis are regularly sent to the WHO collaborative center for meningococcus in Marseille (France) for multi-locus sequence typing (MLST).

RESULTS:

The 2009 meningitis season was characterized by an early onset leading to 13 733 suspected clinical cases of meningitis at week 26 with a case fatality rate (CFR) of 4.2%. Serogroup A meningococcus (ST-7) was the predominant causative agent. Conversely, the 2010 meningitis season was characterized by a substantial increase of serogroup W135 meningococci (ST-11) almost absent since 2005. On 2714 clinical cases (CFR = 8.3%), 2051 CSF were analysed among which 959 had a bacterial etiology and 614 (64%) were serogroup W135 meningococci. For both season sound reactive vaccination campaigns allowed to progressively controlling the outbreak in most parts of the country.

CONCLUSIONS:

Meningitis outbreaks still remains unpredictable. This shows the importance of a sustained and reactive microbiological surveillance for choosing the right polysaccharide meningococcal vaccine to control the meningococcal outbreaks in the country.

PRESENTED BY: DR JEAN-MARC COLLARD

PARALLEL SESSION **ABSTRACTS**

20100326 Oral Vector borne diseases

Keywords: Active surveillance, tick-borne encephalitis, viral infections of central nervous system, laboratory diagnostics, endemic areas

Active surveillance of viral infections of central nervous system revealed previously unknown foci of tick-borne encephalitis in Poland

Hana Orlikova (1, 2), E. Rzepczak (2), A. Turczynska (2), J. Siennicka (3), J. Rogalska (2), P. Stefanoff (2)

AFFILIATIONS:
1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control, Stockholm, Sweden
2. Department of Epidemiology, National Institute of Public Health-National Institute of Hygiene, Warsaw, Poland
3. Department of Virology, National Institute of Public Health-National Institute of Hygiene, Warsaw, Poland

BACKGROUND:
In Poland, reporting of aseptic neurological infections (ANI), (unspecified or specified viral etiology), is mandatory. Among ANI, tick-borne encephalitis (TBE) has a focal geographical distribution. Passive ANI surveillance and limited laboratory TBE diagnostics may lead to uncovered TBE endemic regions. We performed active ANI surveillance in order to improve identification of TBE endemic areas.

METHODS:
Between March 2009 and April 2010, we implemented ANI active surveillance and TBE testing in 107 hospitals, located in 11/16 Polish provinces, covering 253/379 administrative districts. Public health officers verified hospital registers for hospitalization of ANI cases at infectious diseases, neurology and pediatrics departments. Free laboratory testing of serum and cerebrospinal fluid for TBE was offered in National Institute of Public Health in Warsaw. We analysed ANI reporting, and testing for TBE. We compared incidence (in endemic areas › 1/100,000) and geographical distribution of TBE identified during the study with surveillance outcomes in years 2004-2008.

RESULTS:
From March 2009 to April 2010, 1532 ANI suspicions were reported by the 107 hospitals, of which 994 (65%) were finally classified as ANI. From 978/1532 (64%) suspect ACI tested for TBE, 250/978 (26%) were confirmed as TBE. TBE cases were reported in 97/379 (26%) Polish districts, of which 27 notified no TBE case in 2004-2008. Incidence of TBE was › 1/100,000 in 68 districts during the study, comparing to 43 districts in 2004-2008. In 2009, TBE incidence raised to 0.95/100,000 comparing to 0.62/100,000 average 5 year incidence in 2004-2008.

CONCLUSIONS:
Conducting active ANI surveillance allowed identification of areas with previously unknown TBE occurrence. We recommend continuation of routine TBE testing in Polish hospitals, which might contribute in detecting areas where to advise preventive vaccination.

PRESENTED BY: DR HANA ORLIKOVA

20100141 Oral Vector borne diseases

Keywords: Surveillance, tick-borne encephalitis, Lyme borreliosis, predictive positive value, cross-border comparison, incidence

Notable differences in outputs of surveillance systems of Lyme borreliosis and tick-borne encephalitis in two neighbouring countries documented by comparison cross-bordering regions of Poland and Czech Republic, 1999–2008

Hana Orlikova (1, 2), M. Rosinska (2), C. Benes (3), A. Turczynska (2), V. Prikazsky (4), P. Stefanoff (2)

AFFILIATIONS:
1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control, Stockholm, Sweden
2. Department of Epidemiology, National Institute of Public Health-National Institute of Hygiene, Warsaw, Poland
3. Centre of Epidemiology and Microbiology, National Institute of Public Health, Prague, Czech Republic
4. Preparedness and Response Unit, European Centre for Disease Prevention and Control, Stockholm, Sweden

BACKGROUND:
Lyme borreliosis (LB) and tick-borne encephalitis (TBE) are endemic in Czech Republic and Poland, and mandatory reported in both countries. Laboratory testing availability is lower in Poland. We assessed the performance of both surveillance systems comparing Polish and Czech cross-bordering regions.

METHODS:
We used case-based data on LB and TBE reported during 1999-2008 in cross-bordering Polish and Czech areas inhabited by 9,400,000 population. In both countries physicians notify to public health officers, who complete clinical, laboratory and epidemiological data. Demographic data were obtained from Statistical Offices. We compared reported incidence. By revising all cases according to the case definitions established for Poland in 2005 we compared predictive positive values (PPV) of both systems. We evaluated factors associated with PPV using logistic regression.

RESULTS:
During 1999-2008, 6,783 LB cases were recorded in Polish and 12,335 in Czech cross-border region. Incidence increased from 0.98 to 22.36/100,000 on Polish and from 23.79 to 40.57/100,000 on Czech side. PPV of LB was stable in Czech (86%) and increasing in Poland (average value: 71%). Higher PPV was associated with tick-bite ($p<0.0001$), age › 20 years ($p=0.0002$) and Czech system comparing to Polish ($p<0.0001$). In Polish bordering region, 108 TBE cases were reported; incidence ranged 0.10- 0.44/100,000. In Czech 1,151 TBE cases occurred; incidence ranged 2.30-7.43/100,000. PPV for TBE was 45% in Poland and 58% in Czech. Milk exposure ($p<0.0001$) and hospitalisation ($p=0.0022$) were associated with increased proportion of confirmed cases.

CONCLUSIONS:
We documented considerably lower incidence and PPV of surveillance LB and TBE in Polish compared to Czech cross-bordering region. Enhanced laboratory diagnostics and training of personnel involved in surveillance might improve surveillance outcomes. Common case definitions would facilitate comparison between countries.

PRESENTED BY: DR HANA ORLIKOVA

20100309 Oral Vector borne diseases

Keywords: evaluation, surveillance, malaria, Nigeria

Malaria Surveillance System Evaluation in Nigeria, April 2010

Olufemi Ajumobi (1), P. Nguku (1), E. Coker (2), B. Audu (2), K. Sabitu (3).

AFFILIATIONS:
1. Nigerian Field Epidemiology and Laboratory Training Programme, Abuja, Nigeria
2. National Malaria Control Programme (NMCP), Department of Public Health, Federal Ministry of Health, Federal Capital Territory, Abuja, Nigeria
3. Ahmadu Bello University, Zaria, Nigeria

BACKGROUND:
Nigeria accounts for one-fourth of malaria morbidity in sub-Saharan Africa. In 1998, the national malaria surveillance system was set up by the Federal government to support prevention, treatment and control efforts. We evaluated the system to assess whether its performance is in line with set objectives.

METHODS:
We assessed the surveillance system according to the Center for Disease Control and Prevention guidelines for evaluating public health surveillance system (2001). We quantitatively and qualitatively assessed the surveillance system's key attributes. We interviewed 21 key informants at national, sub-national and health facility levels using a semi-structured questionnaire. We reviewed surveillance data from 2001-2009.

RESULTS:
The case definition and tools are simple to use and are acceptable to key stakeholders. The data flow from the local to the national is clearly defined but feed-back is irregular. In February 2010, the tools were adapted to accommodate information on home management of malaria. Of 21 interviewees, 86% agreed the system collects relevant data for the description of the epidemiological situation but excludes data from private health facilities. There has been increasing trend in malaria morbidity, the incidence of malaria doubled in 2009 compared to 2008 (6.6 million cases versus 3.5 million cases). 35% (target≥80%) of the states (n= 37) reported monthly, 25% (target≥80%) had complete data from health facilities, 65% reported late. 51% of the states had external financial support for monthly data collection and partner agencies provide 99.7% of system's operating resources.

CONCLUSIONS:
There is a need to provide supportive supervision for data quality assurance to improve data quality and timeliness. The system is useful, simple, acceptable, flexible, and representative. Surveillance data are used to prioritize insecticide-treated bednet distribution in the states.

PRESENTED BY: DR OLUFEMI AJUMOBI

20100083 Oral Vector borne diseases

Keywords: chikungunya, outbreak, investigation, Reunion Island

Characterization of incident cases of chikungunya in Reunion Island, five years after a major epidemic in 2005–2006

Pascal Vilain (1,2), S. Giron (1), P. Renault (1), M. Baville (3), L. Filleul (1)

AFFILIATIONS:
1. Cellule de l'InVS en région Océan Indien, Saint Denis (Réunion), France
2. Programme de formation à l'épidémiologie de terrain, Institut de veille sanitaire, Saint Denis (Réunion), France
3. Service de lutte anti-vectorielle, Agence de santé Océan Indien, délégation Ile de la Réunion, Saint Denis (Réunion), France

BACKGROUND:
In March 2010, five years after the 2005-2006 major chikungunya epidemic, a new outbreak was reported in the west of Reunion Island. An investigation was launched to describe these incident cases and raise hypotheses on risk factors in order to orient control measures.

METHODS:
Probable case was defined as a clinically compatible case with positive IgM antibodies; confirmed case as a clinical case with a positive RT-PCR or an IgG seroconversion (or fourfold increase). All resident cases born before 2006 July (end of epidemic) detected by the surveillance system between 01/03/2010 and 24/06/2010 were included in the investigation. A standardized questionnaire was administered by phone, including demographic data, location and type of housing, presence of other cases among relatives, presence of mosquitoes in the environment, behaviours and preventive practices during the two epidemics (2005-2006 vs 2010).

RESULTS:
A total of 86 cases were described, all infected for the first time: age and gender were similar to those in 2005-2006; 34.9% of cases had moved to the current place of residence since 2005-2006, including 16.6% who moved from an apartment to a detached house and 26.7% from outside Reunion. Among those reporting "little or no" cases around them in 2005-2006 (50.7%), 42.1% have had contact with cases in 2010. The cases reported significantly more frequently, a great number of mosquitoes in 2010 than in 2005-2006 (45.5% vs. 28.6%); 75.6% reported to protect themselves against mosquitoes during 2005-2006 epidemic, however 40.7% reduced their protection in 2010.

CONCLUSIONS:
Movements of non-immune population and behavioural changes make possible the development of vulnerable cluster to chikungunya infection. These results may contribute to target the population for which a reiterating sensitization campaign is needed.

PRESENTED BY: MR PASCAL VILAIN

PARALLEL SESSION **ABSTRACTS**

20100128 Oral Vector borne diseases

Keywords: Key words: Lyme borreliosis, Incidence, Sweden, Primary Care

Large discrepancy between the current estimate of Swedish Lyme borreliosis incidence and the number of diagnoses made in primary care

Fredrik Jonsson Ståhl (1), M. Hjertqvist (2), A. Wallensten (2)

AFFILIATIONS:
1. Stockholm University, Stockholm, Sweden
2. Swedish Institute for Infectious Disease Control (SMI), Solna, Sweden

BACKGROUND:
The current Swedish incidence estimate for Lyme borreliosis is 69/100 000 based on a study of serologically verified cases from southern Sweden where the disease was temporarily made notifiable for one year in 1992. Most borrelia infections are diagnosed in primary care and treated with antibiotics. Diagnoses are usually based on clinical symptoms only as serological tests are not reliable in early illness. There is no national registry collecting information on primary care diagnoses, but many counties keep computerised registries for internal use. We attempted to acquire incidence data from these registries in order to get updated data on the incidence of Lyme borreliosis in Sweden.

METHODS:
We contacted all Swedish counties and asked for primary care data on number of individuals diagnosed with Lyme borreliosis (ICD code A69.2) in 2008.

RESULTS:
Five out of 21 counties could provide complete datasets, nine provided data from some primary care units and seven little or no data. The 2008 incidence per 100 000 for counties that could provide complete data was 421 in Kronoberg, 529 in Södermanland, 530 in Västra Götaland, 390 in Örebro and 476 in Östergötland.

CONCLUSIONS:
The average incidence of primary care Lyme borreliosis diagnoses in 2008, in counties with complete data, was about seven times higher than the current Swedish estimate. The difference may signify a general increased incidence, alternatively large geographical or yearly variations. The found incidence based on diagnoses only without serological verification may also be falsely high. There is a need to investigate this discrepancy further. If due to false diagnoses it would imply that many patients are given unnecessary treatments, which is serious both from a patient and an antibiotic resistance perspective.

PRESENTED BY: DR ANDERS WALLENSTEN

20100247 Oral Outbreaks 2

Keywords: Salmonella, Food poisoning, Student, Thailand

A Salmonella Food Poisoning Outbreak in Army Reserve Force Student Camp in Northern Thailand, October 2009

Wathee Sitthi (1), S. Santayakorn (1), V. Wongphruksasoong (1), P. Poonaklom (1), T. Piraban (2), S.Kumpeera (3), D. Piyaworakul (3), A. Sermsuk (4), P. Nisawatthananan (4), N. Khadthasrima (5), P. Thammawijaya (1)

AFFILIATIONS:
1. Field Epidemiology Training Program, Bureau of Epidemiology, Department of Disease Control, Ministry of Public Health, Thailand
2. Wangnuea District Health Office, Wangnuea District, Lampang Province, Thailand
3. Wangnuea Hospital, Wangnuea District, Lampang Province, Thailand
4. Lampang Provincial Health Office, Lampang Province, Thailand
5. Chaehom Hospital, Chaehom District, Lampang Province, Thailand

BACKGROUND:
On 16 October 2009, Bureau of Epidemiology (BOE) was notified that 50 Army Reserve Force Students (ARFS) in a two-week training camp in northern Thailand went to a hospital with diarrhea in past 2 days. Outbreak investigation was initiated to verify diagnosis, identify risk factors, and recommend control measures.

METHODS:
We reviewed medical records and interviewed all camp participants to find cases. Retrospective cohort study was conducted to identify risk factors. A case was defined as an ARFS camp participant having at least 1 symptom of watery diarrhea, mucous stool, or bloody stool, or at least 3 symptoms of loose stool, tenesmus, abdominal pain, fever, nausea or vomiting during 12-22 October 2009. Rectal swab of 41 cases and 17 food handlers were cultured for bacteria.

RESULTS:
257 cases were identified from 493 camp participants including ARFS, trainers, and other staff (attack rate (AR) was 52.1%). Among them, 256 cases were ARFS (AR=54.8%) and 1 case was a trainer (AR=14.2 %). Common symptoms included abdominal pain (85%), loose stool (83%), fever (63%) and watery diarrhea (59%). 60 cases went to hospital (15 were hospitalized). Hot Thai curry with chicken (Adjusted OR=2.09, 95%CI=1.05-4.17) and fried pickled cabbage with egg (Adjusted OR=1.97, 95%CI=1.05-3.68) of 13 October lunch might be risk factors. No food or raw materials left for testing. 7 and 4 rectal swabs of cases and food handlers respectively, including the suspected meal cook, were positive for Salmonella serogroup B.

CONCLUSIONS:
A food poisoning outbreak caused by Salmonella serogroup B occurred in ARFS camp. Suspected food items and potential spreaders are identified. Food sanitation, particularly cook screening, should be emphasized for mass gathering.

PRESENTED BY: MR WATHEE SITTHI

20100369 Oral Outbreaks 2

Keywords: legionellosis, pneumonia, outbreak investigations, typing

Outbreak investigation of eight Legionnaires' disease cases in a small area of the North Region, Portugal, November – December 2009

Dafina Petrova Dobreva (1), António M. Monteiro (2), Teresa M. Alves Fernandes (1), Maria de Jesus Chasqueira (3), Maria Teresa Marques (4).

AFFILIATIONS:
1. Direcção-Geral da Saúde, Lisbon, Portugal.
2. Agrupamento de Centros de Saúde da Póvoa de Varzim e Vila do Conde, North Region, Portugal.
3. Microbiology Department, Faculdade Ciências Médicas, Universidade Nova de Lisboa, Chronic Disease Research Center – CEDOC, Lisbon, Portugal.
4. Director of the Department of Pathology and Laboratory Medicine, Centro Hospitalar de Lisboa Ocidental and Microbiology Department, Faculdade Ciências Médicas, Universidade Nova de Lisboa, Chronic Disease Research Center – CEDOC, Lisbon, Portugal.

BACKGROUND:
Eight cases from three neighbouring municipalities in Northern Portugal were admitted to local hospitals between 15/11-07/12/2009 with severe pneumonia and positive urine test for Legionella pneumophila serogroup 1 upon admission. Investigation, aimed at identifying the source of infection and taking prevention measures, started on 20/11/2009.

METHODS:
Local primary care practitioners were sensitized and the National Surveillance Program database was searched for other L. pn. caused pneumonia cases from this region. Probable cases were individuals from one of the three municipalities, with symptom onset between 15/10-27/12/2009 and positive Legionella urine test. Confirmed cases had additionally L. pn. positive culture. Demographic data, risk factors, exposure to possible sources of infection, and travel history were collected for all cases. Cooling and aerosol generating equipment of two car wash stations, two hotels, casino, and seven decorative fountains, reported by cases as possible exposures, were tested for Legionella by culture and PCR.

RESULTS:
Three culture-positive and five urine antigen-positive cases were identified, three females and five males, all smokers. Median age was 49 years. All recovered after antibiotic treatment. The Legionella strain sequence, identical for the three confirmed cases, is new in the European Sequence Based Typing database. The exposure common to seven cases, between 13/10–25/12/2009, was walking down a 400m promenade with decorative fountains. Environmental investigation could not identify L. pn.

CONCLUSIONS:
Investigation was initiated immediately after the first 3 cases were hospitalized but still 39 days away from the initial possible exposure period. Although identical L. pn. strains were isolated in three cases, a common source of infection remained elusive. Recommendation for regular laboratory monitoring of the fountains was issued to the municipal chamber.

PRESENTED BY: MS DAFINA DOBREVA

20100311 Oral Outbreaks 2

Keywords: meningitis, outbreak, surveillance, vaccination, response

Cerebrospinal Meningitis Outbreak and Response – Nigeria, 2009: Lessons Learnt

Moses Obeimen Akhimien (1), G. Kurmi (1), E. Awosanya (1), E. Waziri (1), H. Akpan (2), J. Oladejo (2), B. Adegbite (2), M. Anefiong (2), O. Ojo (2), E. Etuk-Apan (2), E. Ekanem (3), I. Dalhatu (3), P. Nguku (3), L. Davies (4), W. Goitom (5), P. Mitula (5

AFFILIATIONS:
1. Nigerian Field Epidemiology and Laboratory Training Program
2. Epidemiology Unit, Federal Ministry of Health Nigeria
3. Centre for Disease Control and Prevention (CDC), Nigeria
4. Centre for Disease Control and Prevention (CDC), Atlanta
5. World Health Organization, Nigeria Office
6. University of Ibadan Nigeria

BACKGROUND:
Cerebrospinal meningitis (CSM) remains a major public health challenge in the African meningitis belt with 106 million people in Nigeria at risk annually. Between December 2008 to September 2009, Nigeria had a CSM outbreak that was of a magnitude comparable only to that of 1996. We evaluated pre-epidemic preparedness and response to this outbreak in order to improve future response.

METHODS:
Review/valuation of the cumulative CSM surveillance data of week 42, 2009 from the Federal Ministry of Health (FMOH). National pre-epidemic preparedness plan, Central Public Health Laboratory (CPHL) support and CSM outbreak response in the 16 states that crossed the alert/epidemic threshold were evaluated.

RESULTS:
CSM surveillance system detected local outbreaks in 15 (93%) States and was 91% timely. FMOH mobilized and trained State health workers, pre-positioned drugs/vaccines which were inadequate due to the magnitude of the outbreak with 55,674 cases and case fatality rate of 4.1. Age group 5-30 years was most affected and targeted for reactive vaccination. Only nine (56%) States cascaded training on standard case management protocol. In 12 (75%) States, outbreak response was within 48 hours of onset. Of the 11 States that referred samples to the CPHL only six (37.5%) received results, three (50%) of which received it after a month.

CONCLUSIONS:
Though CSM surveillance was effective, response was delayed. Some States did not cascade the training on standard case management and this might have affected their case management ability. Timely sharing of results from CPHL with States need to be improved. Based on this review FMOH has trained six health workers in each State and pre-positioned 1.2 million doses of vaccines in preparation for 2010 epidemic season.

PRESENTED BY: DR MOSES AKHIMIEN

PARALLEL SESSION **ABSTRACTS**

20100080 Oral Outbreaks 2

Keywords: Hepatitis A, Semi-dried tomatoes, Case-control study, Disease outbreak, France/epidemiology

Hepatitis A outbreak associated with semi-dried tomatoes, France, 2009–2010

Paloma Carrillo-Santisteve (1, 2), A. M. Roque-Afonso (3) C. Gallot (1), L. Grout (4, 5), E. Couturier (1), J. Pouey (4), M. J. Letort (1), S. Hoppe (6), P. Capdepon (7), S. Saint-Martin (7), H. De Valk (1), V. Vaillant (1)

AFFILIATIONS:
1. French Institute for Public Health Surveillance, InVS, Saint Maurice, France
2. European Programme for Intervention Epidemiology Training (EPIET), Stockholm, Sweden
3. National Reference Centre for hepatitis A virus, CNR, Paris, France
4. Midi-Pyrénées Interregional Epidemiology Unit, CIRE, Toulouse, France
5. Programme de formation à l'épidémiologie de terrain (PROFET), InVS, St Maurice, France
6. Aquitaine Interregional Epidemiology Unit, CIRE, Bordeaux, France
7. Midi-Pyrénées Health Regional Agency, Tarbes

BACKGROUND:
In January 2010, two clusters of non-traveller hepatitis A (HA) cases in south-west France were notified. We conducted an investigation to determine the source of the outbreak and prevent further spread.

METHODS:
We identified cases through the HA mandatory notifications and the National HA Reference Centre. We defined a probable case as a locally-acquired acute HA infection, resident in the south-west and onset of symptoms from 1st November 2009 to 28th February 2010. An HA infection with the outbreak strain and resident in mainland France was a confirmed case. We conducted a case-control study including primary cases. Controls (4:1) were persons aged 15-60 years living in the same area as cases, without history of HA infection nor vaccination, selected by digit dialling. We computed odds ratios (OR) with their 95 confidence interval (95%CI).

RESULTS:
We identified 49 confirmed and 10 probable cases (median age 31.5, M/F ratio 1.2) scattered through France with symptom onset between 20 November 2009 and 17 February 2010. Cases (n=30) were more likely than controls (n=109) to have eaten sandwiches or salads from a sandwich shop and to have eaten semi-dried tomatoes. These exposures were independently associated with the disease (OR=29.1; 95%CI 9.7-87.0 and OR=8.5; 95% CI4.4-30.2, respectively). The epidemic strain clustered with sequences from HA patients returning from Turkey. Traceback investigations identified a common supplier for the sandwich shops, located in France, importing frozen semi-dried tomatoes from Turkey and manipulating them before distribution.

CONCLUSIONS:
A nationwide hepatitis A outbreak was associated with consumption of semi-dried tomatoes. The genetic analysis suggested a Turkish origin for the strain. Semi-dried tomatoes coming from high endemic countries should be considered a potential vehicle of transmission of HAV.

PRESENTED BY: DR PALOMA CARRILLO SANTISTEVE

20100242 Oral Outbreaks

Keywords: Disease Outbreaks, Clostridium difficile, Cross Infection, Case-Control Studies

An outbreak of Clostridium difficile in a small Canadian hospital

Krista Wilkinson (1), Marianna Ofner (1), Denise Gravel (2)

AFFILIATIONS:
1 Canadian Field Epidemiology Program, Public Health Agency of Canada, Ottawa, Canada
2 Blood Safety Surveillance and Health Care Associated Infections Division, Public Health Agency of Canada, Ottawa, Canada

BACKGROUND:
Clostridium difficile is a significant pathogen in Canadian hospitals and a common cause of adult nosocomial infectious diarrhea. In 2009, a small Canadian hospital declared an outbreak of Clostridium difficile infections (CDI). One of the objectives of the ensuing investigation was to determine the characteristics and risk factors of patients who developed and died of CDI.

METHODS:
We did a retrospective case control investigation of nosocomial CDI cases occurring between May 1, 2009 and April 31, 2010. Each case was matched on length of stay and month of admission to two controls. A chart review was conducted to collect data, including antibiotic history, patient outcomes, and comorbidities standardized using the Charlson Comorbidity Index (CCI). A mortality analysis compared cases that died with cases that survived.

RESULTS:
Nineteen cases were identified. In the 30 days before symptom onset, cases were more likely to have received antibiotics than controls ($p=0.03$). Cases were also more likely to die within 30 days of CDI diagnosis compared to controls ($p\leq0.01$). CCI scores were similar for cases and controls. Nine cases died; CDI contributed to death in 7 cases and was unrelated to death in 2 cases. Cases that died were more likely to have a CCI score greater than seven ($p<0.01$) and had a median age of 91 years as compared to 78 years for surviving cases.

CONCLUSIONS:
As previously found, antibiotic use was a risk factor for CDI in this outbreak. Although comorbidity severity was similar between cases and controls, cases had a higher 30-day mortality, indicating CDI may have contributed to excess mortality. Mortality analysis showed an association between increasing age, comorbidity severity and increasing likelihood of death in CDI patients.

PRESENTED BY: MS KRISTA WILKINSON

POSTER SESSION **ABSTRACTS**

ESCAIDE

POSTER SESSION **ABSTRACTS**

20100211 Poster Antimicrobial resistance

Keywords: Antimicrobial resistance, Salmonella, Campylobacter, indicator E.coli and enterococci, survey, EU

Antimicrobial resistance in zoonotic and indicator bacteria from animals and food in the European Union in 2004–2007

Elena Mazzolini, Pierre-Alexandre Belœil, Pia Mäkelä

AFFILIATIONS:
European Food Safety Authority, Parma, Italy

BACKGROUND:
Zoonotic bacteria that are resistant to antimicrobials are of special concern since they might compromise the effective treatment of zoonotic infections in humans. The aim of this paper is to describe data on the occurrence of antimicrobial resistance in Salmonella, Campylobacter as well as indicator Esherichia coli and enterococci isolates from animals and food submitted under Directive 2003/99/EC.

METHODS:
During the years 2004 to 2007, 26 Member States submitted information on the occurrence of antimicrobial resistance against up to 51 antimicrobial substances in zoonotic bacteria originating from poultry, pigs and cattle as well as from meat thereof to the European Commission and the European Food Safety Authority (EFSA). About 400.000 quantitative data, expressed either as Minimum Inhibitory Concentrations or as disk inhibition zones, were interpreted using harmonized epidemiological cut-off values defining the resistance.

RESULTS:
The proportion of Salmonella and E. coli isolates resistant to ampicillin, sulfonamide and tetracycline varied between 5% and 68% among the isolates from poultry, pigs and cattle in the reporting Member State group. At Member State group level the occurrence of fluoroquinolone resistance varied from 5% to 38% and from 20% to 64% for the Salmonella and Campylobacter isolates from poultry, pigs, cattle and meat thereof, respectively.

CONCLUSIONS:
The occurrence of resistance to tetracycline, ampicillin and sulphonamide in Salmonella isolates from fowl was at a lower level than in Salmonella isolates from pigs and cattle, whereas quinolone resistance levels were higher in Salmonella isolates from fowl. Resistance to antimicrobials, also to antimicrobials regarded critically important for human medicine, was commonly found among tested isolates For some assessed antimicrobials, large differences in the occurrence of resistance over time were observed between Member States.

PRESENTED BY: DR ELENA MAZZOLINI

20100058 Poster Antimicrobial resistance

Keywords: Shiga toxin – producing Escherichia coli, antibiotic resistance, class 1 integron

Antibiotic resistance and class 1 integrons in Shiga Toxin – Producing Escherichia coli from human, cattle and food in Poland.

Aleksandra Januszkiewicz (Jakubczak) (1), W. Rastawicki (1), J. Szych (1), J. Osek (2), R. Gierczyński (1).

AFFILIATIONS:
1. Department of Bacteriology, National Institute of Public Health – Public Institute of Hygiene, Warsaw, Poland
2. Department of Hygiene of Food of Animal Origin, National Veterinary Research Institute, Pulawy, Poland

BACKGROUND:
Shiga toxin – producing Escherichia coli (STEC), is a one amongst major causative agents of foodborne illness worldwide. Recent studies have documented increasing resistance of STEC isolates in human and animal origin. This may partly result from the spread of mobile genetic elements including integrons. We present the first report of antibiotic resistance of STEC in Poland.

METHODS:
We investigated 70 STEC strains from human (n = 44), cattle (n = 16) and food (n =10) isolated from 1999 to 2010. The isolates were tested for susceptibility to 13 antibiotics using disc diffusion and twofold agar dilution methods. Presence and localization of the integrons were performed by PCR, DNA sequencing, Southern blot hybridization assay and conjugation experiments.

RESULTS:
Seventeen isolates (24.3%) were resistant to one or more antimicrobials. The decreasing order of resistance in STEC strains was streptomycin (24.3% of all isolates), sulfamethoxazole (22.8%), tetracycline (11.4%), ampicillin (8.5%), trimethoprim (5.7%), chloramphenicol (4.3%), cotrimoxazole (4.3%), kanamycin (4.3%). Among the resistant isolates 13 (76.4%) were MDR. Class 1 integrons were detected in 5 (29.4%) of 17 resistant strains. Nucleotide sequence analysis revealed that 2 strains carried class 1 integron containing a single gene cassette aadA1 for streptomycin resistance. The three remaining strains had both aadA1 and dfrA that codes resistance to trimetoprim. Integrons were located in a large conjugative plasmid approximately 90 kb.

CONCLUSIONS:
Human and animals STEC in Poland developed resistance to a variety of antimicrobials. Multiple resistance agents could be horizontally transferred via conjugation. The increasing number of antibiotic resistant STEC mainly MDR in Poland would pose serious clinical and therapeutic challenges in future.

PRESENTED BY: MRS ALEKSANDRA JANUSZKIEWICZ (JAKUBCZAK)

20100049 Poster Antimicrobial resistance

Keywords: E. coli; Hospital; cefepime, risk factor, resistance

Cefepime resistance and associated risk factors among E. coli isolated from clinical specimens

Rashid Ramazanzadeh, Majid Mansouri, Parisa Norabadi

AFFILIATIONS:
Kurdistan University of Medical Science

BACKGROUND:
Cefepime is active against bacteria producing chromosomally and plasmid mediated extended-broad-spectrum beta-lactamases enzymes. The aim of this study was to evaluate risk factors for colonization or infection due to E. coli strains resistance to cefepime among hospitalized patients, in a university hospital of Sanandaj-Iran.

METHODS:
The study type was case- control. A case patient was defined as a patient who had one isolate of cefepime resistance E. coli strain. A case patient was defined as a patient who had one isolate of cefepime sensitive E. coli strain. Cefepime resistance was defined by using of HiComb MIC tests (HIMEDIA, India).

RESULTS:
Out of 255 total isolates, 73 (28.6%) were cefepime resistance. The previous treatment of cefepime was a risk for acquisition of cefepime resistance isolate (odds ratio [OR] _ 6.32, [95% CI] _ 1.5 to 25.19, P<0.007). The use of ventilator was a risk for acquisition of cefepime resistance isolate (odds ratio [OR] _ 6.25, [95% CI] _ 1.86 to 21.02, P<0.002). The use of catheter was a risk for acquisition of cefepime resistance isolate (odds ratio [OR] _ 6.28, [95% CI] _ 1.86 to 21.02, P<0.001). There was significant correlation between days of stay in ward and cefepime resistance (p<0.003). ICU hospitalization was associated with cefepime resistance.

CONCLUSIONS:
The main risk factors associated for cefepime resistance were previous treatment of cefepim, use of ventilator, use of catheter and days of stay in ward. There is need more study to evaluate the role of this factor in order to control the spread of drug resistance.

PRESENTED BY: MR RASHID RAMAZANZADEH

20100318 Poster Antimicrobial resistance

Keywords: Antibiotics, ESBL, AmpC, hospital wastewaters, Algeria

Detection of Extended-spectrum β-lactamases and plasmidic cephalosporinases AmpC in Enterobacteriaceae from wastewaters of Zmirli hospital in Algiers

Meriem Derkaoui, L. Anssour, S. Alouache, F. Boufrouche, Y. Messai, R. Bakour

AFFILIATIONS:
Laboratoire de biologie cellulaire et moléculaire, faculté des sciences biologiques, université des sciences et de la technologie Houari-Boumédiène, B.P. 32 El-Alia, Bab-Ezzouar 16111, Alger, Algeria.

BACKGROUND:
The hospital effluents are potential reservoirs of antibiotics resistant bacteria and could contribute in the increase of the exposure of human populations. The objective of this work was the detection of extended-spectrum beta-lactamases (ESBLs) and plasmidic cephalosporinases AmpC (pAmpC), among Enterobacteriaceae from effluent of Zmirli hospital in Algiers

METHODS:
Cefotaxime resistant Enterobacteriaceae were selected on lactose-tergitol agar with cefotaxim (4mg/L). Isolates were identified by API 20E system and screened for ESBLs by Double-Disc Synergy Test. Antimicrobial susceptibility was determined by disc-diffusion method. Molecular typing of isolates was carried out by ERIC-PCR. ESBL and ampC genes, class 1 integrons and ISEcp1B sequence were detected by PCR.

RESULTS:
A total of 109 cefotaxime resistant isolates were isolated, which are also characterized by resistance to gentamicin and ciprofloxacin, while 88 and 31 were resistant to ceftazidime and cefoxitin, respectively. Molecular typing revealed 23 genetic profiles; one strain per profile was retained for further study: K. pneumoniae (n=7), K. oxytoca (n=2), K. terrigena (n=2), C. freundii (n=8), E. sakazakii (n=1), E. cloacae (n=1), E. coli (n=2).β-lactamases detected were ESBLs of group-1 CTX-M, pAmpC of CIT type and CTX-M associated with pAmpC of CIT or FOX type. Intregrons and the genetic association between ISEcpB1 and CTX-M genes were detected in 22 and in all isolates, respectively. Conjugation transfer of CTX-M and pAmpC genes was positive for 7 and 3 isolates, respectively.

CONCLUSIONS:
We detected the presence of CTX-M ESBLs and pAmpC in hospital wastewaters in Algiers, some of them were transferable. Given the inadequacy of water treatment means, there is potential risk of widespread of antibiotic resistance and its transfer into a wide range of aquatic environmental bacteria.

PRESENTED BY: PROF RABAH BAKOUR

POSTER SESSION **ABSTRACTS**

20100010 Poster Antimicrobial resistance

Keywords: : oral candidiasis; PLWH; candida species; azoles resistance

Emergence of Azoles Resistance Candida albicans isolates in Iranian People Living With Human Immunodeficiency Viruses

Ali Reza KHOSRAVI (1), Farzad KATIRAEE (1), Vahid KHALAJ (3), Mahbobeh HAJIABDOLBAGHI (4), Ali Asghar KHAKSAR (2), Mehrnaz RASOULINEJAD (4)

AFFILIATIONS:
1. Mycology Research Center, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran.
2. Department of Mycology, Pasteur Institute of Iran, Tehran, Iran.
3. Biotechnology Research Center, Pasteur Institute of Iran, Tehran, Iran.
4. IRCHA, Imam Khomeini Hospital, Tehran University of Medical Sciences, Iran

BACKGROUND:

Oropharyngeal candidiasis and antifungal drug resistance are the major problem in People Living with HIV (PLWH). The increased reports of antifungal resistance and expanding drug therapy options prompted the determination of antifungal susceptibility profile.

METHODS:

In this study,oral samples from Iranian PLWH were obtained and cultured on CHROMagar and Sabouraud's dextrose agar. All isolates were identified according to assimilation profile, germ tube, colony color and other conventional methods. Disk diffusion testing and Broth Micro dilution of five antifungal according to the methods described in CLSI was performed.

RESULTS:

Candida albicans (50.2%) was the most frequent of yeast isolated, following C. glabrata (22%). Non Candida albicans species were isolated from 71 positive cultures (61%). 25.7% were resistant to fluconazole (MIC ≥64 µg/ml), 21.9% and 16.4% of Candida albicans isolates were resistant to ketoconazole and clotrimazole (MIC >0.125 µg/ml) respectively. Candida albicans resistance isolates to polyene antifungal includes amphotericin B and nystatin were scarce. 57.7% of candida glabrata isolates were resistance to fluconazole and against ketoconazole and clotrimazole, 31% and 35% of isolates were resistance.

CONCLUSIONS:

Based on result we conclude that screening of resistance candida isolates by disk diffusion or broth dilution methods in clinical laboratory is idealistic for surveillance of antifungal resistance to patients' managements. Although Nystatin is widely used in clinical practice for HIV patients, there was no evidence of enhanced resistance, but it was increase resistance to azoles antifungal specially fluconazole.

PRESENTED BY: PROF ALIREZA KHOSRAVI

20100249 Poster Antimicrobial resistance

Keywords: Salmonella

Extended-spectrum beta-lactamase VEB-5 in a Salmonella worthington isolate from the United Kingdom

D. W. Wareham (1, 2), P Khanna (2), N C Gordon (2)

AFFILIATIONS:
1. Queen Mary University London, Centre for Infectious Disease, Institute of Cell and Molecular Science, Barts & The London School of Medicine and Dentistry, London, UK
2. Division of Infection, Barts & The London NHS Trust, London, UK

BACKGROUND:

Resistance due to extended spectrum beta-lactamase (ESBL) production has emerged as a major problem in the Enterobacteriaceae, albeit predominantly in E. coli and Klebsiella spp. Recently we isolated a cephalosporin resistant S. worthington (Sal11) from an infant in the UK. Here we describe molecular analysis of the mechanisms underlying the phenotype which highlights the spread of an uncommon ESBL variant (VEB-5) into the genus Salmonella.

METHODS:

Antimicrobial susceptibility testing was peformed using the BSAC disc diffusion method and ESBL production was assessed using cefpodoxime / clavulanate combined discs. Multiplex PCR was used to screen for genes encoding TEM, SHV, OXA 1/4/30/48, CTX-M-1,3,9,8/25, ACC, FOX, MOX, DHA, CIT, EBC, GES, PER, VEB, IMP, VIM and KPC beta-lactamases. Full coding sequences were amplified, cloned in E. coli TOP10 and sequenced. Plasmids were extracted and transfer of the ESBL phenotype by conjugation was undertaken using a rifampicin resistant E. coli (CSH26) as a recipient strain.

RESULTS:

Sal 11 was resistant to 1st, 2nd and 3rd generation cephalosporins and inhibitor combinations but susceptible to carbapenems. The isolate was also resistant to amionglycosides. Analysis of the beta-lactamase genes carried confirmed the presence of VEB-5 and the CMY-2 AmpC gene. The 16S methlylase gene ArmA was also detected. All three genes were transferred to E. coli CSH-26 by conjugation and mediated cephalosporin resistance and high level aminoglycoside resistance in the transconjugants.

CONCLUSIONS:

We describe the 1st report of a VEB-like ESBL in the genus Salmonella. The gene was readily transferable and appeared to be co-localised with the 16S methyltransferase ArmA. Dissemination of these resistance determinants throughout the enterobacteriaceae is a serious concern which may drive widespread beta-lactam and aminoglycoside resistance.

PRESENTED BY: DR DAVID WAREHAM

20100007 Poster Antimicrobial resistance

Keywords: Azithromycin, Salmonella, Shigella, Campylobacter

In vitro activity of azithromycin against Salmonella spp., Campylobacter spp. and Shigella spp. isolated in a Belgian peripheral hospital.

A. Jeurissen (1), J.P. Ursi (1), J. Van Schaeren (1)

AFFILIATIONS:

1. Laboratory of Microbiology, GZA St. Augustinus, Oosterveldlaan 24, 2610 Wilrijk, Belgium

BACKGROUND:

Salmonella spp., Campylobacter spp., and Shigella spp. are a major cause of human food-borne infections all over the world. Azithromycin has been suggested as a good option in the treatment of bacterial gastro-intestinal infections. In this study, we wanted to explore the in vitro activity of azithromycine against Salmonella spp., Campylobacter spp., and Shigella spp. isolated in our hospital.

METHODS:

Between May 2009 and October 2009 all Salmonella spp., (n = 17), Campylobacter spp. (n = 16) and Shigella spp. (n = 7) were collected consecutively from inpatients with a documented gastro-intestinal infection. Bacterial identification was performed using Vitek 2 system (Vitek 2, Biomérieux, Durham, NC, USA). The minimal inhibitory concentration (MIC) of azithromycin was determined by the E-test, according to the manufacturer's instructions (Biomérieux Benelux, Brussels, Belgium). Results were interpreted as follows (i) Salmonella spp.: susceptible ≤ 32 µg/ml, (ii) Campylobacter spp.: susceptible ≤ 2 µg/ml, and (iii) Shigella spp.: susceptible ≤ 32 µg/ml. Quality control was performed by testing susceptibility of E. coli ATCC 25922.

RESULTS:

The Campylobacter spp. strains exhibited the greatest susceptibility to azithromycin. MIC range was 0,064 to 0.38 with MIC50 of 0.125 µg/ml and MIC90 of 0.25 µg/ml. Subsequently, Salmonella spp. strains had a MIC range of 2 to 16 µg/ml, with MIC50 of 4 µg/ml and MIC90 of 8 µg/ml. The Shigella spp.. showed MIC distributions across a range of 1.5 to › 256 µg/ml, with MIC50 of 6 µg/ml and MIC90 of 8 µg/ml.

CONCLUSIONS:

Using the aforementioned breakpoints, all strains isolated, except one Shigella spp., were susceptible to azithromycin. Our data suggest good in vitro activity of azithromycin against Salmonella spp., Campylobacter spp., and Shigella spp. in our hospital.

PRESENTED BY: DR AXEL JEURISSEN

20100360 Poster Antimicrobial resistance

Keywords: Patient Non-Adherence; Drug Resistance, Bacterial

Patient Non-Adherence to Antibiotics for Acute Infectious Diseases: other reasons than lack of knowledge?

Milene Fernandes, M. Basto, N. Vieira, M. Nobre, A. Leite, R. Fernandes, L. Nicolau, P. Nogueira, P.J. Nicola

AFFILIATIONS:

Institute of Preventive Medicine, Faculty of Medicine, University of Lisbon, Portugal

BACKGROUND:

Antibiotic (AB) resistance is associated to incorrect utilization and patient non-adherence to medication. In Portugal, global non-adherence to antibiotics was estimated to be of 40.7% in 2000. Our study aimed to quantify non-adherence to antibiotics in acute infectious diseases, at ambulatory level.

METHODS:

We conducted an observational study during 2009's first semester. Patients attending to pharmacies from Lisbon region, aged ≥ 18 years and with a prescription of one oral AB were invited to participate. Prescriptions' data were collected at the pharmacy. After the expected date for the treatment conclusion, participants were contacted for a phone interview regarding adherence and related factors. Participants were classified as non-adherents if they answered positively or didn't answer to at least one question from the Morisky's scale. Overall knowledge about the AB treatment – when to stop, the consequences of an early conclusion and the decision of keeping the remaining AB – was also evaluated.

RESULTS:

In 315 eligible patients who accepted to participate, 246 (78.1%) were included in the study, aged 46.4±16.6 years and 184 (74.8%) women. For 244 (99.2%) patients who started the AB treatment, non-adherence prevalence was 45.5% (n=111, CI95% [39.2, 52.0]), mainly related to having taken the AB out of schedule (39.8%, n=97) or having forgotten to take it (13.5%, n= 33). Poor overall knowledge was observed for 79 (32.4%) participants, with no association with non-adherence (p-value = 0.693).

CONCLUSIONS:

In our study, the main reasons for non-adherence are related to unintentional omission and intake delay of single doses, with no established association to knowledge about AB. Other factors such as adequateness of the AB's posology to life style should also be considered when addressing patient non-adherence.

PRESENTED BY: DR MILENE FERNANDES

POSTER SESSION **ABSTRACTS**

20100289 Poster Antimicrobial resistance

Keywords: non-typhoid Salmonella, ESBL, AmpC, Egypt, Algeria

Resistance to extended spectrum beta-lactams in non-typhoid Salmonella from poultry and human

Abdelhakim Aouf 1, 2, H. M. Aboushady 2, I. Hatem 3, M. Djaber 4, Y. Messai 1, M. S. Salama 5, R. Bakour 1.

AFFILIATIONS:
1. Laboratoire de Biologie Cellulaire et Moléculaire, FSB, USTHB, Algiers, Algeria
2. Microbiology Laboratory, Ain Shams University, Cairo, Egypt
3. Microbiology Laboratory, Veterinary College, Cairo University, Egypt
4 Microbiology Laboratory, Kasr Alainy Hospital, Cairo, Egypt.
5. Molecular Biology Laboratory, Ain Shams university, Cairo, Egypt.

BACKGROUND:

Salmonella are widely distributed in nature, they are the major cause of food-born bacterial diseases world wide, with wide range of clinical illness, particularly in infants and in immuno-compromised patients. Along with this incidence, increasing rates of antibiotic resistance have been reported in various regions and antimicrobial chemotherapy is being eroded. The selective pressure by the use of extended spectrum cephalosporins (ESC) is the most important factor in the appearance of plasmid mediated extended spectrum β-lactamases (ESBLs) and Amp-C type cephalosporinases. The aim of this study is the detection of beta-lactamases production, their genes and genetic support.

METHODS:

Seventy six of non-typhoid Salmonella were isolated from both human and poultry in Egypt and Algeria and tested for their antibiotics resistance. To study mechanisms of β-lactams resistance, double disk synergy test was used. Plasmid DNA was extracted by alkaline lyses method; Mating experiments were performed in solid medium. Detection of ESBLs and cephalosporinase genes was carried out by PCR.

RESULTS:

The incidence of multiple antibiotics resistance was extremely high. Beta-lactams resistance is mainly due to the presence of penicillinase high level, extended spectrum β-lactamases (ESBLs) and cephalosporinase. ESBLs and cephalosporinase production was observed only human Egyptian isolates. PCR results showed that ESBLs were TEM or SHV types and only one isolate was AmpC type. The analysis of plasmid profile and genetic transfer by conjugation into E. coli showed that these resistance phenotypes were transferable in association with plasmid of about 60 kb.

CONCLUSIONS:

TEM or SHV ESBLs types and AmpC-type cephalosporinases were the main mechanisms of resistance to ESC. The increase of resistance was mainly due to the licensing of antibiotics in human and veterinary medicine.

PRESENTED BY: DR ABDELHAKIM AOUF

20100329 Poster Contribution of modelling to applied epidemiology

Keywords: bronchiolitis, epidemic threshold, time series

A tool for an early detection of bronchiolitis epidemics in Guadalupe

Martina Escher (1,2), J. L. Chappert (1), S. Cassadou (1), P. Quenel(1)

AFFILIATIONS:
1. InVS, Cire Antilles Guyane
2. EPIET

BACKGROUND:

Bronchiolitis is a viral infection of the lower respiratory tract affecting mainly children aged less than 2 years. Children usually recover spontaneously, however 20% require hospitalisation. Prevention aims at raising awareness among the population during epidemic periods and promoting hygiene measures to reduce its transmission. The objective of this study was to set up an epidemiological criterion for the early detection of bronchiolitis epidemics in Guadalupe.

METHODS:

We analysed the weekly number of brionchiolitis cases in children aged 0-2 years collected by the sentinel surveillance system from 06-06-2005 to 02-05-2010 using a linear regression for long term trend and a sum of sinusoidal functions for seasonality. Predictions were calculated from non-epidemic observations and the upper limit of a one-sided 95% confidence interval was set as threshold for maximum expected values. To determine start and end of an outbreak, consecutive weeks below and above this threshold were considered. The optimal combination for this rule was selected in terms of sensitivity, specificity and positive predictive value (PPV) using as gold standard the advice of an expert who identified epidemic periods.

RESULTS:

A linear trend and two sinusoidal functions of 52 and 26 weeks were used to describe the historical trend and the seasonal variation which accounts for 45% of the variability of bronchiolitis time series. The criterion selected for the beginning of the epidemic period was the exceeding of the threshold for two consecutive weeks, the end was defined by three consecutive weeks below the threshold. (sensitivity=98%, specificity=96%, PPV=95%).

CONCLUSIONS:

The elaboration of an epidemic alert criterion will improve the capability in interpreting the surveillance data of bronchiolitis in Guadalupe and assure a prompt activation of preventive measures.

PRESENTED BY: MISS MARTINA ESCHER

20100051 Poster Contribution of modelling to applied epidemiology

Keywords: epidemiology, mathematical models, influenza forecasting

Dynamic model for prediction of the epidemic wave of influenza A/H1/N1. Why we have made a mistake?

J. Donado-Campos (1), F. Morilla-García (2), F. Martínez-Navarro (1)

AFFILIATIONS:
1. Instituto de Salud Carlos III, Spain
2. Universidad Nacional de Educación a Distancia, Spain

BACKGROUND:

In spring of 2009 it was detected in Mexico a new strain of type A influenza virus that it expands quickly. We think about to predict the number of cases, of hospital complications and deaths in Spain.

METHODS:

We design a dynamic (compartmental) model with six groups: susceptible; people in the state of latency; people that will develop the illness in a symptomatic and asymptomatic way; those that die for complications and those recovered. The model was validated with the last ten years of the Spanish Influenza Sentinel Surveillance Systems (SISSS) We developed two scenarios: S1 of low transmission, similar to the seasonal influenza (Ro=1,8) and S2 of high transmission (Ro=3)

RESULTS:

In July of 2009 the model allowed us to predict that the epidemic wave could produce 3,400,000 (S1) and 10,900,000 (S2) cases in Spain. SISSS has registered about 1,450,000 during the whole season, 100,000 (S1) and 327,000 (S2) hospital complications were estimated. The real data are known. Supposing that the case fatality would be of 2 for thousand, 6,700 (S1) and 21,700 (S2) deaths were predicted, when in fact it has been observed that it was of 0.2 for thousand.

CONCLUSIONS:

The discrepancies among the estimated and observed values can be due to: 1. Different information is compared; the models predict total number of cases, SISSS estimates the number of cases by sampling. 2. Lack in the knowledge of the natural history: proportion of asymptomatic cases, the pattern of contacts among the susceptible, the probability of effective contact…3. The models didn't consider any type of measure of prevention, the role of the mass media, etc.

PRESENTED BY: DR JUAN DE MATA DONADO-CAMPOS

20100336 Poster Contribution of modelling to applied epidemiology

Keywords: Epidemiology, Scrapie, Sheep, Mathematical modelling, Control measures

Scrapie control in Italy: which selective breeding strategies will work?

Francesca Baldinelli (1), G. Scavia (1), R. Nonno (1), G. Vaccari (1), G. Ciaravino (1), M. Sala (2), U. Agrimi (1), T.J. Hagenaars (3)

AFFILIATIONS:
1. Istituto Superiore di Sanitá, Rome, Italy
2. Istituto Zooprofilattico Sperimentale del Lazio e della Toscana, Rome, Italy
3. Central Veterinary Institute of Wageningen University, Lelystad, The Netherlands

BACKGROUND:

Scrapie is a fatal disease of small ruminants belonging to the transmissible spongiform encephalopathies group or prion diseases. Host susceptibility to scrapie depends on both the genotype of the prion protein gene (PRNP), and the scrapie strain. In sheep, polymorphisms at codons 136, 154 and 171 of the PRNP, combining into five alleles (VRQ, ARQ, AHQ, ARH, ARR), are the main determinants of susceptibility. Breeding programmes to control classical scrapie in sheep population have been strongly recommended by the EU. They aimed at increasing the frequency of the ARR allele, associated to resistance, while reducing that of alleles VRQ and ARQ. In Italy, epidemiological surveillance suggests that a single classical scrapie strain, targeting mainly the ARQ allele, does circulate. The ARQ and ARR are the most represented alleles in the sheep population (55% and 37% respectively). The objective of this work is to evaluate the effectiveness of different ovine breeding strategies for classical scrapie eradication in Italy, using a mathematical model.

METHODS:

We use a genetic-epidemiological model that considers genetic susceptibility associated with the main alleles and other PRNP allelic variants. To inform the model epidemiological data from the national surveillance, demographical information from official registries, pathogenesis data from experimental studies have been used.

RESULTS:

Genotype frequencies in the sheep population necessary to reach the basic reproduction ratio required for eradication are estimated, as well as the time for each selective strategy to achieve the disease-free condition.

CONCLUSIONS:

Preliminary results show that scrapie eradication can be achieved only if the additional selection against ARQ allele is implemented and that breeding strategies could benefit from the selection for additional PRNP variants associated with resistance.

PRESENTED BY: MISS FRANCESCA BALDINELLI

POSTER SESSION **ABSTRACTS**

20100223 Poster Food- and water-borne diseases

Keywords: Campylobacter, disease outbreaks, water microbiology, cohort studies, questionnaires

Campylobacter outbreak caused by contaminated drinking water in a Danish town during May 2010

S. Gubbels (1, 2), K. Gaardbo Kuhn (2), P. Ingildsen (3), J. Larsson (4), M. Torpdahl (4), S. Ethelberg (2), K. Mølbak (2)

AFFILIATIONS:

1. European Programme for Intervention Epidemiology (EPIET), European Centre for Disease Prevention and Control, Stockholm, Sweden
2. Department of Epidemiology, Statens Serum Institut, Copenhagen, Denmark
3. Energiforsyningen, Køge, Denmark
4. Department of Microbiological Surveillance and Research, Statens Serum Institut, Copenhagen, Denmark

BACKGROUND:

In May 2010, increases in campylobacter infections were reported by one general practice in Køge, Denmark and the laboratory surveillance system. Patients resided in an area corresponding with the central water supply of Køge. An investigation was performed to examine whether illness was caused by drinking water. During the investigation a water-boiling order was in force.

METHODS:

The approximately 25,000 residents of the area were encouraged to complete an online questionnaire. Questions included the amount of tap water usually consumed, consumption of food items and recreational activities. We defined cases as persons reporting diarrhoea between 1 May-5 June. We excluded respondents reporting travelling in May. Water consumption was analysed using logistic regression. Microbiological fla-typing was performed and water samples were analysed for indicator bacteria and campylobacter.

RESULTS:

A total of 409/1558 respondents reported diarrhoea. The epidemic curve showed waves between 14-21 May and 26 May-2 June. Cases in the first wave reported more often fever, abdominal pain and bloody diarrhoea than those in the second wave (Chi2 p<0.001; p=0.004; p=0.016). Among cases of the first wave quantity of water consumption was associated with illness (linear increase by two glasses of water: OR=1.39; 95%CI 1.16-1.67). This was not seen in the second wave. Forty-nine of 55 laboratory confirmed campylobacter patients (89%) had fla-type A36 and were largely associated with the first wave. Indicator bacteria levels met routine requirements and no campylobacter was demonstrated from water samples.

CONCLUSIONS:

The first wave was interpreted as the actual campylobacter outbreak. The dose-response effect combined with the clustering of cases in time and space strongly indicated that the water had temporarily been contaminated. The water-boiling order was lifted on 18 June.

PRESENTED BY: DR SOPHIE GUBBELS

20100109 Poster Food- and water-borne diseases

Keywords: Paralytic shellfish poisoning, scallops, gonads, viscera

Consumption of gonads of scallops as a risk factor for paralytic shellfish poisoning

Yiu-hong Leung, M. Wong, S.K. Chuang

AFFILIATIONS:

Field Epidemiology Training Programme, Centre for Health Protection, Department of Health, Hong Kong

BACKGROUND:

Consumption of scallops' viscera has been reported to be a risk factor for paralytic shellfish poisoning (PSP). However, epidemiological study on the risk of PSP associated with consumption of specific parts of viscera is lacking. In May 2010, a territory-wide PSP outbreak associated with consumption of scallops occurred in Hong Kong. A total 14 clusters were identified, 28 of the 35 persons who consumed scallops were affected. We conducted a case-control study to delineate the risk of consumption of specific parts of viscera of scallops for the development of PSP.

METHODS:

A case-patient was a person who developed oral/limb numbness, limb weakness or blurred vision within 24 hours after consuming scallops during 12-17 May 2010. Controls were cases' asymptomatic food collaterals who had also consumed scallops at the same meal. We collected demographic and clinical data; and details of parts of scallops consumed (digestive gland, gills, gonads and adductor muscle) using standardized questionnaire through telephone interview. Categorical variables were compared using Fisher's exact test. A p-value <0.05 was considered as statistical significant.

RESULTS:

We identified 28 cases and 7 controls. The 28 cases included 11 males and 17 females with a median age of 43 years (range: 17 to 72 years). They developed PSP symptoms 15 to 150 minutes (median: 30 minutes) after consumption of scallops. 96% of cases and 50% of controls had eaten gonads of scallops (OR=24.0, 95%CI: 1.4 to 887.7). No statistical significant association was found for consumption of digestive gland, gills or adductor muscle.

CONCLUSIONS:

Consumption of gonads of scallops was associated with the development of PSP symptoms. To prevent PSP, the public should be educated to avoid eating viscera, particularly gonads of scallops.

PRESENTED BY: DR YIU-HONG LEUNG

20100103 Poster Food- and water-borne diseases

Keywords: Salmonella, Campylobacter, Giardia, Shigella, travel

Destination as well as sex, age and season affect the probability of infection of food- and waterborne diseases when travelling outside Sweden

Josefine Johansson (1), Sofia Papanikolaou (1), M. Löfdahl (2), S. Ivarsson (2)

AFFILIATIONS:
1. Department of Statistics, Linköping University, Linköping, Sweden
2. Department of Epidemiology, Swedish Institute for Infectious Disease Control, Solna, Sweden

BACKGROUND:
Food- and waterborne infections reported in Sweden are mainly contracted abroad. In a previous study we compared surveillance data to Swedish travel data to evaluate the risk of such infections at common travel destinations. Following this, we further investigated how travel destination along with sex, age and season affect the probability of infection for the diseases campylobacteriosis, shigellosis, salmonellosis and giardiasis in order to identify risk groups among travelers.

METHODS:
Surveillance data for imported cases of the selected diseases reported 1997-2009 was analyzed alongside travel data from the Swedish Travel and Tourist Database for the same period. Countries were divided into geographic areas with the Nordic countries, except Sweden, used as reference. A generalized linear model was used to analyze differences in probability of infection per night of stay. Odds ratios, the odds for infection in a certain country group divided by the odds for the reference group, were approximated as relative risks.

RESULTS:
The risk of infection for all four diseases was highest in the India and neighboring countries group. A decreasing trend over time was observed for the risk of all four diseases imported from North Africa and East Asia. For Campylobacter, Salmonella and Shigella, the risk was significantly higher for women. The age group at highest risk was 0-14 years for Shigella, Salmonella and Giardia. The seasonal pattern differed between diseases and country groups, but patterns were apparent for certain diseases and destinations.

CONCLUSIONS:
This study estimated how risks of infection for the selected diseases differ by gender, age and season and how it has changed over time. The results give the opportunity to target health advice to certain groups at risk when travelling.

PRESENTED BY: MS SOFIE IVARSSON

20100279 Poster Food- and water-borne diseases

Keywords: water buffalo, Coxiella burnetii

Detection of Coxiella burnetii in water buffalo dairy herds using bulk tank milk.

Michela Tarantino (1), Alessandra Martucciello (2), Lorena Schiavo (2), Esterina De Carlo (2), Federico Capuano (2), Giorgio Galiero (2) and Paolo Pasquali (1)

AFFILIATIONS:
1. Dipartimento di Salute Pubblica Veterinaria e Sicurezza Alimentare, Istituto Superiore di Sanità, Italy
2. Istituto Zooprofilattico Sperimentale del Mezzogiorno Italy

BACKGROUND:
Coxiella burnetii is the causative agent of Q-fever, a worldwide zoonosis. Coxiella can infects different animal species including arthropods, but the disease affects mostly humans and ruminants. Diseased animals usually shed Coxiella by birth products, but asymptomatic carriers may also shed it by vaginal mucus, milk, faeces, urine and semen. Detection of shedders is crucial to assess the infection status of the herd and to limit the risk of transmission between animals and to humans. Diagnosis of C. burnetii infection is usually done by serology or PCR and methods for detection of the pathogen in dairy cows, sheep and goats have been developed. On the contrary, little is known on the role of water buffalo (Bubalus bubalis) in regard of the Q-Fever. Buffalo dairy farming is a common practice mainly in South Italy, particularly for the production of the soft cheese Mozzarella di Bufala. The aim of this study is to evaluate the presence of C. burnetii in water buffalo dairy herds in Campania (South Italy) by testing the bulk tank milk.

METHODS:
Bulk tank milk samples from 46 herds were tested both by ELISA for antibody detection and by PCR amplification.

RESULTS:
The results showed one sample positive by ELISA and PCR and three samples positive by PCR only.

CONCLUSIONS:
Using commercial ELISA and standard PCR we detected C. burnetii infection and assessed the shedding of this pathogen through the milk also in water buffalo herds. Further studies to define the extent of the infection in this farming production are in progress.

PRESENTED BY: MISS MICHELA TARANTINO

POSTER SESSION **ABSTRACTS**

20100190 Poster Food- and water-borne diseases

Keywords: infectious gastrointestinal illness, enteric pathogens

Diagnostic capacity for enteric pathogens in three hospitals in North Italy

Caterina Graziani (1), A. Raglio (2), S. Andreoni (3), C. Farina (4), L. Mughini Gras (1), I. Luzzi (1), A. Caprioli (1), A. Ricci (5), L. Busani (1)

AFFILIATIONS:
1. Istituto Superiore di Sanità, Rome, Italy
2. Ospedali Riuniti, Bergamo, Italy
3. Ospedale Maggiore, Novara, Italy
4. Azienda Ospedaliera San Carlo Borromeo, Milano, Italy
5. Istituto Zooprofilattico delle Venezie, Legnaro, Italy

BACKGROUND:
The prevention and control of infectious gastrointestinal illness (IGI) require the knowledge of the involved pathogens. The diagnostic capacity is often a limitation for the identification of the main causes of IGI. This study presents an analysis of the IGI diagnostic approach routinely adopted in three hospitals located in Northern Italy, with the aim of evaluating the diagnostic methods in place, the efficacy of the testing for the enteric pathogens and the critical points for improvement of the diagnostic activity.

METHODS:
Information concerning the routine approach when specimens with a request of IGI diagnosis are submitted, and data on the IGI diagnostic activity performed from 01/01/2009 to 31/12/2009 were obtained by administering a standard questionnaire (modified from MedVetNet) to the head microbiologists of the three hospitals.

RESULTS:
The three hospitals tested between 1935 and 3506 specimens each. All routinely searched Salmonella, Shigella and Campylobacter using cultural assays. The positivity rate for these pathogens ranged between 2.8% and 6.2%. Other pathogens (E. coli VTEC, Yersinia, viruses and parasites) were searched if requested or suspected. The positivity rate in this second group ranged between 6.4% and 8.4%. None of the laboratories had in place molecular methods and further characterization or typing was done for Salmonella (serotyping), Shigella and Yersinia (species). Two laboratories follow recommendations for the search of pathogens based on the characteristics of the specimen.

CONCLUSIONS:
The study involved three laboratories only. The limited number of pathogens routinely tested and the sensitivity of the methods used could have affected the efficacy of the diagnosis (very low percentage of positive). Development of criteria/guidelines for the diagnosis of IGI to obtain a more effective diagnostic approach is needed.

PRESENTED BY: MISS CATERINA GRAZIANI

20100125 Poster Food- and water-borne diseases

Keywords: Gastroenteritis, Diarrhea, Cost of illness, Sick leave

Estimated incidence and production losses due to acute gastroenteritis in Sweden

Frida Hansdotter (1), Y. Ngo (1), K. Sundström (2), Y. Andersson (1)

AFFILIATIONS:
1. Department of epidemiology, The Swedish Institute for Infectious Disease Control (SMI), Solna, Sweden
2. AgriFood Economics Centre, Lund, Sweden

BACKGROUND:
Little is known about the annual incidence and societal costs due to acute gastroenteritis in Sweden, information important for planning control measures and setting priorities. We conducted a survey in May 2009 to estimate the incidence and production losses due to acute gastroenteritis.

METHODS:
A postal self-administered questionnaire was distributed to 4000 persons randomly selected from the national registry. We asked about the number of episodes of acute gastroenteritis during the previous 12 months followed by questions about symptoms, duration of sickness and work/school absenteeism related to the last episode. A case was defined as a person with at least one episode of diarrhea or three or more of the symptoms: vomiting, stomach cramps, nausea or fever. We adjusted the incidence estimate for age and calculated a 95% confidence interval. Production losses were calculated using data on average wage costs by age group and gender from Statistics Sweden.

RESULTS:
Among 2564 respondents (66% response rate), 439 cases were identified with 1.6 episodes of gastroenteritis per case. In total, 19% (95%CI 17-20%) of the population suffered at least one episode of acute gastroenteritis during the study period. Of the cases, 74% took sick leave and 81% of parents of cases <12 years stayed home from work (median duration=3 days). Mean production losses per episode and case taking sick leave was EUR 161 and per parent staying at home with a sick child EUR 239. Total production losses were EUR 223 million.

CONCLUSIONS:
Acute gastroenteritis occurred in 1 in 5 people during the study period resulting in extensive total production losses. Future surveys should also consider health care costs to estimate the total cost of illness due to acute gastroenteritis.

PRESENTED BY: MS FRIDA HANSDOTTER

20100031 Poster Food- and water-borne diseases

Keywords: Gastroenteritis, hospitalization, etiology, rotavirus

Etiology of acute gastroenteritis requiring hospitalization in the Netherlands

Ingrid Friesema (1), R. F. de Boer (2), E. Duizer (1), L. M. Kortbeek (1), D. W. Notermans (1), MPG Koopmans (1), AMD Kooistra-Smid (2), YTHP van Duynhoven (1), on behalf of the GEops Working Group

AFFILIATIONS:
1. National Institute for Public Health (RIVM), Centre for Infectious Disease Control, Bilthoven;
2. Laboratory for Infectious Diseases, Department of Research & Development, Groningen

BACKGROUND:
Infectious gastroenteritis causes a considerable burden of disease worldwide. In the Netherlands, gastroenteritis has an estimated community-incidence of 283 per 1,000 person years. Only a small proportion of these cases visits a general practitioner, and hospitalization rates are even lower. Nevertheless, the costs for hospitalization are high. Effective control of gastroenteritis should be targeted at the diseases with the highest burden. To determine this, an accurate understanding of the relative importance of the different bacterial, viral, and parasitic pathogens is needed.

METHODS:
Our objective was to determine the etiology of gastroenteritis requiring hospital admission in the Netherlands. Six hospitals enrolled patients admitted with gastroenteritis for approximately one year over the period May 2008 – November 2009. Participation included epidemiological and clinical questionnaires, and a fecal sample.

RESULTS:
In total, 143 children and 44 adults hospitalized for gastroenteritis, were included in the study. The full diagnostic panel of pathogens could be performed on the fecal samples of 96 children and 41 adults. One or more pathogens were found in 98% and 59%, respectively. Relatively often co-infections were found in both the children (40%) and the adults (22%). In children, viruses were detected in 82% of the samples (rotavirus most common with 56%), bacteria in 32% (enteropathogenic E.coli: 13%) and parasites in 10% (Cryptosporidium: 7%). In adults, viruses were detected in 32% (rotavirus most common with 22%), bacteria in 34% (Clostridium difficile: 10%), and parasites in 24% (Dientamoeba fragilis: 5%) of the samples.

CONCLUSIONS:
The present study emphasizes the importance of viral pathogens, especially rotavirus, in hospitalizations with gastroenteritis. Policies to reduce (costs of) hospitalizations due to gastroenteritis should therefore be focused on rotavirus.

PRESENTED BY: DR INGRID FRIESEMA

20100040 Poster Food- and water-borne diseases

Keywords: infectious diseases, outbreaks, disease clustering, Salmonella Goldcoast

European investigation into unusual multi-state increase of Salmonella Goldcoast infections, 2009.

Salmonella Goldcoast EU investigation team

AFFILIATIONS:
Denmark: Steen Ethelberg (1), Luise Muller (1), Mia Torpdahl (1), Eva Møller-Nielsen (1)
ECDC: Annick Lenglet (2), Celine Gossner (2), Johanna Takkinen (2), Denis Coulombier (2)
Hungary: Krisztina Horvath (3), Katalin Kristalovics (3), Noemi Nogrady (3), Judit Paszti (3)
Italy: Ida Luzzi (4), Gaia Scavia (4), Giovanna Ciaravino (4), Anna Maria Dionisi (4)
Norway: Karin Nygard (5) and Georg Kapperud Norwegian (5)
Spain: Gloria Hernandez (6), Aurora Echeita, Silvia Herrera (7), Carmen Varela (6), Elena Martinez (6), Martin Mengel (6), Isabel Martinez-Pino (6)
United Kingdom: Katy Harker (8), Chris Lane (8), Tansy Peters (8)

1. Statum Serums Institute, Denmark
2. European Centre for Disease Prevention and Control, Sweden
3. National Centre for Epidemiology, Hungary
4. Istituto Superiore di Sanita, Italy
5. Institute of Public Health, Norway
6. National Centre for Epidemiology, Institute Carlos III, Madrid, Spain
7. National Centre for Microbiology, Institute Carlos III, Madrid, Spain
8. Health Protection Agency, United Kingdom

BACKGROUND:
In October 2009, Hungary and Italy reported an increase in Salmonella Goldcoast (SG) cases through the European food and waterborne diseases and zoonoses (FWD) network. Denmark, Norway and the United Kingdom (UK) identified cases having travelled abroad during the incubation period. We initiated an outbreak investigation to identify the scale and source of the outbreak and the discriminatory power of pulsed-field-gel-electrophoresis (PFGE) for SG.

METHODS:
A case was defined as a European resident with SG infection since 2009. The investigation included: 1) national epidemiological investigations in Italy and Hungary, 2) trawling interviews of travel-related cases in Denmark, Norway and the UK, and 3) PFGE profile comparison of isolates from human cases and animal/food isolates using XbaI and Spe enzymes.

RESULTS:
In Europe 148 cases were reported. Results from Italy and Hungary supported the hypothesis on consumption of pork products as the source of infection. The fifteen travel-related cases reported no common source of exposure. Analysis of the PFGE profiles (n=112) showed two clusters with >85% homology. Cluster A contained human isolates from Hungary (n=44), Italy (n=15), Spain (n=12), UK (n=3), one Cyprus-travel case, and Italian pork isolates (n= 5). Cluster B contained 36 human isolates, 60% reported travel to Mallorca in the week before symptom onset.

CONCLUSIONS:
This European level outbreak investigation demonstrates the value of conducting epidemiological and microbiological investigations in a coordinated manner. PFGE analysis with XbaI can discriminate clusters of SG but the interpretation should be supported by epidemiological information such as travel history. SG infection is a likely result of pork meat consumption, but further analyses are needed in collaboration with veterinary authorities to understand the complex pattern of exposure from farm to fork.

PRESENTED BY: MS ANNICK LENGLET

POSTER SESSION **ABSTRACTS**

20100295 Poster Food- and water-borne diseases

Keywords: Hepatitis A, case-control study, dried-tomatoes, surveillance

Increasing trend of hepatitis A in Italy related to semi-dried tomatoes, results from a case-control study conducted in two regions

Caterina Rizzo (1), P. Salcuni (2), L. Virtuani (2), L. Vellucci (2), A. Bella (1), S. De Santis (1), F. Riccardo (1), M. G. Pompa (2), S. Salmaso (1), S. Declich (1).

AFFILIATIONS:
1. National Center for Epidemiology, Surveillance and Health Promotion, Istituto Superiore di Sanità, Roma, Italy
2. Ministry of Health, Rome, Italy

BACKGROUND:
In Italy hepatitis A (HAV) is endemic; however, incidence rate has shown a decreasing trend in recent years also because infant routine immunization has been implemented since 2000 in endemic Southern regions. Following the HAV outbreaks described in Australia, France and Netherlands linked to consumption of semi-dried tomatoes, we analyzed retrospectively HAV incidence as notified through the Italian surveillance system in order to detect any possibly overlooked increases during the period of the outbreaks in Europe, and we conducted a case-control study.

METHODS:
HAV incidence analysis in Italy was performed by: a) reviewing data within the statutory notification system from November/2009 to February/2010; b) reviewing data from the syndromic-surveillance-network of Italian emergency services access for acute-jaundiced-syndrome; c) conducting a case-control study in those regions where an increasing number of cases was reported.

RESULTS:
Data from national-notification and the syndromic-surveillance systems showed that no epidemic threshold was breached for HAV and for acute-jaundiced-syndrome, respectively. However, two regions reported an increasing trend of HAV cases in the study period with a total of 31 cases. Of these, five resulted secondary cases. Of the 26 primary cases, 23 were male, with a median age of 36 years (range 9-60). No laboratory investigation of cases was possible since no acute serum sample was available for sequencing. A total of 26 cases and 36 controls were investigated. The univariate analysis showed no association between semi-dried tomatoes consumption and disease (odds-ratio: 2.7; 95% CI: 0.66-12.5).

CONCLUSIONS:
The case-control study did not confirm food products containing semi-dried tomatoes as a risk factor for the Italian HAV cluster. However, dried tomatoes are commonly eaten in Italy and their consumption was reported both by cases and controls.

PRESENTED BY: DR CATERINA RIZZO

20100173 Poster Food- and water-borne diseases

Keywords: Salmonella Goldcoast; outbreak investigation; pork-containing food

International outbreak of Salmonella Goldcoast: epidemiological and microbiological investigation in Italy

Giovanna Ciaravino (1), G. Scavia (1), A. M. Dionisi (1), A. Pavan (2), L. Barco (3), A. Ricci (3), I. Luzzi (1)

AFFILIATIONS:
1. Istituto Superiore di Sanità, Rome – Italy
2. Regione Lombardia, Milan – Italy
3. Istituto Zooprofilattico Sperimentale delle Venezie, Padua – Italy

BACKGROUND:
In Italy, notification of Salmonellosis in human is mandatory. Information on typing of isolates from human is provided by EnterNet-Italia, a laboratory-based surveillance network, that cooperates with both the ECDC and the NRL for Salmonella in animals and food. An urgent inquiry, concerning a suspected international outbreak of Salmonella Goldcoast infection in humans, was received from the ECDC (November 2009). A national investigation was initiated to prove whether Italy was involved in the outbreak and to determine possible sources of infection.

METHODS:
A nation-wide active case-finding was carried out in cooperation with the Regional Public Health Authorities. Cases were ascertained through the EnterNet-Italia database and the regional surveillance system for human infectious diseases. Epidemiological investigation was focused only on cases occurred between June 2009 and February 2010. PFGE profiles of strains isolated from human and animal/food were analyzed and compared using two enzymes (XbaI/Spe).

RESULTS:
Sixty-six confirmed cases of S.Goldcoast infection were reported. Most of them clustered in the Lombardia Region. Thirteen cases were linked with two point-source outbreaks, associated with the consumption of different type of salami. Of the remaining cases, 38 were traced-back and in depth interviewed. Twenty-five cases reported the consumption of “pork-containing food”, in particular of salame, bacon, sausages. The PFGE analysis revealed an high homology of the Italian S.Goldcoast strains isolated from humans and swine. High similarity with isolates from Hungarian cases was also observed.

CONCLUSIONS:
An outbreak of S.Goldcoast occurred in Italy since summer 2009. The Italian cases were part of the international outbreak. No source of infection could be confirmed either microbiologically or epidemiologically, however the pig production chain was strongly suspected to be implicated in the origin of the outbreak.

PRESENTED BY: MISS GIOVANNA CIARAVINO

20100239 Poster Food- and water-borne diseases

Keywords: infectious diseases, outbreak, Foodborne Diseases, Salmonella enterica

Investigation of Hungarian Cases of a European Outbreak of Salmonella Goldcoast, 2009/2010

Martin Mengel (1, 2), K. Horvath (3), N. Nogrady (3), K. Krisztalovics (3), J. Paszti (3), J. Takkinen (4), A. Lenglet (4)

AFFILIATIONS:
1. European Programme for Intervention Epidemiology Training, European Centre for Disease Prevention and Control, Stockholm, Sweden
2. National Centre for Epidemiology, Instituto de Salud Carlos III, Madrid, Spain
3. National Centre for Epidemiology, Budapest, Hungary
4. European Centre for Disease Prevention and Control, Stockholm, Sweden

BACKGROUND:

Salmonella Goldcoast (SGC) is rare in outbreaks in Europe. Between July-September 2009 Hungary observed 23 cases of SGC, instead of the usual 0-9 and alerted ECDC. Further cases were identified EU-wide. Within this context Hungary launched an investigation to describe the outbreak, identify risk factors for infection and propose control measures.

METHODS:

Cases were Hungarian residents, SGC lab-positive, reported since 1/January/2009. Pulsed-field-gel-electrophoresis (PFGE) was conducted on SGC isolates. Using an in-depth questionnaire, covering demographics, symptoms and various foods, Sixteen cases were interviewed, with disease onset from 1/October/2009, hence minimizing recall bias. A prospective matched case-control study was initiated, focused on infection through pork. We included one case/household. Controls were persons notified (±1 week) for infections other than gastroenteritis, matched by age (± 5 years) and region. Matched odds ratios (MH-ORs) were calculated for all exposures.

RESULTS:

Sixty cases (34 males) were notified in Hungary with onset from 2/January/2009 to 16/February/2010. PFGE profiles of 45 isolates were indistinguishable. Fifteen of 16 initially interviewed cases reported regularly consuming pork the week before symptom onset. One family cluster (n=7) ate "pig cheese" (pig's stomach stuffed with various pork meat). Excluding unmatched cases the case-control study includes 16 cases and 28 controls. Pig cheese or sausages were eaten by 9/14 cases with MH-OR=6.9 (CI95%=0.8-60.5) and MH-OR=2.6 (CI95%=0.5-15.1), respectively.

CONCLUSIONS:

Epidemiological analysis did not identify an association between infection and consuming specific pork foods. The duration and geographic spread of the outbreak point to a continuous common source of SGC in the food chain. Laboratory results present links to European cases. The Hungarian investigations are completed. Further investigations at EU-level try to identify contamination sources and propose control measures in pig stock.

PRESENTED BY: MR MARTIN MENGEL

20100053 Poster Food- and water-borne diseases

Keywords: norovirus, foodborne outbreak

Multiple norovirus outbreaks associated with imported frozen raspberries in Finland in 2009

Sarvikivi E. (1), Roivainen M. (1), Maunula L. (2), Niskanen T. (3), Korhonen T. (1), Lappalainen M. (4), Kuusi M. (1)

AFFILIATIONS:
1. Department of Infectious Disease Surveillance and Control, National Institute for Health and Welfare (THL), Helsinki, Finland;
2. Department of Food Hygiene and Environmental Health, Faculty of Veterinary Medicine, University of Helsinki, Finland;
3. Finnish Food Safety Authority Evira, Helsinki, Finland;
4. Department of Virology, Hospital District of Helsinki and Uusimaa Laboratory (HUSLAB), Helsinki, Finland

BACKGROUND:

In 2009, the Finnish National Institute for Health and Welfare (THL) received numerous notifications of norovirus outbreaks associated with imported frozen raspberries. This study was conducted in order to summarize the information regarding these outbreaks.

METHODS:

We reviewed all data compiled by THL regarding food-borne outbreaks in Finland in 2009. Point-source outbreaks with an incubation period of 12-48h and positive results for norovirus in human stool samples and/or food samples were considered. For these, we collected information on the source, number of affected people, and genotyping results.

RESULTS:

Between March and October 2009, 21 norovirus outbreaks with a link to imported raspberries occurred, affecting >1000 people, and representing 66% of all food-borne norovirus outbreaks notified. Epidemiological investigation was conducted in 10 outbreaks indicating raspberries as the source in 8. Norovirus was detected in human and/or berry samples in 16 outbreaks; genogroup GII was found in 10 and GI in 6. Raspberry samples from 8-11 different batches were investigated; 5/15 (33%) samples corresponding to 3 batches (~20000kg each) were positive for norovirus. These batches were withdrawn from the market in June, July, and October. In 4 outbreaks epidemiological evidence strongly suggested raspberries (originating from 4 batches) being the source although the berry samples tested negative. Later norovirus was detected in two of these batches.

CONCLUSIONS:

Imported raspberries served as a vehicle for norovirus transmission for months despite withdrawal of contaminated batches. Proper epidemiological investigation was missing in many outbreaks, which was often compensated by successful virus detection in raspberries. Our findings highlight the importance of cooperation between epidemiology and virology: both investigations should be strengthened in the future to control such outbreaks more effectively.

PRESENTED BY: DR MARKKU KUUSI

POSTER SESSION **ABSTRACTS**

20100169 Poster Food- and water-borne diseases

Keywords: Bloody diarrhea, Hemolytic Uremic Syndrome, HUS, E. coli O104

New challenge for national public health, Hemolytic Uremic Syndrome (HUS)—Republic of Georgia, 2009

Otar N. Chokoshvili (1, 4), Lomashvili K. (4), Malakmadze N. (3), Lashqarashvili M. (2), Chitadze N. (2), Tevzadze L. (2), Geleishvili M. (4), Strockbine N. (3), Bopp C. (3), Talkington (3), Mody R. (3), Brant J. (5), Rush T. (3, 4), Maes E. (3, 4).

AFFILIATIONS:
1. Infectious Disease, AIDS and Clinical Immunology Research Center, Department of Epidemiology
2. National Center for Diseases Control and Public Health Tbilisi, Georgia
3. Center for Disease Control, US, Atlanta, Georgia.
4. Southern Caucasus Field Epidemiology and Laboratory Training Regional Program, Tbilisi, Geogia.
5. Consultor Independiente para la REDSUR TEPHINET – Red de programas de Epidemiologia de Campo

BACKGROUND:
HUS, a life-threatening condition, most frequently follows bloody diarrhea caused by Shiga toxin-producing E. coli (STEC). In July–August 2009, eight persons with probable HUS were admitted to Tbilisi hospitals, two case patients died. Preliminary testing of stool samples suggested the presence of E. coli O157. We investigated to confirm an outbreak, identify common exposures, and find additional cases.

METHODS:
We started active surveillance for bloody diarrhea and probable HUS at nine clinics in two regions. A Probable HUS case was defined as anemia and kidney damage occurring within 21 days after a diarrheal illness. We collect specimens (stool and blood) interviewed patients and abstracted medical charts. Samples were tested for Shiga toxin and enteric pathogens at the Georgia national laboratory and at CDC Atlanta.

RESULTS:
We identified 87 bloody diarrhea cases, 25 with probable HUS. Half of the HUS case-patients were less than 15 years old, 67% were female, seven died including two children. No common exposures were identified. Among 20 HUS case-patients whose specimens were tested, two had Shiga toxin in their stool (including one with serological evidence of E. coli O104). Preliminary E.coli O157 findings were not confirmed. Among 56 persons with only bloody diarrhea we isolated O104 STEC from two and Shigella from 10; we found serological evidence of E. coli O26 in two.

CONCLUSIONS:
Georgia experienced many sporadic HUS and bloody diarrhea cases in 2009; it is unclear if this represents the detection of a pre-existing burden, or a new phenomena. Cases were caused by several pathogens, including the first confirmed O104 STEC infection in Georgia. We recommend strengthening surveillance through reporting of suspected HUS cases and improving capacity to detect STEC infections.

PRESENTED BY: MR OTAR CHOKOSHVILI

20100366 Poster Food- and water-borne diseases

Keywords: norovirus, gastroenteritis, outbreak

Norovirus Outbreak in a Thermal Hotel in Turkey

Demet Furkan Sevindi (1), H. Kalaycıoğlu (1), E. Türkekul Şen (1), G. Korukluoğlu (1), A. Gözalan (1)

AFFILIATIONS:
Refik Saydam National Public Health Agency

BACKGROUND:
Noroviruses are the most common cause of gastroenteritis outbreaks. This retrospective cohort study was carried out to analyse the outbreak, detected during a meeting which all participants were health care workers, in a thermal hotel in Turkey. The cases with diarrhea were notified on 10 February 2010. Norovirus was identified from three of the eight specimens analysed by RT-PCR in Refik Saydam National Public Health Agency. The primarily suspected reason was the well water system of the hotel.

METHODS:
A web based questionnaire was sent to 227 participants of whom 107 completed. The response rate was 41,1 %. Data was analyzed by SPSS-17 and chi-square tests. A case was defined as a person who attended the meeting and be resident at the hotel between 7 February and 12 February and developed diarrheae and/or vomiting and / or nausea and/or abdominal pain.

RESULTS:
Totally 42 subjects (39,3 %) were defined as cases. According to epidemic curve which demonstrated a sharp peak on 9 February, the menus of 7, 8 and 9 February covering the incubation period were analyzed one by one and as three categories of meats, foods with potato and cream, fresh fruits and vegetables. There was no statistical significance in food analysis. Symptoms of persons consuming tap water were higher than those consuming bottled water (46,3%, p=0,261). Among cases, 43,2% of whom entering the pool had symptoms while it was 37,1 % who didn't enter the pool. Bacterial analysis of water and food samples were negative. Viral analysis was failed due to inadequate sampling.

CONCLUSIONS:
There was no evidence that the outbreak was food or water related. Our findings indicated the importance of virologic investigations of environmental samples.

PRESENTED BY: MRS DEMET FURKAN SEVINDI

20100265 Poster Food- and water-borne diseases

Keywords: V. cholerae, V. parahaemolyticus, V. vulnificus

OCCURRENCE OF PATHOGENIC VIBRIOS IN THE LIGURE SEA ENVIRONMENT (ITALY)

Antonio Barbaro (1), Cristiana Maurella (1), Carlo Ercolini (2), Nicoletta Vitale (1), Laura Chiavacci (1), Laura Serracca (2)

AFFILIATIONS:
Istituto Zooprofilattico Sperimentale del Piemonte Liguria e Valle d'Aosta (1) Osservatorio Epidemiologico, Torino; (2) Laboratorio di Microbiologia Marina, Sezione di La Spezia

BACKGROUND:
Consumption of raw or undercooked seafood contaminated with pathogen vibrios (V. cholerae, V. parahaemolyticus e V. vulnificus) may lead to development of acute gastroenteritis characterized by diarrhea, headache, vomiting, nausea, and abdominal cramps. To evaluated vibrios distribution in the Ligure Sea (north-western Italy) a surveillance plan on seafood and sea fish was settled in 2007.

METHODS:
Samples of shellfish and sea fish from commercial distribution, fish market and purification centres in Liguria were collected between May 2007 and April 2008. The approach involved isolating pathogenic vibrios strains by cultural and biochemical analysis and PCR. The presence of V. parahaemolyticus thermostable direct haemolysin (tdh) and the tdh-related haemolysin (trh), was also investigated. In order to evaluate association with sea temperature, place of collection and fish categories a bivariate analysis was executed.

RESULTS:
Two hundred and twenty eight samples consisting of sea fishs (144), crustaceans (33), and molluscs (51) were analyzed. V. parahaemolyticus was identify in 2 samples out of 228 by PCR in (mussel, squid) (0,9%; IC 95%: 0,1%-3%) no tdh and trh were found. Samples showed no presence of V. vulnificu, neither V. cholerae O1 and non O1, V. cholerae non O139. Fisher exact test showed association between presence of V. parahaemolyticus and sea temperature; while others factors were not statistically significant.

CONCLUSIONS:
Results confirm the occasional presence of Vibrio spp. in seafood products. Although the absence of TDH and TRH toxins responsible of human pathogens may suggest a low risk for consumer in the region further investigations should be considered.

PRESENTED BY: MRS MAURELLA CRISTIANA

20100348 Poster Food- and water-borne diseases

Keywords: Helicobacter pylori, peptic ulcer, risk factors

Possible modification of risk factors for peptic ulcer among persons with Helicobacter pylori infection in Georgia

Nana Mebonia (1), N. Chakvetadze (2), M. Mircxulava (2)

AFFILIATIONS:
South Caucasus FELTP

BACKGROUND:
According to US Centers for Disease Control, Helicobacter pylori presents in 50 to 70 % of patients with peptic ulcer. In Georgia, since 2004 incidence of gastric disorders has increased twice. The goal of this study was to assess variation in importance of risk factors for peptic ulcer among the patients with or without Helicobacter pylori infection.

METHODS:
Persons visiting one of four Tbilisi, Georgia endoscopy centers in 2007-2008 with gastric complaints were serologically tested for Helicobacter pylori and examined by endoscopy for clinical diagnosis. Case-control study was conducted to identify an association between different exposures, Helicobacter pylori and peptic ulcer. Case-patients were diagnosed with peptic ulcer; controls had gastric symptoms but free from stomach cancer, gastritis or ulcer.

RESULTS:
We identified 181 case-patients and 164 controls. Bivariate analysis revealed associations between ulcer and Helicobacter pylori (OR=2.2, 95%CI=1.4-3.4), frequent alcohol consumption (OR=2, 95%CI=1.1-3.4), family history of gastric disorders (OR=3.4, 95%CI=2.1-5.3), smoking (OR=1.9, 95%CI=1.3-2.8). Stratified analysis showed stronger association between Helicobacter pylori and ulcer among patients with frequent consumption of alcohol (OR=3.2 vs. OR=1.9) and consumption of spicy food (OR=2.8 vs. OR=1.3) then among those who did not have above habits. The role of family history in developing of ulcer was increasing with Helicobacter pylori infection (OR=4.2 vs. OR=2.6).

CONCLUSIONS:
Our study revealed that frequent consumption of alcohol or spicy food might increase risk of developing peptic ulcers among those with Helicobacter pylori infection. Having family history of gastric disorders concomitant with Helicobacter pylori infections increases the risk of developing ulcer. Increasing population awareness about influence of certain risk factors on development of ulcer among patients with Helicobacter pylori could contribute to prevention of disease.

PRESENTED BY: MS NANA MEBONIA

POSTER SESSION **ABSTRACTS**

20100234 Poster Food- and water-borne diseases

Keywords: Yersinia enterocolitica, case-control studies, risk factors, foodborne illnesses

Risk factors of sporadic Yersinia enterocolitica infections in Germany, 2009–2010: a case-control study

Bettina M. Rosner, K. Stark, D. Werber

AFFILIATIONS:
Robert Koch Institute, Department of Infectious Disease Epidemiology, Berlin, Germany

BACKGROUND:
Yersinia enterocolitica infection leads to gastroenteritis and sometimes to sequelae such as reactive arthritis. Yersiniosis incidence in Germany is higher than in other European countries, highest in children aged <5 years and varies across federal states. We conducted a multi-state case-control study to investigate risk factors of sporadic Y. enterocolitica infection.

METHODS:
A case was defined as illness in a person with notified Y. enterocolitica infection between 15 April 2009 and 30 June 2010. Age-frequency-matched controls were randomly drawn from population registries. Participants completed self-administered questionnaires. Age- and sex-adjusted multivariable logistic regression models were constructed to identify possible risk factors.

RESULTS:
In preliminary analysis, including 501 cases and 1419 controls, the consumption of raw minced pork was the major risk factor of yersiniosis (adjusted odds ratio 4.0; 95% confidence interval 2.9-5.7). This association was even higher in children aged <5 years (6.1; 3.2-11.6). The proportion of cases reporting such consumption before disease onset was 32% overall, but also in children aged <5 years. Raw minced pork was most frequently consumed in federal states with high reporting incidences of yersiniosis (16-22 notified infections per 100.000 inhabitants) and least frequently in states with low reporting incidences (4-5 notified infections per 100.000 inhabitants). Additional risk factors of yersiniosis were handling of raw minced pork in the household and, in children, playing in a sandbox.

CONCLUSIONS:
Reducing the high prevalence of Y. enterocolitica in slaughtering pigs and products made therefrom is critical for prevention of yersiniosis. Risks associated with consumption of raw minced pork, popular in Germany, need to be communicated more clearly to consumers, in particular to parents of young children.

PRESENTED BY: DR BETTINA ROSNER

20100130 Poster Food- and water-borne diseases

Keywords: Foodborne Diseases, Disease Outbreaks, Salmonella Infections, Salmonella Food Poisoning, Public Health

Severe salmonella infections linked to a private barbecue, Rhineland-Palatinate, Germany May 2010

Elke Mertens (1, 2, 3), H. Kreher (4), W. Rabsch (5), F. Burckhardt (1)

AFFILIATIONS:
1. Public Health Services Rhineland-Palatinate, Germany
2. Postgraduate Training for Applied Epidemiology (PAE, German FETP), Robert Koch Institute, Berlin, Germany
3. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
4. District Health Office Pirmasens, Rhineland-Palatinate, Germany
5. National Reference Centre for Salmonella, Robert Koch Institute, Wernigerode, Germany

BACKGROUND:
In May 2010 ten cases of S.enteritidis were notified to the District Health Office Pirmasens, Germany. Early investigations revealed a private barbecue as a possible source. Our aim was to identify the vehicle and to describe the extent of the outbreak.

METHODS:
We conducted exploratory interviews. In a retrospective cohort study all barbecue participants received questionnaires containing items on demographics, food consumption and symptoms. We performed descriptive and analytical data analysis. Pathogens identified in stool cultures were phage-typed. A case was a person who developed diarrhoea within 6-72 hours after attending the barbecue.

RESULTS:
All 14 barbecue participants developed gastro-enteric symptoms, 11 returned questionnaires. Median age of the cases was 26.5 (range 21-28) and gender was evenly distributed. First symptoms occurred within 6-25 hours (median 16) after the barbecue. Ten cases developed severe diarrhoea lasting > three days, three were hospitalised and two developed pancreatitis. The only common exposure was a vegetable-pasta-salad prepared by a person who could not attend the barbecue because he was hospitalised with diarrhoea the morning before. His vegetable-pasta-salad had been stored unrefrigerated for 23 hours before being served at the barbecue. No food for testing was left over. We found no relationship between amount of vegetable-pasta-salad consumed and hospital admission, symptom duration or disease onset. Stool cultures found S.enteritidis in ten cases. Phagetype S.enteritidis PT:8/7 was identified in the salad-preparer and one barbecue-participant.

CONCLUSIONS:
This salmonella outbreak resulted in severe infections and hospitalisations among young healthy adults. The most likely vehicle was a vegetable-pasta-salad which had been stored unrefrigerated for 23 hours, allowing substantial increase in bacterial load. This outbreak underscores the importance of proper kitchen hygiene and food storage in private settings.

PRESENTED BY: DR ELKE MERTENS

20100027 Poster Food- and water-borne diseases

Keywords: infectious diseases, outbreaks, disease clustering, information dissemination, food and waterborne, zoonotic

Summary of the Food- and Waterborne Diseases and Zoonoses Urgent Inquiries affecting Europe in 2009.

Annick Lenglet, Nadia Ciampa, Angela Lahuerta Marin, Therese Westrell, Johanna Takkinen, Andrea Ammon and Denis Coulombier on behalf of the Food and Waterborne Diseases and Zoonoses Network.

AFFILIATIONS:
European Centre for Disease Prevention and Control

BACKGROUND:
The European Centre for Disease Prevention and Control (ECDC) coordinates the Food and Waterborne Diseases and Zoonoses network (FWD network) for epidemiologists and microbiologists from EU and EEA/EFTA countries and eight non-EU countries. One aim of this network is to detect multi-country, common-source FWD outbreaks by exchanging information through urgent inquiry (UI) messages. We present a summary of the UIs for 2009.

METHODS:
FWD network countries inform network members of unusual increases in human cases of enteric disease detected through national surveillance systems, by sharing UIs with laboratory and epidemiology information. Countries are reporting back if similar increases are observed. By exchanging microbiological and epidemiological data, multi-country outbreaks with common sources of contamination can be identified.

RESULTS:
In 2009, 28 UIs were issued. Twenty-one were initiated by EU or EEA/EFTA countries, two by ECDC and five by non-EU countries. Eleven UIs involved two or more countries. Salmonella sp. was reported in 61% of UIs, followed by 21% related to STEC/VTEC infection, 11% related to Shigella sp. and one related to Cyclospora. For 68% of the UIs a source of infection was identified. Two UIs led to multi-country investigations supported by ECDC; one for hepatitis A associated with consumption of semi-dried tomatoes and one for Salmonella Goldcoast suspected to be from contaminated pork-containing food.

CONCLUSIONS:
The FWD urgent inquiries are a valuable resource for the early detection of outbreaks of food and waterborne and zoonotic origin within Europe and internationally. The number and content of UIs in 2009 corresponds to previous years. However, in 2010 it is anticipated that through the use of the Epidemic Intelligence Information System (EPIS), information exchange will increase, be more rapid and transparent.

PRESENTED BY: MS ANNICK LENGLET

20100284 Poster Food- and water-borne diseases

Keywords: Giardia, Cryptosporidium, risk assessment

Towards a risk assessment for Giardia sp. and Cryptosporidium sp. in Portuguese fluvial beaches: a seasonal sampling over two years

Cláudia Julio (1), I. Ferreira (1), S. Martins (1), C. Sá (2), H. Ângelo (1), J. Guerreiro (3), R. Tenreiro (2)

AFFILIATIONS:
1. Instituto Nacional de Saúde Dr. Ricardo Jorge, Departamento de Doenças Infecciosas, LNR de Infecções Gastrentestinais, Lisboa, Portugal
1. Universidade de Lisboa, Faculdade de Ciências, Centro de Biodiversidade, Genómica Integrativa e Funcional (BioFIG), Lisboa, Portugal
1. Universidade de Lisboa, Faculdade de Ciências, Centro de Oceanografia, Lisboa, Portugal

BACKGROUND:
Waterborne outbreaks of diarrhoeal illness reported worldwide are mostly associated with Cryptosporidium sp. and Giardia sp. Lake and river waters contaminated with (oo)cysts are major routes of human exposure making essential the development of preventive strategies for water safety. Since monitoring of water contamination with (oo)cysts is not routinely performed in Portugal, this study aims to unveil the possible associations between Portuguese fluvial beach characteristics and risk for public health caused by different genotypes of Giardia sp. and Cryptosporidium sp..

METHODS:
Nineteen beaches were selected according to land use and environmental parameters and sampled, on winter and summer, for the presence of Giardia sp. and Cryptosporidium sp., as well as faecal indicators and physicochemical parameters. Immunomagnetic separation was performed according the US EPA Method 1623 with Dynal procedure (Dynabeads), followed by detection of (oo)cysts by immunofluorecence microscopy after staining with FICT-labelled monoclonal antibody. Cysts viability was also confirmed by nucleic acid dye (DAPI) staining.

RESULTS:
The results show that Giardia cysts are present at least in 83% of the sampled beaches. Presence of Cryptosporidium oocysts was not lower than 74%. Additionally, seasonal differences on (oo)cysts amount were perceived. A dendrogram analysis highlighted different clusters which evidence patterns among the sampled beaches. Principal Component Analysis also indicates distinct weights for land use, physicochemical and microbiological parameters in these different clusters.

CONCLUSIONS:
The results of the present study indicate that Giardia sp. and Cryptosporidium sp. are widely distributed and should be considered as a public health issue. Moreover, beach clusters turn out to be a helpful tool to assess the public health risk.

PRESENTED BY: DR CLÁUDIA JULIO

POSTER SESSION **ABSTRACTS**

20100119 Poster From outbreak investigation to policy changes

Keywords: Hepatitis A outbreak. Vaccination. Epidemiological pattern.

AN OUTBREAK OF HEPATITIS A IN A NURSING SCHOOL. LESSONS FOR CHANGES

Antonia Galmes Truyols, J. Gimenez Duran, A. Nicolau Riutort, M. Portell Arbona, J. Vanrell Berga

AFFILIATIONS:
Epidemiology Service. Public Health Department. Balearic Islands. Spain

BACKGROUND:
As a result of the improvement of sanitation in the Balearic Islands, the predominant transmission way of Hepatitis A (HA) changed from water or food to faecal-oral, its incidence decreased and important changes in its epidemiological pattern occurred. Current data suggest that there is an important group of susceptible young adults, and it is not unlikely that epidemics will appear in populations that, because of their age, are at a higher risk of complications, while HA vaccine is used almost exclusively in international travellers. We describe a current outbreak of HA reported on 7th May 2010 which main focus is a nursery school, as well as the Public Health response.

METHODS:
Epidemiological, clinical and laboratory data are collected through the nursery staff, the affected persons and the health records. An alert to the health services issued and surveillance of HA was enhanced. Non-reported are searched through the laboratory records. Control measures: information, hygiene reinforcement, isolation of cases and vaccination of contacts.

RESULTS:
The current number of cases is 15 (7 children, 1 care giver and 7 relatives of symptomatic and non-symptomatic children). There is not common exposure to food or water. The first case initiated symptoms on 13th May and 3 clusters, one every two weeks, followed. One of the adults suffered from thrombocytopenia and haemorrhage. Only 43% of the eligible persons were vaccinated.

CONCLUSIONS:
This outbreak illustrates the change of the pattern of HA in its transmission way, the age of affected persons and complications and the need of specific HA control policies. The early vaccination of contacts of HA cases should be considered and the introduction of HA vaccine in paediatric vaccination schedule should be discussed.

PRESENTED BY: DR ANTONIA GALMES TRUYOLS

20100087 Poster From outbreak investigation to policy changes

Keywords: communicable diseases, legal aspect

Communicable diseases and national legislation in Greece: the need for systematization and clarity

Hatzianastasiou S., Pavli A., Smeti P., Saroglou G., Maltezou H. C.

AFFILIATIONS:
Travel Medicine Office, Hellenic Centre for Disease Control and Prevention

BACKGROUND:
Legal preparedness regarding communicable diseases (CDs) is paramount in the context of the International Health Regulations (IHR-2005) implementation. Having observed in a previous study legal knowledge gaps among PH workers, we explored whether these are related to lack of clarity of law.

METHODS:
We conducted a review of 202 legally binding documents published in the National Legal Gazette from 1830 (founding of Greek state) to 5/2010. Compatibility with European and international law was examined.

RESULTS:
CD control has been the focus of health legislation in the 19th and first part of the 20th century: five laws for the comprehensive management of CDs were enacted between 1836-1950, followed by the 2003 law reform -in view of the Athens Olympic Games 2004- and a second reform in 2007. These were accompanied with subsequent amendments and ad hoc laws/decrees in response to specific outbreaks and emerging diseases. Existing legislation authorizes and regulates epidemiologic surveillance, notification and response functions at central and peripheral levels, provides for health measure application commensurate with PH risk, and integrates the principles of fairness, objectivity and human rights respect. No incompatibility exists between Greek and European or international law. However, relevant laws arenot consistently followed by complementary regulations necessary for law implementation. Delineation of jurisdiction at various levels of government is generally not clarified. Legal provisions are scattered and duplicated in multiple texts of varying eras making it a difficult task for PH workers to understand standing legal requirements.

CONCLUSIONS:
Greek legislation contains provisions enabling CD control and is compatible with European and international law. Still, fragmentation, duplication and legal gaps call for revision and systematization with a view to a coherent and unambiguous legal framework.

PRESENTED BY: DR SOPHIA HATZIANASTASIOU

20100268 Poster From outbreak investigation to policy changes

Keywords: measles, eradication, WHO, target

Is measles eradication feasible?

Claude P. Muller

AFFILIATIONS:
WHO Collaborating Centre for Reference and Research on Measles Infections, WHO European Regional Reference Laboratory for Measles and Rubella, Institute of Immunology, Centre de Recherche Public – Santé / Laboratoire National de Santé, Luxembourg, Luxembourg

BACKGROUND:
The World Health Organization (WHO) has adopted a global target for 2010 to reduce measles mortality by 90% as compared to the estimated levels for 2000. In addition, five of the six WHO regions have measles elimination goals. Due to the remarkable progress in measles control made during the past years, the time has now come to discuss about the feasibility of measles eradication.

METHODS:
The different requirements for measles eradication are highlighted as well as the arguments in favor and against eradication.

RESULTS:
The current status of measles control is presented globally and for the different WHO regions. While all but one region have achieved the mortality reduction goal, only one region so far achieved measles elimination. What actions are needed to achieve elimination in the other regions is discussed. In the next step the biological, logistical and financial feasibility of eradication are investigated and the requirements concerning vaccine supply and commitment of member states are presented.

CONCLUSIONS:
Whether measles eradication is a realistic target largely depends on the political and financial commitment of member states and efficient routine and supplementary vaccination strategies, surveillance and outbreak response systems.

PRESENTED BY: PROF CLAUDE MULLER

20100375 Poster GIS methods for outbreaks and surveillance

Keywords: ArcGIS, Autocorrelation, Climate, Spatial Analysis

A GIS Study of Pandemic Inluenza Characteristics

Lars Skog, Annika Linde, Fredrik Elgh

AFFILIATIONS:
Royal Institute of Technology, Stockholm, Sweden
Swedish Institute for Infectious Disease Control, Solna, Sweden
Umeå University, Umeå, Sweden

BACKGROUND:
Are there common patterns in pandemics reaching Sweden? Does weather conditions influence influenza dissemination?Thorough preparations and analyses were made on comprehensive data sets from the Asiatic Influenza in Sweden 1957-58.

METHODS:
1200 pages of records from the Swedish Medical Board were scanned, digitized and localized. In all more than 275000 cases were described in space and time. Data was converted to GIS and analyzed to describe certain characteristics. Climatogical data from the Swedish Metereological and Hydrological Institute was calculated, interpolated and assigned to all places where influenza cases were reported.

RESULTS:
Animated video sequences were created depicting the spread of the pandemic. Here the spread of the Asiatic Influenza 1957-58 is described in both space and time. Results are ccmpared with those for the Russian Influenza 1889-90 and the recent Swine Influenza. Climatological issues are discussed and methods are suggested for future analysis. No significant differnce in dissemination could be found between smaller and larger places.

CONCLUSIONS:
The methods used should be further developed and emphasis should be given to develop forms and methods for data collection in order to facilitate temporal and spatial analysis. The impact of weather factors on influenza dissemniation should also be further studied, using more detailed and recent data.

PRESENTED BY: MR LARS SKOG

POSTER SESSION **ABSTRACTS**

20100202 Poster GIS methods for outbreaks and surveillance

Keywords: Legionnaires disease, Geographical information system, cluster detection

Legionella Pneumonia Geographical Information System: a helpful tool in cluster detection

Sjoerd M. Euser (1), J. P. Bruin (1), E. P. F. IJzerman (1), J. W. Den Boer (1)

AFFILIATIONS:

1. Regional Public Health Laboratory of Haarlem, Haarlem, the Netherlands

BACKGROUND:

Legionnaires' disease is an airborne infectious disease named after a point-source outrbreak of pneumonia among members of the American Legion. In 2002, a National Legionella Outbreak Detection Programme (NLODP) was installed in the Netherlands, based on the observation that outbreaks of Legionnaires' disease are often preceded and followed by small clusters of solitary cases. Within this programme, all reported Legionnaires' disease patients and their identified potential sources of infection are registered in a central database by the Legionella Source Identification Unit (LSIU). This LSIU is also available to all Municipal Health Services to perform a sampling investigation of potential sources of Legionella infection. During the Legionnaires' disease outbreak in Amsterdam (2006), 31 cases were infected by a badly maintained cooling tower that was only identified as the source of infection after extensive research efforts. This outbreak emphasized the need for more advanced tools to enhance source identification within the NLODP.

METHODS:

Geographical information systems are powerful instruments that can be used as visual aids for complex data, both during surveillance efforts and in outbreak situations. Therefore, we developed a Legionella Pneumonia Geographical Information System (LP-GIS) that provides information on patients (patients characteristics, home address, first day of disease, microbiological diagnosis, isolated genotype from culture), and potential sources of infection (location, historic sampling results, isolated genotype from samples), and which is available for all Municipal Health Services in the Netherlands.

RESULTS:

With the LP-GIS, all information on patients and potential sources can be visualized at any desired level of geographical detail in one view.

CONCLUSIONS:

This enables the generation and immediate testing of hypotheses on the identification of Legionnaires' disease clusters during surveillance and in outbreak situations.

PRESENTED BY: MR SJOERD EUSER

20100312 Poster GIS methods for outbreaks and surveillance

Keywords: Rabies, Vaccination, GIS, Spatial Analysis

The application of GIS-based systems to the management of emergency rabies vaccinations of foxes in Italy

Paolo Mulatti, N. Ferrè, L. Gagliazzo, T. Patregnani, M. Lorenzetto, F. Mutinelli, L. Bonfanti, S. Marangon

AFFILIATIONS:

Istituto Zooprofilattico Sperimentale delle Venezie, Legnaro (Italy)

BACKGROUND:

From 2008 to 2010 rabies re-emerged and spread in wild foxes in North-Eastern Italian regions. To control the infection and to minimize the risk of human exposure, in December 2009 and April 2010 two emergency Oral Fox Vaccination (OFV) campaigns were carried out by aerial distribution in the affected regions. The main constrains that could have affected vaccination efficacy were the need to reach and verify an adequate and homogeneous vaccine bait density (25-30 baits/km2), the mountainous areas, and the limited resistance of vaccine to the winter temperatures. To overcome these limitations a GIS system was implemented and applied to manage the OFV campaigns.

METHODS:

The baits were distributed through helicopters, following pre-defined flight paths to guarantee the homogeneous coverage of the vaccination area. A satellite-navigated and computer-supported automatic system was used for the bait distribution, allowing to register the geographical coordinates of each dropping site. The bait density was estimated by superimposing a grid with a step of 1 km, and weighting the counted baits using the fraction of the grid considered "suitable".

RESULTS:

The vaccination areas were designed keeping into account the freezing point, and the baits were distributed below 1000m and 1500m asl respectively in winter and spring vaccination campaigns. However, Explorative Spatial Data Analysis (ESDA) on the distribution of infected foxes detected between September 1st 2009 and May 24th 2010 showed significant clustering of cases above 1500m. Following the results of the ESDA, the spring vaccination area was extended to include altitudes up to 2300m asl.

CONCLUSIONS:

GIS proved to be almost necessary to plan, execute and assess the outcome of the vaccination campaign, and provided information to promptly implement corrective measures.

PRESENTED BY: DR PAOLO MULATTI

20100322 Poster Health care associated infections

Keywords: Human leptospirosis, acute phase, MAT, molecular diagnosis

A Molecular Approach for the Early Human Leptospirosis Diagnosis

Teresa Carreira (1, 2), M. Nunes (1, 2), M. L. Vieira (1, 2)

AFFILIATIONS:
1. Unidade de Leptospirose e Borreliose de Lyme, Instituto de Higiene e Medicina Tropical (IHMT), Universidade Nova de Lisboa (UNL), Lisboa, Portugal;
2. Centro de Recursos Microbiológicos (CREM), Faculdade de Ciências e Tecnologia, UNL, Lisboa, Portugal

BACKGROUND:

Leptospirosis is an emerging health problem in many countries, including Portugal. The early laboratory diagnosis is relevant because the severe cases can have a fatal outcome. The reference microscopic agglutination test (MAT) is the method which detects antibodies against specific serovars. However, MAT is relatively insensitive on acute-phase, and paired sera are needed for diagnosis. Thus, molecular approaches has been attempted in order to obtain a rapid diagnosis. Several primers has been designed on genes well conserved amongst the pathogenic Leptospira species, such as lipL32 and lipL21 which encode OMP's (Outer Membrane Proteins) and are known for their immunogenic role during the infection.

The aim of this study was to optimize the molecular diagnosis PCR-based, in order to diagnose the early leptospiral infection by DNA detection in serum samples from suspected leptospirosis patients.

METHODS:

A total of 164 sera obtained in the first days of disease, from Portuguese patients, was evaluated with the following primers: G1-G2, U-lipL21 and A-lipL32, using two conventional and nested-PCR protocols, respectively. All samples were also tested by MAT.

RESULTS:

The nested-PCR (A-lipL32) showed leptospiral DNA in 127 (77.4%) sera while the PCR's with primers G1-G2 and U-lipL21 revealed the presence of leptospires DNA in 20 (12.2%) and 11 (6.7%) samples, respectively. The MAT results showed agglutinins anti-L. interrogans sensu lato in 22 (13.4%) of the samples. Comparison of nested-PCR and MAT results showed a significant difference ($p<0.001$) favourable to the molecular evaluation in the acute phase.

CONCLUSIONS:

Our results indicated that the PCR assay using primers based on lipL32 gene is a useful, sensitive and specific tool for diagnosing leptospirosis patients particularly, in the first days of disease, considering the absence of antibodies.

PRESENTED BY: MS TERESA CARREIRA

20100377 Poster Health care associated infections

Keywords: nosocomial infection, prevalence, surveillance, evaluation

Evaluation of the national surveillance system for prevalence of nosocomial infections in Norway, 2002–2007

Ágnes Hajdu (1, 2), H.M. Eriksen (2), N.K. Sorknes (2), S.H. Hauge (2), H.L. Løwer (2), B.G. Iversen (2), P. Aavitsland (2)

AFFILIATIONS:
1. National Center for Epidemiology, Budapest, Hungary
2. Norwegian Institute of Public Health, Oslo, Norway

BACKGROUND:

Since 2002, the Norwegian Institute of Public Health (NIPH) invites all hospitals and long-term care facilities for elderly (LTCFs) to participate in two annual point-prevalence surveys, recording the most common types of nosocomial infections (NIs). Using CDC criteria for evaluating surveillance systems, we assessed how well the system operates to meet its objectives.

METHODS:

Documents and surveillance tools were reviewed at NIPH. Questionnaires were sent to infection control practitioners (ICPs) at hospitals and contact persons (CPs) at LTCFs, one in each, to evaluate the system's performance. Compliance with the surveillance protocol was assessed among health professionals (HPs) involved in hospital data collection during the prevalence survey in spring 2007. Sensitivity surveys were conducted in two hospitals.

RESULTS:

On average 87% of hospitals and 32% of LTCFs participated in 2004-2007; reported data is highly complete. The surveillance described and showed trends in the prevalence of reportable types of NIs in Norway. Twenty-nine (58%) ICPs, 137 (13%) CPs, and 435 HPs (54% nurses, 42% physicians, 4% other) responded to the questionnaires. Most ICPs (69%) and CPs (62%) consider the prevalence surveys to be an important part of infection control at their institutions. Nine hospitals and 21 LTCFs implemented new control measures based on their surveillance results. Overall 348 (80%) HPs reported receiving the definitions of NIs attached to the data collection form. Among them, 39% reported full compliance with their use. Pooled sensitivity was 69.2% [95% CI: 41.3-89.3], and positive predictive value was 50% [95% CI: 27.8-72.1].

CONCLUSIONS:

The output of the surveillance system is useful and accepted by the users. There appears to be low compliance with the use of the definitions. The surveillance requires active promotion in LTCFs.

PRESENTED BY: MS ÁGNES HAJDU

POSTER SESSION **ABSTRACTS**

20100143 Poster Health care associated infections

Keywords: Evidence, World Wide Web, Healthcare Associated Infection

Evidence and Global Access: The importance of sharing resources

Susan Wiseman (1), P. Kostkova (2), G. Jawaheer (2)

AFFILIATIONS:
1. City eHealth Research Centre, City University and Department of Health, London
2. City eHealth Research Centre, City University, London

BACKGROUND:
Finding the evidence base for infection prevention and control policy and practice can no longer be marginalised to UK resources alone as the internet brings an even greater choice of 'global' research and subsequent evidence base

METHODS:
There will rightly always be evidence based government driven policy which must inform local practice but if we are to remain innovative and find new ways to provide a service with a zero tolerance approach to healthcare associated infections we will need to broaden our horizons to new research being carried out by colleagues worldwide. We also need to find ways of sharing our progress and the resources which drive prevention of infection in the UK via new modern technology

RESULTS:
Since the launch in May 2005, the National Resource for Infection Control (NRIC: www.nric.org.uk) has not only filled the gap in provision of evidence-based guidelines and policy to infection control professionals in the UK but has also become an internationally recognised online resource with quickly growing number of users. In 2009, NRIC recorded 47,738 unique visitors (not counting repeat visits) from 162 different countries resulting in 208,818 pages viewed and 13GB of data downloaded; 64% of visitors were from UK, 13% from USA, 8% from EU and 15% from the rest of the world.

CONCLUSIONS:
This presentation will discuss the present range of resources available to infection prevention and control professionals and other healthcare staff via the World Wide Web, the increasing concerns that use of the internet may not always provide reliable research based answers and ideas on how to provide 'safe' global access to the evidence base required

PRESENTED BY: MS SUSAN WISEMAN

20100244 Poster Health care associated infections

Keywords: needlestick injuries, nurse

Incidence and risk factors for needlestick injuries among nurses in oncology

Delia Herghea (1), A.Irimie (2, 3), M. Roman (1), I. M. Crisan (3)

AFFILIATIONS:
1. Infection Control Department, Oncology Institute "Ion Chiricuta", Cluj-Napoca, Romania
2. Surgical Department, Oncology Institute "Ion Chiricuta", Cluj-Napoca, Romania
3. University of Medicine and Pharmacy "Iuliu Hatieganu", Cluj-Napoca, Romania

BACKGROUND:
Needlestick injuries (NSI) represent a major hazard in nursing practice. The aim of this study was to evaluate incidence and risk factors for needlestick injuries among nurses from The Oncology Institute "Ion Chiricuta" Cluj-Napoca, Romania.

METHODS:
Surveillance data from January 2007 to December 2009 were analyzed and compared with various risk factors.

RESULTS:
From a total of 168 nurses, 19.1% reported at least one occupational needlestick injury over the three year surveillance period. Mean period of work experience was 4.9±3.6 years among nurses who reported an NSI and 8.9±8.3 years among nurses without NSI (p=0.007). The high-risk settings for occupational sharps injuries were the oncology department (RR= 6.67, 95%CI 1.82-24.36, p=0.006), the hematology department (RR=6.5, 95%CI 1.83-23.09, p= 0.004) and the intensive care unit (RR=4.33, 95%CI 1.18-15.88, p= 0.024). Most frequent injury-causing devices were syringes needles (61.1%) followed by peripheral venous catheters (25%) and suture needles (13.9%). Out of 36 injuries, 13.9% occurred during disposal of contaminated devices.

CONCLUSIONS:
Underdeveloped professional skills increase the risk of needlestick injuries. The risk of NSI was significantly higher among health personnel from oncology, hematology and intensive care unit due to complex nursing activities.

PRESENTED BY: MR DELIA HERGHEA

20100386 Poster Health care associated infections

Keywords: catheter-related infections, hospital costs

Increased health costs attributable to catheter-related bloodstream infection in a hospital in Spain.

Martínez H., Villanueva C., Camargo-Ángeles C., García-Román V., Martín-Ruiz A. C., García-González C., González-Torga A.

AFFILIATIONS:
Hospital General Universitario Alicante. Spain.

BACKGROUND:
In addition to high morbidity and mortality, catheter-related bloodstream infection (CRI) is a major cause of health costs increments. The objetive was to determine the increase of stay and costs associated with CRI in each Unit of the Alicante General Hospital(HGUA).

METHODS:
Retrospective cohort study with 1:3 matching. Study period: February to December 2009. The CRI (exposed) were defined according to CDC criteria. The unexposed were randomly selected among patients with uninfected CVCs, satisfying the matching criteria. Matching: a) Unit, b) Age, c) nasogastric tube, and d) mechanical ventilation. Stays were compared overall and for each unit, determining the increase of costs. Source: Economic Information Center HGUA.

RESULTS:
It were inserted 2043 CVCs, and there were 111 CRI. We included 93 CRI, after exclude repeated infections in the same patients, and 186 unexposed. Stay in days (median, P25-P75): global exposed (E) 31 (20-52) vs. unexposed (UE) 13 (7-24), p <0.000; Operating rooms E 27.5 (17-36) vs. UE 9.5 (7-16), p <0.000; Reanimation unit E 49 (40-60) vs. UE 20 (6-41), p = 0.025; neonatal ICU E 60 (49-60) vs. UE 36.5 (15-36), p = 0.048; Radiology E 41 (31-55) vs.. UE 20 (8-29), p = 0.005; ICU E 26 (18-52) vs.. UE 13.5 (8-22), p <0.000. Increased length of stay and cost per CRI and Unit: General Surgery 18 days, € 5,495.76; Neonatal ICU 23.5 days, € 14302.1; ICU 12.5 days, € 17,447; Internal Medicine / Nephrology: 21 days, € 7,529.55.

CONCLUSIONS:
Overall, each CRI in the HGUA doubled the patient's stay, increasing it in 18 days, at a cost ranging from € 5,495.76 (General Surgery) to € 17,447 (ICU).

PRESENTED BY: DR JOSÉ SÁNCHEZ-PAYÁ

20100035 Poster Health care associated infections

Keywords: bacterial contamination, anesthesia machines, infection control

Processing anesthesia machines – new findings raise old questions

Spertini V. (1), Borsoi L. (2), Berger J. (1), Blacky A. (1), Diab-Elschahawi M. (1),Assadian O. (1).

AFFILIATIONS:
1. Clinical Institute of Hospital Hygiene, Medical University Vienna, Austria
2. Institute of Social Medicine, Medical University Vienna, Austria

BACKGROUND:
Some earlier studies have investigated aspects of bacterial contamination of anesthesia machines and their potential hazard for pulmonary infection and cross-infection among anesthetized patients. Disposable equipment and bacterial filters have since been introduced to minimize this risk. However, the anesthesia machine's internal breathing system has been considered to be free of microorganisms. The aim of this study was to investigate if any microorganisms can be yielded from used internal anaesthesia machines' breathing system.

METHODS:
Forty anesthetic machines were sampled on six defined locations within the internal breathing circle system of the anesthesia machine Primus (Draeger Medical Systems, Germany). Specimens were collected with swabs moistened in sterile 0.9% NaCl solution. The material was then plated on Columbia agar, enriched in brain-heart infusion and subsequently incubated at 37°C for 2 days. Logistic regression analysis was performed between contamination of the internal breathing circuit and the processing interval.

RESULTS:
Bacterial growth in the internal breathing circle system was found in seventeen of forty sampled machines (42.5%). The most common contaminants retrieved were coagulase negative staphylococci, aerobe spore forming bacteria and micrococcus species. In one breathing casette, Escherichia coli were yielded.

CONCLUSIONS:
Considering the preventive measures implemented at our hospital, the kind of bacteria retrieved and the on-site internal process observation, we conclude that the contamination found is explained by a lack of adherence to hygienic procedures during handling and storage of the internal breathing circuit. However, sticking with the hygienic operation procedures at our hospital, we consider the potential risk of bacterial cross-transmission between patients through anesthesia machines to be low.

PRESENTED BY: DR VERERNA SPERTINI

POSTER SESSION **ABSTRACTS**

20100215 Poster HIV – STI

Keywords: HIV/HCV, HIV/HBV co-infection

CLINICAL AND EPIDEMIOLOGICAL FEATURES OF PATIENTS LIVING WITH HIV/HCV AND/OR HIV/HBV CO-INFECTION

1. Ivan G. Baltadzhiev, 2. A. K. Kevorkian

AFFILIATIONS:
1. Department of Infectious Diseases, Parasitology and Tropical Medicine, Medical University, Plovdiv, Bulgaria
2. Department of Epidemiology, Hygiene and Social medicine, Medical University, Plovdiv, Bulgaria

BACKGROUND:
Due to overlapping transmission routes, viral hepatitis infections are crucial for the morbidity and the mortality among HIV-infected patients.

METHODS:
A cohort of 133 HIV/AIDS patients (112/84,21% men and 21/15,78% women with age range 16-64 years) were tested for HCV and HBV/HDV. Epidemiological and clinical studies including serological (ELISA), routine laboratory tests, and abdominal ultrasonography were done.

RESULTS:
Thirty one (23,30%) patients, mainly heterosexual young people were HCV and HBV negative; 98(73,68%) patients were only HCV positive; 1(0,75%) was HBsAg positive, 2(1,50%) homosexuals (MSM) IDUs were HCV/HBV co-infected and one MSM who undergone a severe icteric form of viral hepatitis and ended to cirrhosis was HCV/HBV/HDV positive. The HIV/HCV positive cohort consisted almost entirely of IDU young men from 18 to 33 years old. Most of these individuals had been or were imprisoned at the time of the study and 97% were from the Gipsy-ethnic group, consisting of 50 000 peoples in a city of 350 000 inhabitants. The HIV/HCV positive patients were anicteric and only 5 of them had ALT/AST twice the normal levels. Hepato-splenomegaly were usual for most cases in this group. They received HAART, accordingly their clinical and monitored medical records, starting from ≤500 CD4+ cells/µl. However the adherence was not sure in most cases. Interestingly, there were only 2 HIV/HCV positive women, respectively there were no confessed IDUs among them.

CONCLUSIONS:
We focused on the need of screening, management and counseling for HCV and/or HBV infected HIV-patients, immunization of HBsAg/HBcIgG negative one, and adequate treatment of HIV/HCV and/or HIV/HCV/HBV chronically infected patients. Although HBV-immunization among newborn in Bulgaria started from 1992, an occult VHB needs to be excluded among none immunized HIV-living people.

PRESENTED BY: MR IVAN BALTADZHIEV

20100192 Poster HIV – STI

Keywords: Human Immunodeficiency Virus, HIV-Test, Germany

First Web-based Survey on HIV-Testing in Germany, 2009

Niels Kleinkauf (1, 2), L. Voss (3), M. Dehnert (3), A. Tille (4), O. Hamouda (3)

AFFILIATIONS:
1. Postgraduate Training for Applied Epidemiology (PAE, German FETP), Robert Koch-Institute, Berlin, Germany
2. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
3. Robert Koch-Institute, Berlin, Germany
4. Robert Koch-Institute, Wernigerode, Germany

BACKGROUND:
Estimates of HIV incidence in Germany are based upon mandatory laboratory notification of cases. In 2009 5,786 HIV-cases were notified of which 2,843 were newly diagnosed. We wanted to know the total number of screening-tests performed that result in the confirmed cases reported to the RKI in order to assist evaluation of the completeness of reporting. Secondary objective was analysis of the currently used test methodology.

METHODS:
From 1,200 German laboratories contacted by post and selected from a comprehensive list of microbiological laboratories, 424 had performed HIV-tests in 2009 and gave consent to participate in an online survey. A web-based questionnaire was newly developed asking for type and total number of tests performed 2009 and the number of positive tests in each test category. Data were analyzed with STATA, version 11.

RESULTS:
We received responses from 324 labs (76,4%). In total 2,189,470 HIV-screening-tests and 20,205 HIV-immunoblots were performed including 17,008 and 7,183 tests with a positive result respectively. Of 88 labs performing quantitative nucleic acid tests (NAT) 30% use these also as confirmatory HIV-tests in the second sample.

CONCLUSIONS:
The number of positive HIV-confirmation tests recorded in this survey correlate well with the HIV cases notified to the RKI. Performance of an online-survey has proven be an effective method to collect data on testing procedures in German laboratories and can be recommended for similar investigations in the future. A revision of the German guidelines for the diagnosis of HIV-infection should be considered since these currently do not fully reflect the role of the NAT as confirmatory test in today's laboratory practice.

PRESENTED BY: MR NIELS KLEINKAUF

20100334 Poster HIV – STI

Keywords: HIV diagnosis, Avidity Index, Surveillance, Incidence

HIV Incidence estimation from HIV case-reporting data using serologic testing algorithm to identify HIV recent infections

Alessia Mammone (1), P.Pezzotti (2), C. Angeletti (1), N. Orchi (1), A. Navarra (1), MR Sciarrone (3), C. Sias (3), V. Puro (1), MR Capobianchi (3), E. Girardi (1).

AFFILIATIONS:
1. Dipartimenti di Epidemiologia. Istituto Nazionale Malattie Infettive L. Spallanzani – Rome, Italy
2. Agenzia Sanità Pubblica Regione Lazio, Rome Italy
3. Laboratorio Virologia. Istituto Nazionale Malattie Infettive L. Spallanzani – Rome, Italy

BACKGROUND:
Surveillance of new HIV diagnoses has been improved in the last years with the introduction of laboratory-based methods identifying recent infections (RI). Combining regional HIV surveillance data, and the Avidity Index (AI)method to identify RI, we applied the incidence estimator proposed by Karon et al. to estimate HIV incidence in Lazio Region, Italy.

METHODS:
We performed AI on serum samples of new diagnoses reported to the HIV surveillance system, in the period 2004-2008. RI was when AI ‹0.80, with a mean window period of 202 days since seroconversion. HIV incidence was estimated as the number of persons detected as recently infected divided by the estimated probability of detection, i.e. the probability that an infected person be diagnosed during the window period. This probability was assumed to depend on the following factors: individuals choosing whether and how frequently to seek HIV testing, variation of testing frequency, the reporting of test results only for infected persons, and infected persons who never had an HIV-negative test.

RESULTS:
During the study period 3633 new HIV diagnoses were reported; among 776 with AI, 34.8% were identified as RI (81 heterosexuals (HET), 155 men-who-have-sex-with men, (MSM) and 34 drug users, (DU)). In the same period we estimated 4906 new infections. The higher number of infections was among HET (2385), followed by MSM (1666) and by DU (666).

CONCLUSIONS:
This is the first study in Italy that provides estimates of HIV incidence. It is interesting to note that although the higher number of RI, among reported diagnoses, was found in MSM, the higher number of new infections was estimated in HET. This is likely due to the different testing behaviors of these two groups.

PRESENTED BY: DR ALESSIA MAMMONE

20100117 Poster HIV – STI

Keywords: men who have sex with men, HIV infections, Poland

Increasing trend in HIV detection rate in diagnostic testing among men who have sex with men in Poland.

Sylwia Furman, B. Werbińska-Sienkiewicz, M. Rosińska

AFFILIATIONS:
Department of Epidemiology, National Institute of Public Health – National Institute of Hygiene, Poland

BACKGROUND:
The increasing HIV transmission among men who have sex with men (MSM) is considered a serious public health problem in Europe. In Poland the percent of MSM among men newly diagnosed with HIV with known transmission route increased from 11.9% in 2002-2004 to 27.6% in 2007-2008, but prevalence data are lacking. The aim of this study was to analyze trends in frequency of HIV detection in diagnostic testing among MSM in Poland.

METHODS:
We used data from routine monitoring of HIV testing in Poland in 2002-2008, excluding blood donors. Data are collected annually from all laboratories known to perform HIV tests. The survey includes information on the reason for testing, the number of tests and the number of the positive screening test results.

RESULTS:
In total 3721 tests were performed among MSM in the study period. The overall frequency of positive results among the MSM was 9.8% (95% CI 8.9%-10.8%) clearly increasing with time: 5.6% (2002-2004), 9.3% (2005-2006), 14.9% (2007-2008)(p‹0.0001). Average rate varied greatly between regions (p‹0.0001): in 7 out of 16 regions exceeded 10%, but in following 7 remained below 5%.

CONCLUSIONS:
High and increasing frequency of detection of HIV infection in Poland among MSM requires strengthening of public health interventions targeting this group. The problem has to be prioritized especially in the 7 regions with high frequency of infections. Current study is limited by possible variation in testing behaviors over time and between regions, but the findings are supported by the results from case-based surveillance.

PRESENTED BY: MS SYLWIA FURMAN

POSTER SESSION **ABSTRACTS**

20100254 Poster HIV – STI

Keywords: hiv, sti, patient, care integration

Integrating sexual health care and HIV care for HIV infected patients: what is important to patients?

Nicole HTM Dukers-Muijrers, Christian JPA Hoebe, Carlijn Somers, Selwyn Lowe, Annemarie Niekamp, Maria Mergelsberg, Jolanda Schippers, Laura Spauwen, Cathrien Bruggeman, Bert Vrijhoef

AFFILIATIONS:
School of Public Health and Primary Care (CAPHRI) Maastricht University Medical Centre (MUMC+) Public Health Service (GGD) South Limburg

BACKGROUND:
Prevention of sexually transmitted infections (STI) is well organised in The Netherlands. However, current system fails to reach the vulnerable group of HIV patients. To reach more patients and provide better fitting sexual health care an integration of hospital and public health services is set up. Current study examines patients' ex-ante (before services integration is in place) expectations regarding sexual health care.

METHODS:
Starting November 2009, all HIV patients attending HIV care at the Maastricht UMC are offered a questionnaire to measure expectations with sexual health care and HIV care. Recruitment is ongoing; we here report on the first 149 repondents.

RESULTS:
Of participants (median age 46 years) 85% were male (87% homosexual). Highest importance scores were given for information on medication, guaranteed privacy regarding HIV and expertise on HIV. Of 20 items, sexual health items were ranked at 10th, 16th and 18th place. Of participants, 54% had sexual health questions they would like to discuss with their provider. Of respondents, 27%, 17%, 21%, 17%, and 18% indicated that 'safe sex', 'STI', 'sexual relations', 'sexual problems'and 'STI symptoms' were frequently discussed with their HIV care nurse. Overall 80% preferred to receive sexual health care from their own HIV care provider, 7% by public health practitioner (GGD), 3% by general practitioner, and 10% had no preference.

CONCLUSIONS:
Sexual health is addressed but is not a standard a topic in the HIV care setting. Half of HIV patients express a need for sexual health/STI care, preferably at the HIV care consultation. This study is the first to reveal data on effectiveness of an integrated collaborative structure combining HIV care (hospital) and sexual health care (Public Health) expertise.

PRESENTED BY: DR NICOLE DUKERS-MUIJRERS

20100112 Poster HIV – STI

Keywords: Syphilis, Congenital, Indian Ocean, Reunion Island, Pregnancy, Mass Screening

Reemergence of congenital syphilis on Reunion Island: the need for improving screening during pregnancy

Eric D'Ortenzio (1), J. Ramiandrisoa (1), L. Aubert (1), J.-L. Alessandri (2), P.-Y. Robillard (3), M. Bertsch (4), A. Gallay (5), V Goulet (5)

AFFILIATIONS:
1. Regional office of French Institute for Public Health Surveillance in the Indian Ocean, Saint-Denis, Reunion Island, France
2. Neonatology and Paediatric ICU, Regional Hospital, Saint-Denis, Reunion Island, France
3. Neonatology and Paediatric ICU, Regional Hospital, Saint-Pierre, Reunion Island, France
4. Neonatology and Paediatric department, Centre Hospitalier Gabriel Martin, Saint-Paul, La Réunion, France
5. French Institute for Public Health Surveillance, Saint-Maurice, France

BACKGROUND:
On Reunion Island, a French overseas territory (810 000 inhabitants), a recent increase (2006) of early syphilis has been documented, firstly in men who have sex with men seropositive HIV, and secondarily in the general population. In 2009, we conducted a retrospective study between 2004 and 2009 to document the situation of congenital syphilis (CS) on the island.

METHODS:
All public and private hospitals were investigated. We reviewed medical files of infants aged less than 2 years old, with positive treponemal specific test (TPHA) and non treponemal specific test (VDRL). Additionally, hospitalized infants with an ICD-10 A50.0 to A50.9 exit diagnosis were selected. Cases were classified as confirmed or probable CS according to the CDC (Atlanta, USA) case definitions.

RESULTS:
Eighteen files of infants have been identified according to the selection criteria. Seven cases were classified as probable, three in 2008 and four in 2009. The sex-ratio M/F was of 0.75. Five were preterm newborns and four had a low birth-weight. Mothers had a median age of 22 years at delivery, including two of 16 years. Social difficulties or alcohol consumption were reported for three women. The mean age of gestation for the 1st syphilis screening was 23 weeks. Diagnosis and treatment were realized after delivery for three mothers. A seroconversion during the pregnancy was observed. All mothers were seronegative HIV.

CONCLUSIONS:
This survey confirms the reemergence of CS on Reunion Island, reflecting the increase of early syphilis in the heterosexual population, seronegative HIV, and particularly in women of childbearing age. This alarming situation should conduct to reinforce screening and prevention strategies towards pregnant women, but also in the general population.

PRESENTED BY: DR ERIC D'ORTENZIO

20100193 Poster HIV – STI

Keywords: MSM, HIV prevalence, undiagnosed HIV infection, oral fluid

SIALON Project (2008–2010): HIV prevalence and undiagnosed HIV infections among MSM attending gay venues in six European cities (Barcelona, Bratislava, Bucharest, Ljubljana, Prague and Verona). Project co-funded by the European Commission under the Public

Jean Pierre Foschia (1), Michele Breveglieri (1), Martina Furegato (1), Enrica Castellani (1), Lorenzo Gios (1), Dunia Ramarli (2), Paola Coato (3), Massimo Mirandola (1)

AFFILIATIONS:
1. Regional Centre for Health Promotion, ULSS20, Veneto Region, Verona, Italy
2. Verona University Hospital, Clinical Immunology, Verona, Italy
3. Verona University Hospital, Microbiology, Verona, Italy

BACKGROUND:
HIV prevalence among MSM has risen in recent years in Europe. The objective was to obtain reliable information on HIV prevalence and undiagnosed HIV infections.

METHODS:
Cross-sectional study on MSM. 2.407 subjects were enrolled (circa 400 per country). Time-location sampling was used to recruit representative samples of men visiting the gay scene in each city. A self-administered questionnaire and an oral fluid collector were used to gain data for each participant. EIA testing was performed on oral fluid to detect anti-HIV antibodies.

RESULTS:
Valid oral fluid samples were 2.287. Average age of respondents was higher in Barcelona and Verona (38.2 and 35.8 years respectively) than in Central-Eastern European cities. HIV prevalence: 17.0% (Barcelona), 11.8% (Verona), 6.0% (Bratislava), 5.1% (Ljubljana), 4.6% (Bucharest) and 2.6% (Prague). In the overall sample, this indicator was significantly lower among young people than among people ≥ 25 years of age (3.5% vs 9.6%). Undiagnosed HIV cases and recent infections: 56% of all HIV+ MSM were not aware of their serostatus. This figure was almost 80% in Bucharest and Ljubljana, and lower than 50% only in Barcelona (44.6%). Considering HIV+ MSM who were tested over the last year and got the result, 49.6% reported an HIV negative test. At city level these percentages were higher than 80% in Ljubljana and Bucharest while the lowest figures were in Barcelona and Bratislava (nearly 40%). Verona and Prague had intermediate values.

CONCLUSIONS:
HIV prevalence was higher in Southern European cities than elsewhere. Outreach prevention programmes promoting HIV testing are needed in order to promote HIV testing and detect undiagnosed infections. Data suggest that quite a number of infections was recently acquired, particularly in Ljubljana and Bucharest.

PRESENTED BY: MR JEAN-PIERRE FOSCHIA

20100281 Poster HIV – STI

Keywords: STI; HIV; surveillance; Bulgaria; Romania

STI and Risk Behaviour in Bulgaria and Romania: First results from the BORDERNETwork Project

Matthias Nachtnebel (1,2, 3), K. Haar (1), K. Jansen (4), V. Bremer (5), E. Steffan (6), K. Chudomirova (7), V. Benea (8), O. Hamouda (1)

AFFILIATIONS:
1. Department of Infectious Disease Epidemiology, Robert Koch-Institute, Berlin, Germany
2. Robert Koch-Institute, Post Graduate Training in Applied Epidemiology (PAE)
3. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
4. Ruhr University, Bochum; Germany
5. European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
6. SPI Forschung GmbH, Berlin, Germany
7. Clinic for Dermatology and Venerology, Plovdiv, Bulgaria
8. Clinical Hospital "Prof.Dr. Scarlat Longhin', Bucharest, Romania

BACKGROUND:
In many European countries, sexually transmitted infections (STI) are re-emerging and countries of Central and Eastern Europe (CEE) are of special concern. The BORDERNETwork-project implements a pilot second generation sentinel surveillance, combining biological with behavioural data, to provide evidence on distribution of STI/HIV and risk behaviour.

METHODS:
BORDERNETwork operates in 4 CEE countries (Austria, Bulgaria, Romania and Slovakia). We collect information on newly diagnosed STI (chlamydia, gonorrhoea, syphilis) and HIV regularly through a set of questionnaires. Physicians report anonymised data on performed tests, diagnosed infections, demographics and assumed risk behaviour. Linked voluntary patient questionnaires provide information on socio-demographics, transmission and self-reported behaviour. Currently, data from Bulgaria (August 2008-January 2010) and Romania (October 2008-December 2009) are available.

RESULTS:
In Bulgaria, 36068 clients (55% male) attended 5 sentinel-sites (medical universities, hospitals and district dispensaries), in Romania 4419 (58% male) 6 sites (hospitals and a mobile outreach unit). In Bulgaria, 1337/60571 (2.2%) of STI-tests performed were positive and 661/5221 (12.7%) in Romania. Syphilis was the most frequently diagnosed STI in both countries, 860/43356 (2%) in Bulgaria, 529/2909 (18.2%) in Romania. In both countries self-reported source of infection and condom-usage varied by gender: more women (51% vs. 6%) reporting their regular partner (OR=14.8; 95%CI 9.4-23.5), while men reported casual partners (OR=4.1, 95%CI 2.8-6.0) and contact to prostitutes (OR=36.3, 95%CI 6.2- 1463.1). Men were more likely to report inconsistent condom-use with casual partners (25% vs. 11%) (OR=2.6, 95%CI 1.6-4.2).

CONCLUSIONS:
The sentinel surveillance showed a high proportion of positive STI-tests, especially in Romania. Potential causes of differences between the two countries may lie in thresholds of accessibility of sentinel-sites. Insight into behavioural factors offers an opportunity for gender-specific and evidence-driven prevention.

PRESENTED BY: MR MATTHIAS NACHTNEBEL

POSTER SESSION **ABSTRACTS**

20100344 Poster Influenza

Keywords: influenza, pandemic, vaccination

Acceptance and utilisation of pandemic influenza A/H1N1 vaccination in different target groups in Southwest Germany, October – December 2009

Brockmann S. O. (1), Knebel H. (1), Kouros B. (2), Pfaff G. (1), Piechotowski I. (1)

AFFILIATIONS:
1. Baden-Württemberg State Health Office, Stuttgart, Germany
2. Ministry of Labour and Social Affairs, Families and Senior Citizens, Baden-Württemberg, Germany

BACKGROUND:
As of October 2009, the German Advisory Committee on Immunization (STIKO) recommended pandemic influenza vaccination, with healthcare professionals, persons with underlying chronic disease and pregnant women as initial target groups. Baden-Württemberg (population 10.7 mio) offered free pandemic influenza vaccinations by general practitioners (GP). Before the start of the vaccination campaign, an intensive discussion among physicians and in the media began. Criticism focused on limited experience and possible side effects of the pandemic vaccine which contained adjuvant, especially with regard to children and preg-nant women. This study aimed on investigating whether the campaign reached the target groups.

METHODS:
A sentinel of 62 GP´s was initiated, representing 1% of GPs within the state. Physicians returned an anonymous questionnaire for each patient vaccinated (date of vaccination, age, sex, and risk factors according to the STIKO recommendation). Data were monitored continuously on a weekly basis during the vaccination campaign.

RESULTS:
Between 26 October and 4 December 2009, sentinel GPs vaccinated 9.435 persons (53% male). Vaccination was accepted by all age groups (age‹1-99, median 43). Teenagers and young adults aged 13-30 years were underrepresented whereas children ‹10 years were more likely to get vaccinated. Half of the vaccinated patients (51%) had no underlying disease and did not belong to a target group as recommended by the STIKO during this time period.

CONCLUSIONS:
The overall acceptance of the vaccination campaign in Germany was poor. Only 7% of the population was vaccinated. Vaccination through GPs seems to reach all target groups in the population. GPs restricted vaccinations not only to members of primary target groups in official recommendations but immunized also to patients' demands. This has to be considered in future mass vaccination campaigns.

PRESENTED BY: MR STEFAN BROCKMANN

20100385 Poster Influenza

Keywords: flu vaccine, adverse reaction

Adverse reactions to the seasonal flu vaccine and influenza AH1N1 vaccine in health-care personnel of a university hospital in Spain.

Villanueva C., Martínez H., Camargo-Ángeles R., García-Román V., Cartagena-Llopis L., Barrenengoa J., Fuster M.

AFFILIATIONS:
Hospital General Universitario Alicante. Spain.

BACKGROUND:
Adverse reactions (ARs) are a major cause of low coverage for the flu vaccine. In the 2009-2010 season, we administered the influenza AH1N1 vaccine in addition to the seasonal flu.Our objetive was to study the frequency and characteristics of ARs for seasonal and AH1N1 influenza vaccines.

METHODS:
Cohort study that included all health-care personnel vaccinated for seasonal flu and/or AH1N1 during the vaccination campaign 2009-2010. To detect AR, we contacted the employee seven days after vaccination. They were asked about any AR.

RESULTS:
A total of 1290 health-care workers were evaluated (77,7 %). Seasonal flu vaccine: 25,3% suffered AR, vaccine coverage: 31,0 %; with 45 years old 64,9%; sex: women 67,7%; staff: physicians 27,7%, nursing/physical therapist 32,2%, assistant/technician 16,8%, orderly 4,3% and other 19,2 %; AR evaluated: local pain 15,8%, discomfort 4,7%, myalgias 2,0%, fever 0,8% and other AR 6,4%; number of AR evaluated: one 87,3%, two 9,5 % and three or more 2,3 %. Influenza AH1N1 vaccine: 80.5% suffered AR, vaccine coverage: 22.2%; with 45 years old 57.9%, sex: women 61.9%; staff: 36.4% physicians, nursing/physical therapists 31.6%, assistant/technician 13.6%, orderly 4.8% and other 13.7%; AR evaluated: local pain 74.6%, discomfort 21.5%, myalgia 15.1%, fever 5.9% and other AR 16.5%, number of AR evaluated: one 58.7%, two 23.5% and three or more 17.8%. There were a significantly higher percentage of AR for the H1N1 flu vaccine (p‹0.001).

CONCLUSIONS:
The percentage of AR in AH1N1 influenza vaccine was significantly higher than in seasonal flu, owed probably to the presence of adjuvants. Despite this, AR has been mostly mild.

PRESENTED BY: DR JOSE SÁNCHEZ-PAYA

20100361 Poster Influenza

Keywords: pandemic influenza, crossborder, real-time, surveillance, response

Crossborder cooperation between a Dutch and a German public health servive during the influenza A H1N1 pandemic using a real-time information exhange system

HLG ter Waarbeek (1), C. Kara-Zaïtri (2), H. Freund (3), V. Bochat (3), CJPA Hoebe (1)

AFFILIATIONS:
1. Department of Infectious Diseases, South Limburg Public Health Service and the Maastricht University Medical Center, the Netherlands
2. Independent consultant in health informatics, UK
3. Public Health Service Aachen, Germany

BACKGROUND:
During the influenza A H1N1 pandemic, crossborder regions akin to international movement of people and goods, had to work together on preparedness, detection and response despite varying legislation in order to reduce (transborder) disease spread and minimize crossborder community impact.

METHODS:
In the Euregion Maas Rhine, Public Health Services of South Limburg (NL) and Aachen (D) used a collaborative real-time web-based decision support system called FluZone, developed originally in England, to manage the pandemic. Important public health data for defined transnational influenza cases, contacts and sources were shared in real-time, including a geographic information system.

RESULTS:
In South Limburg (620.000 inhabitants), 288 cases were notified (197 laboratory confirmed), with 70 hospital admissions and 3 deaths (2 underlying illness), in line with Dutch national data. The average age was 22.8 yrs (range 0-81); 4%>60, 61%60, medical condition). Aachen (330.000 inhabitants) showed similar case data; however different national response protocols e.g., on prophylaxis and vaccination, required improved crossborder communication. Of South Limburg cases/contacts, 22 required direct transborder involvement. FluZone facilitated rapid real-time data exhange, yielding better crossborder management.

CONCLUSIONS:
With few hospital admissions and fatalities, and little socio-economic disruption, the recent pandemic was relatively mild. However, it has re-emphasised the need for better crossborder preparedness, surveillance and response. Using a single web-based real-time intelligence system, such as FluZone, has improved detection and control. Handling surveillance and management from other sectors such as Animal Health, Food Safety, Civil Protection or Transport are already earmarked for further research .

PRESENTED BY: MISS HENRIËTTE TER WAARBEEK

20100319 Poster Influenza

Keywords: Influenza, Severity of cases, Risk Factors, Vaccination

DO WE KNOW EXACTLY, WHICH ARE THE REAL RISK GROUPS FOR SEVERE INFLUENZA?

Jaume Giménez-Duran, A. Galmés, A. Nicolau, JM. Vanrell, C. Bosch, M. Portell

AFFILIATIONS:
Service of Epidemiology. Department of Public Health, Regional Government of the Balearic Islands, Spain.

BACKGROUND:
Since the beginning of the pandemic, Spain has implemented the surveillance of severe cases admitted in hospitals. In the Balearic Islands every hospital informed to the public health services only for admissions at ICU services. We describe the characteristics of the severe cases of A(H1N1)v infection and estimate the rates.

METHODS:
Descriptive study of the severe cases. Data were collected from the ICU professionals and from the electronic health records.

RESULTS:
The severe cases were 43, confirmed by RT-PCR, since July, 2009 to January, 2010, 6 died and 34 recovered. Gender: 17 women; 26 men. Average age: 36.9 (range 1-80). The ICU admission rate and the death rate were 3.9 and 0.6 cases per 100,000 inhabitants. Stay at the ICU: 9.3 days for the recovered (1-48 days), 16.3 for the deceased (0-28 days). Risk factors: smokers 14 (33.3%), any respiratory disease 13 (47.6%); morbid obesity 4 (9.5%); diabetes 9 (21.4%); other metabolic diseases 12 (28.6%); neoplasia 4(9.5%); no risk factors 12 (28%). Six patients had received moderate doses of steroids shortly before the diagnosis of severe influenza; 2 of them had no other risk factor. Complications: hypoxemia 38 cases, with (34) or without (4) pneumonia; septic shock 15. Twenty four patients (57%) required mechanical ventilation (median: 8 days; interquartile range 3-12 for recovered cases; 20 days (interquartile range 9.5 – 26.5) among deceased. The difference was near the limit of significance (p = 0.08).

CONCLUSIONS:
As only the ICU cases were objectively severe, it is difficult to know the complete burden of severity, though this specific surveillance system provides a strong indicator. Nearly 30% of severe cases were out of the risk groups for the vaccination.

PRESENTED BY: DR JAUME GIMENEZ-DURAN

POSTER SESSION **ABSTRACTS**

20100286 Poster Influenza

Keywords: vaccine effectiveness, hospitalisation, pandemic influenza, matched case-control design, pandemic influenza vaccine

Dutch estimates of pandemic influenza vaccine effectiveness against hospitalisation in individuals with underlying illnesses estimated using a matched case-control design

A. (Anneke) Steens (1), E. Wijnans (2), J. Dieleman (2), K. Greenland (1), J. Whelan (1), M. Sturkenboom (2), M. van der Sande (1), W. van der Hoek (1)

AFFILIATIONS:
1. National Institute for Public Health and the Environment (RIVM), Centre for Infectious Disease Control (CIb), epidemiology and surveillance unit, Bilthoven, the Netherlands
2. Erasmus Medical Center, Department of Medical Informatics, Rotterdam, the Netherlands

BACKGROUND:

The (pandemic) influenza vaccination strategy in the Netherlands targeted those at highest risk of influenza-related complications (and their contacts) to reduce severe morbidity and mortality from influenza. First estimates of the effectiveness of the vaccine (VE) against laboratory-confirmed influenza are available; however limited data has been presented for VE against severe disease.

METHODS:

In this study we aimed to estimate the effectiveness of the pandemic vaccination in prevention of hospitalisation because of pandemic influenza infection (pH1N1) using a matched case-control design. We focused on individuals with an indication for vaccination because of chronic disease or older age (≥ 60 years). In the Netherlands, pH1N1 requiring hospitalisation is notifiable, and therefore all such cases are registered in the web-based national infectious diseases surveillance system, which includes information about age, sex, comorbidity and self-reported vaccination status. Matched controls were drawn at random from the Integrated Primary Care Information (IPCI) general practitioners (GP) network, which contains longitudinal data on patient records of approximately 1,000,000 patients (~6% of Dutch population) from around the Netherlands. The VE will be estimated using conditional logistic regression.

RESULTS:

In total, 149 hospitalised patients of all ages were included in this study and were matched on age, sex and type of comorbidity with controls drawn from a population of 50,000 eligible patients from GPs with reliable electronic registration. VE analysis is ongoing. Preliminary results will be presented.

CONCLUSIONS:

Estimates of this study are important for further recommendations on vaccination against this novel influenza strain. Furthermore, this study may act as a pilot for future studies to estimate the VE against severe disease.

PRESENTED BY: MS ANNEKE STEENS

20100258 Poster Influenza

Keywords: Influenza, Pandemic Influenza vaccine, vaccine effectiveness, case control studies, surveillance

Early pandemic influenza vaccine effectiveness estimates in Portugal using the National Laboratory Network for Influenza Surveillance

Baltazar Nunes (1), R. Guiomar (2), A. Machado (1), I. Falcão (3), P. Gonçalves (2), C. Furtado (2) on behalf of the Laboratory Network for Diagnose of influenza A (H1N1)v Infection

AFFILIATIONS:
1. Department of Epidemiology, Instituto Nacional de Saúde Dr. Ricardo Jorge, Portugal
2. Department of Infectious Diseases, Instituto Nacional de Saúde Dr. Ricardo Jorge, Portugal
3. General Directorate of Health, Portugal

BACKGROUND:

The early evaluation of the influenza vaccine effectiveness (VE) is of major importance for public health decisions, particularly during a pandemic season. In response to the emergence of the new influenza virus, a laboratory network for diagnostics of virus A (H1N1)v infection was created. In this study, we investigate the feasibility of using this laboratory routine surveillance data to estimate the pandemic VE in Portugal.

METHODS:

Participants were patients with influenza-like illness symptoms. We used a case-control design where laboratory positive influenza cases were compared to negative influenza controls. Full vaccinated individuals received at least one vaccine dose, 14 days prior the onset of symptoms. Data analysis was restricted considering: onset of symptoms and start of the vaccination campaigns >14 days and onset and swab< 8 days. Pandemic VE was estimated as one minus the odds ratio of being vaccinated in cases versus controls adjusted for confounders by logistic regression.

RESULTS:

The study encompassed 12,930 ILI patients (> 6 months), 44,1% were positive for A(H1N1)v. Pandemic VE, adjusted for week of onset and age group, was 84.7% (95% CI 72.7 -91.5). Adjusted VE estimates didn't differ substantially by age groups: < 15 years old VE=85.8% (95% CI 67.0-93.9), 15-64 age group VE=84.3% (95% CI 62.7-93.4). VE estimates increased according to time between vaccination and onset of disease: within the first 6 days VE=38.9% (95% CI 4.4-61.0); within 7-14 days VE=51.7% (95%CI 14.7-72.7) and after 14 days VE=final 84.7%.

CONCLUSIONS:

Main conclusion suggests a protective effect of the pandemic vaccine. Also, the use of routinely collected laboratory data demonstrated to be a reasonable approach for VE estimation. For future monitoring of influenza vaccinations campaigns, this network should be considered.

PRESENTED BY: MR BALTAZAR NUNES

20100287 Poster Influenza

Keywords: Pandemic influenza, influenza vaccines

Effectiveness of pandemic influenza vaccines: evidence from primary care databases in England 2009–2010

Pia Hardelid (1), D. Fleming (2), H. Dunnall(2), N. Andrews (1), R. Pebody (3)

AFFILIATIONS:
1. Statistics Unit, Health Protection Agency, London, UK
2. Royal College of General Practitioners Research and Surveillance Centre, Birmingham, UK
3. Immunisation, Hepatitis and Blood Safety Department, Health Protection Agency, London, UK

BACKGROUND:
Various methodological approaches have been used to monitor the effectiveness of national influenza immunisation programmes, however concerns have been raised about their potential for bias and confounding. Developmental work has been underway in England to measure influenza vaccine effectiveness (VE) by extracting routine patient records from an established cohort in primary care. We describe the experience of monitoring the effectiveness of the English pandemic influenza vaccination programme.

METHODS:
Primary care records of 766,278 individuals, alive and registered for at least one year with one of 96 practices in England on the 1st November 2009 were extracted, with episodes of acute respiratory tract infection (ARTI), influenza-like illness (ILI), and laboratory confirmed H1N1 infection in the period 1st November 2009-31st January 2010 the outcomes of interest. Dates of seasonal and pandemic vaccination in the same period were also obtained. Poisson regression models were used to obtain VE estimates, adjusted for key confounders.

RESULTS:
Pandemic vaccine effectiveness in preventing ARTI, ILI and laboratory confirmed H1N1 were -19% (-12%, -27%), 26% (95% CI 7%, 41%) and 77% (5%, 94%) respectively, the varying estimates for effectiveness reflecting the specificity of the outcome variable. Age group, time period, presence of a chronic condition and consultation frequency were found to be the main confounding variables. Seasonal influenza vaccine conferred an increased risk for all outcomes.

CONCLUSIONS:
These results from a large cohort study indicate that pandemic influena vaccine is effective in preventing ILI and confirmed H1N1 infection. Refinements to the current method will be discussed as well as extensions to monitoring of other vaccination programmes such as VZV.

PRESENTED BY: DR PIA HARDELID

20100084 Poster Influenza

Keywords: Influenza A Virus, H1N1 Subtype; Germany; Population Surveillance; Disease Notification

Electronic reporting of suspected cases of pandemic influenza (H1N1) 2009 in Bavaria – was it worth it?

Beatrix von Wissmann (1, 2, 3), K. Schönberger (1), W. Hautmann (1), M. Wildner (1)

AFFILIATIONS:
1. Bavarian Health and Food Safety Authority (LGL), Institute for Health, Oberschleißheim, Germany
2. Postgraduate Training for Applied Epidemiology (PAE, German FETP) Robert Koch Institute, Dept. Infectious Disease Epidemiology, Berlin, Germany
3. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden

BACKGROUND:
During weeks 18-46 2009, mandatory reporting of pandemic influenza (H1N1) 2009 (PI) in Germany was extended to suspected cases, defined as influenza-like illness after exposure to laboratory confirmed PI cases or visiting PI endemic regions. Reporting of suspected cases to the local health office allowed prophylactic case management. During weeks 18-29, electronic records of suspected cases were forwarded to regional and national level and confirmed or declared void later, according to laboratory results. We investigated the contribution of electronic reporting of suspected cases to the assessment of PI incidence and distribution in Bavaria.

METHODS:
Bavarian PI reports for weeks 18-29 were categorised as suspected, confirmed, void or unspecified for initial and final status. The proportion of confirmation of suspected cases was calculated by week and district. Median time between disease onset and case confirmation was compared according to initial status (confirmed/ suspected).

RESULTS:
The final status of 718 PI reports for weeks 18-29 was: confirmed n=533, suspected n=14, void n=155, unspecified n=16. A quarter (25.2%; 37/149) of initially suspected cases was later confirmed. The proportion of confirmation varied by districts [median: 21.4% (3/14); range: 0-75% (0/4-3/4)] and week [median: 13.3% (2/15), range: 0-38.1% (0/5-8/21)]. There was no significant difference (z=-1.35, p=0.18) in time-span from disease onset to case confirmation by initial status, with a median time of 5 days (range: 1-39 days) for cases immediately reported as confirmed, compared to 7 days (range: 2-37 days) for those initially reported as suspected cases.

CONCLUSIONS:
Reporting of suspected cases did not reduce the time-span to confirmation. Low positive predictive value of suspected cases and high variability in confirmed proportions limits their contribution towards timely predictions on influenza incidence and distribution.

PRESENTED BY: DR BEATRIX VON WISSMANN

POSTER SESSION **ABSTRACTS**

20100297 Poster Influenza

Keywords: influenza, influenza vaccine, vaccine effectiveness, communicable disease control, case control studies

Estimates of pandemic influenza vaccine effectiveness in Hungary, 2009–10: as part of a multi-centre European case control study (I-MOVE)

Judit Krisztina Horvath (1), B. Oroszi (1), Zs. Molnar (1), K. Kaszas (1), M. Rozsa (2), A. Csohan (1)

AFFILIATIONS:
1. National Center for Epidemiology, Department of Communicable Disease Epidemiology, Budapest, Hungary
2. National Center for Epidemiology, National Influenza Reference Laboratory, Budapest, Hungary

BACKGROUND:
Influenza vaccine effectiveness (IVE) needs to be estimated annually, since it can vary due to vaccine mismatch. The 2009 pandemic influenza A(H1N1) underlined the need for reliable and early IVE estimates. We conducted a case control study to estimate 2009/10 pandemic IVE (PIVE) in Hungary in the 18+ population as part of the European I-MOVE (Influenza Monitoring Vaccine Effectiveness) project.

METHODS:
From December 2009 to April 2010 voluntary GPs, contributing to sentinel influenza surveillance in Hungary, interviewed and collected swabs from a systematic sample of patients presenting with influenza-like illness (ILI). Cases were ILI patients laboratory-confirmed by RT-PCR as 2009 pandemic influenza A(H1N1) (pH1N1). Controls were those who tested negative for influenza. Vaccination was defined as having received one dose of pandemic vaccine more than 14 days before onset of symptom. We estimated PIVE as 1-OR. We used logistic regression to adjust for age group, sex, underlying conditions, number of GP consultations during the previous 12 months, seasonal influenza vaccination 2009-10, region, and week of ILI onset.

RESULTS:
Among 87 GPs participating in the study, 63 (72.4%) recruited at least one participant. We included 55 cases and 306 controls. The adjusted PIVE was 79.1% (95% CIs: 12.8-95.0%) in the 18+ age group, and 80.1% (95% CIs: 7.7-95.7%) in the 18-59 age group.

CONCLUSIONS:
It was feasible to estimate PIVE estimates in Hungary in the pandemic context. The results suggest that the pandemic vaccine was effective in preventing laboratory confirmed pH1N1 illness. During the next season our target is to achieve a bigger sample size to provide age-specific estimates. The Hungarian data were included in the I-MOVE multi-centre case control study to estimate PIVE at European level.

PRESENTED BY: DR JUDIT KRISZTINA HORVATH

20100055 Poster Influenza

Keywords: Case-control studies; Influenza A Virus, H1N1 Subtype; Influenza vaccines; Ireland

Monitoring the influenza vaccine effectiveness using the general practitioners' sentinel surveillance system in Ireland

Anne-Sophie Barret (1, 2), J. O'Donnell (1), A. O'Hora (1), C. Collins (3), S. Coughlan (4), M. Joyce (3), J. Moran (4), WW. Hall (4), D. O'Flanagan (1)

AFFILIATIONS:
1. Health Protection Surveillance Centre, Dublin, Ireland
2. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
3. Irish College of General Practitioners, Dublin, Ireland
4. National Virus Reference Laboratory, Dublin, Ireland

BACKGROUND:
As influenza viruses constantly evolve and vaccines are reformulated every year, influenza vaccine effectiveness (IVE) needs to be estimated annually. The 2009 influenza A (H1N1) pandemic has emphasised the need for reliable and early IVE estimates. This study was part of a multi-centre European study (I-MOVE). Our objective was to estimate the pandemic IVE and to measure the feasibility of using the general practitioners' (GP) sentinel surveillance system for monitoring the IVE in Ireland.

METHODS:
A case-control study was conducted between November 2009 and May 2010. Participating sentinel GPs collected swabs from patients presenting with influenza-like illness (ILI) along with their vaccination history and possible confounders (age, risk factors, previous influenza vaccinations). Cases were those individuals with laboratory-confirmed pandemic influenza. Controls were those who tested negative for influenza. Vaccination was defined as having received one dose of vaccine more than 14 days before the onset of symptoms. Univariable and multivariable analyses were performed to compare the proportion of vaccinated cases and controls.

RESULTS:
Sixty-one GP practices were invited to participate in the study. Twenty-four practices (39%) agreed to participate; 16 of whom (67%) recruited ILI patients. In the analyses, we included 32 cases and 64 controls. Six patients (6.3%) were vaccinated against pandemic influenza. One vaccine failure was identified. The IVE adjusted for age and risk factors was 68% (95% CI: -251%; 97%).

CONCLUSIONS:
Our results suggest that the 2009 pandemic influenza vaccines were protective. However the number of recruited patients was insufficient to obtain precise IVE estimates. It emphasises the importance of a multi-centre study to get reliable results. We conclude that the Irish influenza sentinel surveillance network can be used to monitor the IVE.

PRESENTED BY: MISS ANNE-SOPHIE BARRET

20100003 Poster Influenza

Keywords: H1N1, Hemagglutination Inhibition, Humoral Immunity

High Titers of Hemagglutination Inhibition Antibodies against 2009 H1N1 Influenza Virus in Southern Iran

Mohsen Moghadami – mitra amini – Afagh Moattari-Kamran Bagheri Lankarani-Hamid Reza Tabatabaee, Alireza Mirahmadizadeh, Abbas Rezaianzadeh, Jafar Hasanzadeh, Mostafa Ebrahimi, Nima Zamiri, Abdolvahab Alborzi*

AFFILIATIONS:
1. Health Policy Research Center, Shiraz University of Medical Sciences, Shiraz, Iran,

BACKGROUND:
Pandemic flu had at least two waves in Iran. Knowing how many of the general population were already exposed to this infection has a major impact on national preventive measures. As of December 30, 2009, a total of 3672 confirmed cases of human infection with a novel Influenza A (2009 H1N1) virus had been reported in Iran with 140 deaths.In this study we aim to measure, as a pilot study, the seroprevalence of positive antibody titer (humoral immunity) against 2009 H1N1 virus in Iranian population in Shiraz, Southern Iran

METHODS:
Through cluster random sampling of families residing in Shiraz, 2553 subjects were selected and after a medical interview blood samples were taken and checked for polyclonal antibody against 2009 H1N1 antigen using hemagglutination inhibition assay. An antibody titer of more than 1:40 dilution was considered positive. Data were analyzed considering the demographic characteristics of the population and were compared among different age groups

RESULTS:
1504 (58.91%) samples were tested positive for the presence of polyclonal an-tibody against 2009 H1N1 virus. The prevalence of positive titers were significantly higher in 60 to 64 years old group and significantly lower in 20 to 24 years old group ($p<0.05$). Data did not differ based on other demographic characteristics or the history of flu like illnesses in the past 6 months

CONCLUSIONS:
High seroprevalence of antibody against 2009 H1N1 in the sera of our subjects describes either a high level of pre-existing immunity against H1N1 in Iranian population or a high rate of asymptomatic infection in our area compared to other countries.

PRESENTED BY: DR MOHSEN MOGHADAMI

20100188 Poster Influenza

Keywords: Incidence; Disease Outbreaks; Influenza, Human; Child, Hospitalized

Incidence of influenza like illness, acute respiratory illness, and pandemic and seasonal influenza in a paediatric clinic in Germany, February to April 2010

Elke Mertens (1, 2, 3), J. Bensch (4), M. Vogt (5), H-G. Meyer (5), B. Bornhofen (1), F. Burckhardt (1)

AFFILIATIONS:
1. Public Health Services Rhineland-Palatinate, Infectious Disease Epidemiology, Germany
2. Postgraduate Training for Applied Epidemiology (PAE, German FETP), Robert Koch Institute, Berlin, Germany
3. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
4. Vinzentius Hospital, Pediatric Clinic, Landau, Germany
5. Public Health Services Rhineland-Palatinate, Molecular Biology Laboratory, Germany

BACKGROUND:
Children are very susceptible to and important spreaders of influenza. In Rhineland-Palatinate, the under 15-year-old population had an incidence of 1264/100.000 during the pandemic influenza (H1N1)2009 (PI) (weeks 14-53). In order to describe how the pandemic would influence seasonal influenza (SI) and whether a further pandemic wave would occur, we measured the incidence of respiratory symptoms, PI and SI among children admitted to the only regional paediatric clinic serving a population of 280,000 inhabitants.

METHODS:
Between weeks 6-17 2010, all children (0-14 years) admitted to the paediatric clinic were included in the cross-sectional study if parents consented. Paediatricians took nasopharyngeal swabs of all included children and answered questionnaires asking for socio-demographic and clinical data. ECDC-definitions of acute respiratory illness (ARI) and influenza-like illness (ILI) were used. Swabs were analysed for PI and SI using RT-PCR.

RESULTS:
Of 462 admitted children, 175 (38%) participated. Median age was 1.5 (IQR:2.5), 58% were boys. ARI and ILI criteria were met by 73 (42%) and 46 (26%) children, respectively. Forty-nine (28%) had bronchitis and nine (5%) had chronic obstructive lung disease. Proportions of pneumonia, bronchitis, ARI, ILI and underlying diseases were similar in under-1-year-olds (n=62; 35%), 1-2-year-olds (n=68; 37%) and over-2-year-olds. Proportions of pneumonia, bronchitis and underlying diseases were similar between children with and without ARI/ILI. No swab was positive for PI or SI.

CONCLUSIONS:
Although a large number of children were admitted with ARI/ILI, none of them had PI or SI. Concordantly, the national sentinel surveillance observed a peak of ARI while diagnosed influenza infections were declining during the same period. There was no further pandemic wave. ILI und ARI were not correlated with pneumonia, bronchitis or influenza in our study.

PRESENTED BY: DR ELKE MERTENS

POSTER SESSION **ABSTRACTS**

20100189 Poster Influenza

Keywords: Pandemic H1N1, boarding school, dormitory, mask use, Thailand

Investigation and Control of Pandemic H1N1 Outbreak in two Boarding Schools, Angthong Province, Thailand, August 2009

Ms. Sanisa Santayakorn

AFFILIATIONS:

Wathee Sitthi (1), Vilaiporn Wongphruksasoog (1), Sakirin Al-sihak (1), Natthavut Prajaksub (1), Banjong Ardkam (1), Chettakrit Daraphong (1), Pisittawoot Ayood (1), Patummal Silaporn (1), Chakrarat Pittayawonganon (1), Hattaya Kanjanasombat (2), Nichapa Trichaisri (3), Phongporn Krongyat (4), Renu Kritsanasup (5), Panithee Thammawijaya (1)

1. Field Epidemiology Training Program (FETP), Bureau of Epidemiology, Department of Disease Control, Ministry of Public Health, Thailand
2. Bureau of Epidemiology, Department of Disease Control, Ministry of public health
3. Office of Disease Prevention and Control 2, Department of Disease Control, Ministry of Public Health, Thailand
4. Angthong Provincial Health Office, Angthong
5. Pamok Health Center, Angthong

BACKGROUND:

In Thailand, the first pandemic H1N1 outbreak in school was reported in mid-June 2009 in Bangkok. On August 4, 2009, the local Surveillance and Rapid Response Team notified a cluster of 120 sick students in a boarding school, Angthong Province. An investigation was carried out with objectives to identify risk factors and implement prevention and control measures.

METHODS:

Active surveillance was initiated in two boarding schools (A and B) in Angthong. A suspected case was a student/teacher who developed 2 of the following 4 symptoms: fever, cough, rhinorrhea and sore throat between July 27 and August 6, 2009. A confirmed case was a suspected case tested positive pandemic H1N1 virus in nasopharyngeal swabs by RT-PCR technique. A retrospective cohort study was conducted in School A.

RESULTS:

Of 1115 students in School A, 382 cases (11 confirmed and 371 suspected) developed symptoms (attack rate 34.3%). The attack rate was 9.2% (32/349) with 2 confirmed cases in School B. No severe and fatal cases were reported. The median ages of cases were 11 years (Range: 6-19 years) and 14 years (Range: 12-19 years) in School A and B, respectively. Dormitory-specific attack rates ranged from 18%-63%. Students in 2 schools lived in the same dormitories. Protective factors for influenza infection included regularly mask use (RR=0.33, 95%CI=0.21-0.50) and using personal water glass (RR=0.72, 95%CI=0.63-0.82).

CONCLUSIONS:

Laboratory-confirmed pandemic H1N1 outbreaks occurred in two boarding schools. Influenza transmission between the schools linked to sharing dormitories. Health educations including promotion of mask use and no sharing water glass, and rapid isolation of new cases contributed to reduced transmissions in both schools.

PRESENTED BY: MRS SANISA SANTAYAKORN

20100065 Poster Influenza

Keywords: Influenza, immunisation, vaccination, vaccination coverage, risk groups

National seasonal influenza vaccination surveys in Europe, 2008 and 2009.

Jolita Mereckiene (1, 7), S. Cotter (1, 7), F. D'Ancona (3, 7), C. Giambi (3, 7), A. Nicoll (2), D. Levy-Bruhl (4, 7), P. Lopalco (2), T. Weber (2), K. Johansen (2), L. Dematte (5, 7), S. Salmaso (3, 7), P. Stefanoff (6, 7), D. Greco (3, 7), F. Dorleans (4, 7)

AFFILIATIONS:

1. Health Protection Surveillance Centre, Dublin, Ireland
2. European Centre for Disease Prevention and Control, Stockholm, Sweden
3. Istituto Superiore di Sanità, Rome, Italy
4. Institut de Veille Sanitare, Saint-Maurice, France
5. CINECA Consortium of University, Bologna, Italy
6. National Institute of Public Health – National Institute of Hygiene, Warsaw, Poland
7. Vaccine European New Integrated Collaboration Effort (VENICE) Project
8. The list of gatekeepers is available in the final report on VENICE website: http://venice.cineca.org

BACKGROUND:

Prior to 2008, when VENICE conducted its first survey, there was no comprehensive information on the seasonal influenza vaccination programmes in Europe. There was a need to improve knowledge on which population groups vaccination is targeted and which indicators are used to monitor vaccine coverage.

METHODS:

In 2009 the second cross-sectional survey was undertaken across European Union (EU), Norway and Iceland Member States (MS) to determine changes in seasonal influenza vaccination policy since the 2008 survey and to compare vaccination coverage between countries using data obtained from both surveys. The 2009 questionnaire was completed on-line by each MS gatekeeper by updating survey response fields which had been prefilled with data from the previous survey conducted in 2008.

RESULTS:

Of 27 responding countries, all recommend seasonal influenza vaccine to the elderly population: 18 countries recommend vaccination for individuals › 65 years; nine countries have lower age cut-off ranges from between › 50 and › 60 years of age. Six countries recommend vaccination of children. Most countries recommend influenza vaccine for individuals with chronic medical conditions and HCWs. In the 2009 survey, the reported vaccine coverage varied by country and risk group, ranging from 1.1% – 82.6% for elderly (n=23); to between 32.9% -71.7% for clinical risk groups (n=8); and from 13.4% -89.4% for HCWs (n=9).

CONCLUSIONS:

Results of the two consecutive surveys indicate that most countries recommend influenza vaccination for the main risk groups, however there is a discrepancy between what is officially recommended and achieved vaccination coverage. The reported vaccination coverage in some countries is low, in some countries is substantial and still needs to be improved in order to achieve EU and World Health Organization goals.

PRESENTED BY: MRS JOLITA MERECKIENE

20100133 Poster Influenza

Keywords: Epidemiology, hemagglutinin H1, H1N1 influenza virus, Pandemic, Basic Reproduction Number

Pandemic influenza A/H1N1(2009) in Niger: description and effective reproduction number.

Jean-François Jusot (1), Lagaré Adamou (1), Oumarou Alto (1), Ali Djibo (2), Issoufou Aboubacar (2), Issa Tidjani (2), Jean-Marc Collard (1) and the sentinel network of Niger

AFFILIATIONS:
1. Centre de Recherche Médicale et Sanitaire (CERMES), Niamey, Niger
2. Ministère de la Santé Publique, Niamey, Niger

BACKGROUND:
In March 2009, a new strain A/H1N1(2009) emerged in Mexico, leading to a new pandemic in the world. First cases were reported in West Africa on June 2009. Niger was lately affected. The aim of this work was to describe the pandemic A/H1N1(2009) and to estimate the basic reproductive number in Niger.

METHODS:
In April 2009, a surveillance system for flu was set up in Niger which included a sentinel network and a laboratory dedicated to flu detection and subtyping. Subjects with symptoms of influence-like illness or severe acute respiratory infection attending the sentinel network sites were enrolled. These subjects were sampled with a nasopharyngeal swab. Specimens were tested for evidence of influenza viruses by reverse transcription-PCR. Demographic factors, clinical symptoms and travel history were collected through questionnaires.

RESULTS:
Between the 2 February and 8 April 2010, 46 cases of A/H1N1(2009) were detected. The number of cases increased between the 5th and 8th week and decreased until the 14th week. The onset of the first case symptoms occurred on the 28 January 2010. The mean age of A/H1N1(2009) cases was 13.6 years. The predominant classes of age were the 1-4 and the 5-14 years. The average of the minimal duration of shedding was 2.6 days. Among the 46 A/H1N1(2009) and the 195 negative subjects, only symptoms of severity among children under 5 years were significantly higher for negative subjects. The basic reproductive number was estimated at 1.5 (95% IC = 1.3 – 1.7) for a mean generation interval of 3.6 days.

CONCLUSIONS:
Pandemic influenza A/H1N1(2009) in Niger did not show more severe cases than negative subjects. The estimatedvalue of Ro was close to those observed in other countries.

PRESENTED BY: DR JEAN-FRANÇOIS JUSOT

20100304 Poster Influenza

Keywords: pandemic influenza, surveillance, laboratory network

Pandemic Influenza Virus Surveillance in Portugal by the Laboratory Network for Diagnostic of Influenza A (H1N1)pdm Infection

*R. Guiomar (1); P. Pechirra (1); P. Gonçalves (1); R. Cordeiro (1); P. Conde (1); A. Arraiolos (1); I. Batista (2); E. Paixão (2); B. Nunes (2); C. Furtado (3)**

AFFILIATIONS:
1. National Influenza Reference Laboratory, Department of Infectious Diseases, Instituto Nacional de Saúde Dr. Ricardo Jorge
2. Department of Epidemiology, Instituto Nacional de Saúde Dr. Ricardo Jorge
3. Reference and Epidemiological Surveillance Unit, Department of Infectious Diseases, Instituto Nacional de Saúde Dr. Ricardo Jorge
*on behalf of the Laboratory Network for Diagnostic of influenza A (H1N1)pdm Infection

BACKGROUND:
In April 2009 a new influenza A(H1N1) virus of swine origin disseminated throughout the world, resulting in the first pandemic of the XXI century. To face the increasing number of diagnosis being requested, a National Laboratory Network for Influenza Surveillance of the new influenza A(H1N1)pandemic virus was activated in Portugal.

METHODS:
This is a descriptive study of the Influenza-like Ilness (ILI) cases reported by this network. Association between the variables was evaluated by chi-squared test. Over 62089 ILI cases were notified, 25594 (41.2%) cases were laboratory confirmed A(H1N1)pdm virus (realtime RT-PCR), from week 17/2009 to week 15/2010.

RESULTS:
In the week 33 (summer) were detected 1039 (4.1%) positive cases for A(H1N1)pdm virus although the winter peak occurred in week 46 with 3131 (12.5%) A(H1N1)pdm positive cases. In the age group of 5-14 years old were detected the majority of positive cases 9983 / 15785 (63.0%) opposite in the elderly group (>65 years old) was detected the lower number of A(H1N1)pdm positive cases, 280/2361 (11.0%). The distribution by gender accounts 40.4% of female and 42.3% of male positive cases. The signs and/or symptoms present were analysed revealing that headache (49.7%), cough and myalgies (46.5%) and odinophagia (46.1%) were statistically associated with A(H1N1)pdm positive cases. The chronic pulmonary disease seemed to be more associated with laboratory confirmed A(H1N1)pdm cases. Ninety five strains were isolated and antigenically characterised, 45 were taken for genetic analysis (hemagglutinin, neuraminidase). All the strains were antigenically and genetically like the pandemic vaccine strain. It was detected only one strain with the mutation H275Y in the neuraminidase, resistant to oseltamivir.

CONCLUSIONS:
This Laboratory network was an important tool to monitories and control the evolution of the pandemic.

PRESENTED BY: DR PAULO GONÇALVES

POSTER SESSION **ABSTRACTS**

20100068 Poster Influenza

Keywords: influenza, influenza A, surveillance, evaluation.

Participation and representativeness within the laboratory-based influenza surveillance in Finland 2008–2009

Andreas Jacks (1, 2), Thedi Ziegler (2), Outi Lyytikäinen (2).

AFFILIATIONS:

1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control, Stockholm, Sweden
2. National Institute for Health and Welfare (THL), Helsinki, Finland

BACKGROUND:

Influenza surveillance in Finland has collected virus strains from sentinel sites for the past 15 years, used for vaccine studies. We evaluated participation and representativeness of the present system in order to provide recommendations for swabbing practices in the influenza-like illness (ILI) surveillance being introduced in Finland.

METHODS:

Out of 44 institutions ever participated in the surveillance, sites sending ≥1 NP swab during May 2008–April 2009 were eligible. Demographic data and viral PCR results were extracted from the database of the national influenza reference laboratory.

RESULTS:

During the study period, 896 swabs were sent by 31 sites; 19 were garrisons (48% of all swabs), 3 local laboratories (29%) 5 occupational healthcare centres (16%) and 4 primary healthcare centres (7%). Of the swabs, 25% were positive for influenza A (range by type of site, 5-49%) and 8% for influenza B. Samples were sent during the whole study period with a minimum of 2 swabs per week during summer. Majority of swabs were from persons aged 15-29 years (54%) and 0-4 years (24%), 2% from persons aged >65 years. Proportions of swabs positive for influenza A varied by age group, from 1% in persons aged 5-14 years to 71% in 15-29 years. Males provided 77% of all swabs. One large garrison provided 11% of all swabs and 16% of all positive for influenza A.

CONCLUSIONS:

Sampling covered the whole year but was unevenly distributed between sites. Garrisons provided a large proportion of final sample, resulting in underrepresentation of women, elderly and hospitalized patients. Results will be used when selecting number and type of swabbing sites for the new ILI surveillance in Finland.

PRESENTED BY: DR ANDREAS JACKS

20100074 Poster Influenza

Keywords: influenza, 2009 pandemic, review, comparison, old seasonal influenza, new seasonal influenza

Review-comparison of 'old' seasonal influenza (from 1970 until 2008), the 2009 influenza A (H1N1) pandemic and first impressions of the new seasonal influenza 2010

Lopez V., Penttinen P., Ciancio B. C., Nicoll A.

AFFILIATIONS:

All four authors currently work at the European Centre for Disease Prevention and Control (ECDC) – Stockholm, Sweden

BACKGROUND:

The objective of this review was to document the similarities and differences between three human influenzas: the 'old' seasonal influenza (1970 to 2008), the 2009 influenza A(H1N1) pandemic.

METHODS:

An exhaustive comparison of all the features related to prior influenza epidemics and the 2009 pandemics was performed using peer-reviewed and other publications and the ECDC 'known unknowns' of influenza as a template. Two publications from ECDC, which contain most of the relevant data needed to conduct this review, were used as the background support for this review. In addition, another publication from the Journal Euro Surveillance was used to help with the production of the table and to provide the 'forward look' or future information perspectives of this comparison-review. Finally, initial impressions of the new seasonal influenza from the Southern Hemisphere were gathered using epidemic intelligence techniques.

RESULTS:

The comparison of the different features between the 'old' seasonal influenza and the 2009 influenza A(H1N1) pandemic indicate similarities but at least nine differences which render them substantially distinct, including those affected, severe pathology, incidence rates, antiviral resistance, time of occurrence and disease burden. Similarly, the first impressions of the 'new' seasonal influenza indicate that it is again different from the old seasonal influenza though not necessarily worse.

CONCLUSIONS:

The 'old' seasonal influenza and the 2009 influenza A(H1N1) pandemic differed quite considerably. Conclusions or facts derived from the former should not be extrapolated to the latter. It is too early to come to any conclusions about the 'new' seasonal influenza to inform public health decisions and policies.

PRESENTED BY: MR VICENTE LOPEZ CHAVARRIAS

20100078 Poster Influenza

Keywords: pandemic influenza A (H1N1), infant and children, critical illness, risk factors

Severe pediatric cases with pandemic influenza A (H1N1) in Germany

Mathias Altmann (1, 2, 3), Lena Fiebig (1), Jana Soyka (1), Rüdiger von Kries (3), Manuel Dehnert (1) and Walter Haas (1)

AFFILIATIONS:
1. Robert Koch-Institute, Berlin, Germany
2. Postgraduate Training for Applied Epidemiology (PAE, German FETP)
3. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
4. University of München, Munich, Germany

BACKGROUND:
Children were particularly affected by the 2009 influenza A (H1N1) pandemic. Information on epidemiological features, risk factors and course of the disease in critically ill children with pandemic influenza A (H1N1) are still rare, especially in Europe.

METHODS:
In a large hospital-based observational study in Germany, we investigated children less than 15 years admitted to pediatric intensive care units (PICU) as well as deaths with laboratory-confirmed 2009 pandemic influenza virus infection. Cases were reported through a standardized questionnaire asking for risk factors, treatment, vaccination status and outcome from 3 August 2009 to 30 April 2010.

RESULTS:
Ninety-three children fulfilled the case-definition, 9 (10%) had acquired the infection while being hospitalised. Cases were reported from 55 hospitals all over Germany. Date of disease onset ranged from 21 September 2009 to 23 February 2010. Seventy-five percent had underlying chronic medical conditions, neurodevelopmental disorders (e.g. developmental delay, cerebral palsy and epilepsy) being the most prevalent (57%). Of 15 fatal outcomes, 11 occurred during PICU stay, leading to a case-fatality ratio in the PICU of 12% (95% CI 6-21%). Diagnosis of Acute Respiratory Distress Syndrome (ARDS) was the only complication strongly associated with fatal outcome (OR 7.4; 95% CI, 1.6-37.8; p=0.004). The median time from symptom onset to antiviral treatment was 4 days (IQR, 1-7), irrespective of outcome. Only 9% (5/53) of the children had been vaccinated against the 2009 pandemic influenza and all of these survived.

CONCLUSIONS:
Our results stress the importance of vaccination, as well as early diagnosis and prompt treatment for children with underlying chronic medical conditions, especially neurodevelopmental disorders, to reduce severe disease and adverse outcome of pandemic influenza A (H1N1).

PRESENTED BY: DR MATHIAS ALTMANN

20100332 Poster Influenza

Keywords: Adverse events following immuniyation, pandemic H1N1 influenza vaccine

SUSPECTED ADVERSE EVENTS FOLLOWING IMMUNIZATION WITH PANDEMIC H1N1 2009 INFLUENZA VACCINE IN SERBIA

Dragana Dimitrijevic, J. Obrenovic, S. Savkovic, D. Bulatovic, B. Grgic, K. Seke

AFFILIATIONS:
Institut of Public Health of Serbia, Belgrade, Serbia

BACKGROUND:
Vaccine safety monitoring has to be an integral part of comprehensive surveillance of the pandemic influenza vaccination program. Objectives: To describe and evaluate the reports of suspected adverse events following vaccination with pandemic H1N1 2009 influenza vaccine till December 2009. to March 2010. in Serbia.

METHODS:
Descriptive. Case by case analysis of adverse events associated with pandemic influenza vaccine.

RESULTS:
Some 149882 doses have been administered to date. During observed period there were 84 reports of suspected adverse events to the pandemic influenza vaccine, respectively. A single report may include more than one suspected reaction. The vast majority of the adverse reactions are non-serious. The most of the reports are mild and self-limited reactions at the injection site, as well as generalized reactions such as headache, fever, muscle aches and joint pain. The most frequently reported suspected adverse reactions included pyrexia, headache, fatigue, myalgia, arthralgia, chills, nausea, injection-site pain and hyperhidrosis. No fatal cases have been reported in people vaccinated with this vaccine. The majority of cases reports are between 30-64 years. There has received 1 laboratory-confirmed cases of H1N1-viral infection and disease in patients who had been vaccinated with pandemic vaccine. Affected individual had onset of symptoms more than 30 days following vaccination. The most frequent time between administration of the vaccine and the occurrence of the reaction was one day (Mod=1day).

CONCLUSIONS:
The balance of risks and benefits for this vaccine remains positive. The reported adverse reactions of the pandemic influenza vaccine correspond to those observed in other countries using the same vaccine. Vaccine inefficacy has to being closely monitored. There is currently no concern raised regarding the efficacy of H1N1 vaccines.

PRESENTED BY: DR DRAGANA DIMITRIJEVIC

POSTER SESSION **ABSTRACTS**

20100085 Poster Influenza

Keywords: Influenza, immunisation, vaccination, vaccine uptake

Telephone survey to assess uptake of seasonal, pandemic influenza and pneumococcal vaccines in Ireland during the 2009/2010 influenza season

Jolita Mereckiene (1), S. Cotter (1), J. O'Donnell (1), D. Igoe (1), D. O'Flanagan (1)

AFFILIATIONS:
1. Health Protection Surveillance Centre, Dublin, Ireland

BACKGROUND:
In Ireland seasonal influenza and pneumococcal vaccines are recommended for individuals at risk: >65 years of age, chronic illness, immunosuppressed, children with long-term aspirin therapy and residents of long-term care facilities. Additionally, in 2009, pandemic influenza vaccine was recommended for all with priority given to pregnant women, healthy children aged <5 years, schoolchildren and people with obesity. Seasonal and pandemic influenza vaccines were recommended to healthcare workers (HCW). We conducted a survey to estimate vaccine uptake among risk groups and identify reasons for non-vaccination with recommended vaccines in order to improve targeted immunisation programmes.

METHODS:
We undertook a cross-sectional telephone-based household survey among non-institutionalised individuals. We selected a sample of individuals >18 years representing the Irish population in terms of age, sex and region. We collected information on self-reported medical and underlying conditions, influenza and pneumococcal vaccination status among respondents and one child in their household.

RESULTS:
Vaccine uptake for pandemic influenza was: 50% (95%CI:44.4-55.9) among individuals with medical conditions, 67% (95%CI:48.1-81.4) among pregnant woman, 53% (95%CI:45.0-61.5) among children <=5 years and 50% (95%CI:45.5-54.3) among schoolchildren. Seasonal influenza and pneumococcal uptake was respectively: 29% (95%CI:20.4-32.2) and 12% (95%CI:7.9-16.9) among individuals 18-64 years of age with medical conditions; 64% (95%CI:57.3-69.3) and 33% (95%CI:27.1-39.0) among persons >=65 years of age. Pandemic and seasonal influenza uptake among HCW was respectively: 39% (95%CI:30.6-47.4) and 26% (95%CI:19.4-34.8). The most commonly (33%) reported reason for non-vaccination was "I don't need it".

CONCLUSIONS:
In risk groups pandemic vaccine uptake exceeded that of seasonal influenza and pneumococcal vaccines. In those >65 years of age, seasonal influenza vaccine uptake was nearly twice that of pneumococcal vaccine. Vaccine uptake among HCW was low. Risk perception influences vaccination uptake.

PRESENTED BY: MRS JOLITA MERECKIENE

20100185 Poster Influenza

Keywords: Influenza, Pandemic

Transmission patterns of Pandemic Influenza in London during the containment phase (20th April to 28th June 2009)

Sooria Balasegaram (1), F. Ogilvie (1), A. Glasswell (2), C. Anderson (2), V. Cleary (1), D. Turbitt (1), G. Fraser (2), B. McCloskey (3)

AFFILIATIONS:
1. North East Central London Health Protection Unit, London WC1V 7PP
2. London Regional Epidemiology Unit, Health Protection Agency, London WC1V 7PP
3. London Regional Division, Health Protection Agency, London WC1V 7PP

BACKGROUND:
In the UK, a national containment strategy was employed for pandemic (H1N1) 2009 influenza. The publicly funded Health Protection Agency (HPA) and the National Health Service (NHS) undertook case investigation and treatment, and tracing and prophylaxis of contacts.

METHODS:
Data was obtained from notifications to the London Flu response centre for completed weeks in the containment phase from 20th April to 28th June 2009 (weeks 17-26). Cases were matched by postcode areas to the index of multiple deprivation (IMD).

RESULTS:
From 20 April to 28 June 2009, there were 2202 confirmed, 1272 epidemiologically linked and 13 probable cases of pandemic H1N1 (2009) influenza in London. The attack rate was highest (206.1 per 100000 in the primary school age group (5-11 years) followed by rates of 128.8 in the secondary school age group (12-17 years); 45.3 in the pre-school age group (0-4 years) and 21.6 in adults (18 years an over).

The rate ratios, between the rate in IMD quintile 1 (most deprived population) and IMD quintiles 4 and 5 (least deprived) changed from 0.52 for all ages in weeks 17-23 to 1.66, 1.88, and 2.11 in weeks 24, 25 and 26 respectively. Community transmission was marked by a increase in the number of school outbreaks from 14 from week 17-23 to 45 in week 25.

CONCLUSIONS:
Results shows the transition that occurred during the containment period, from high incidence in the most affluent areas; relating to school outbreaks from imported cases, to a subsequent higher incidence in the most deprived areas, as infection spread to the wider community from week 24.

PRESENTED BY: DR SOORIA BALASEGARAM

20100246 Poster Influenza

Keywords: Vaccine effectiveness, Influenza

Using the screening method to estimate pandemic vaccine effectiveness against laboratory confirmed A/H1N1v in Italy, 2009–2010.

Thomas Seyler, Antonino Bella, Paolo D'Ancona, Isabella Donatelli, Simona Puzzelli, Maria Cristina Rota, Annapina Palmieri, Caterina Rizzo

AFFILIATIONS:
Istituto Superiore di Sanità, Roma, Italy

BACKGROUND:
Early estimates of influenza vaccine effectiveness (VE) are needed, especially during a pandemic. Existing surveillance systems and routinely collected data can be used to provide VE in a cost-effective and timely manner. In Italy an influenza sentinel surveillance system (Influnet) was implemented in 1999/2000 season. The objective of this study, conducted within the I-MOVE project, was to estimate pandemic VE against laboratory confirmed cases identified within Influnet using the screening method.

METHODS:
A case was defined as a patient presenting from 26 October 2009 to 25 March 2010 at a sentinel general practitioners from the Influnet network with ILI and with a throat swab positive for A/H1N1v. Swabbing was systematic. A patient was considered vaccinated against influenza A/H1N1v if she or he had received one dose of the pandemic vaccine at least 14 days before onset of symptoms. The reference population was the Italian population. The National Institute of Health provided the data on the number of first doses administered by week. We used Farrington's method to build the confidence intervals.

RESULTS:
We had information on the vaccination status of 254 laboratory confirmed 2009 A/H1N1v cases. One case (0.39%) was vaccinated. Vaccine coverage among the general population was 1.41% on week 2. We estimated VE to be 72.4% (CI: -96.8-96.1).

CONCLUSIONS:
The point estimate is in line with other studies conducted in Europe and suggests that pandemic vaccines offered good protection to medically-attended influenza like illness cases with confirmed pandemic influenza. We will use the same method during the next influenza season, aiming at stratifying by age and adjusting for the presence of chronic diseases.

PRESENTED BY: MR THOMAS SEYLER

20100232 Poster International health

Keywords: Field Epidemiology Training, Capacity building, Africa

APARET (African Programme for Advanced Research Epidemiology Training)

Norbert Georg Schwarz, Rebecca Babirye, David Mukanga

AFFILIATIONS:
Bernhard Nocht Institute for Tropical Medicine, Hamburg, Germany
African Field Epidemiology Network, AFENET, Kampala, Uganda

This presentation is linked to the presentation 'Field Epidemiology (and Laboratory) Training Programs – Africa's answer to public health workforce deficiency: the AFENET story' by David Mukanga et al.

Actually these presentations do not really fit into the ESCAIDE abstract assessment criteria as our presentation are not about scientific topics. However we think that APARET and AFENET are of interest for European Epidemiologists and therfore want to introduce these programmes to the ESCAIDE audience.

BACKGROUND:
see explanations in the affiliation box

METHODS:
see explanations in the affiliation box

RESULTS:
To build sustainable research capacities in Epidemiology and Public Health on the African continent, African researchers need to find ways to successfully apply for highly numerated international research grants to enable them to establish research careers in Africa. Graduates of Field Epidemiology Training Programmes (FETP) and Field Epidemiology and Laboratory Training programmes (FELTP) in Africa will be employed as research associates by African APARET partners for 2 years (salary provided by host institute). During the first year of their contract they will be embedded in the EU-supported APARET programme. A core part of the fellowship will be the application for a major research grant. Mentors from European and American institutions will support the APARET fellows. They will provide practical support to the fellow, serve as a tool to establish South-North networks and open European and American funding agencies to African fellows. Mentors will be nominated from the European and American non-host institutes. APARET will additionally provide small research grants to support the work of APARET fellows while they are employed at their host institutes. APARET accompanying workshops will be a two-week initiation workshop with face-to face contact between fellow and mentor and workshops will focus on topics such as research funding project management, ethical issues; a one-week proposal writing and project-planning workshop and a 4 days final seminar, where fellows will present their result. APARET can be credited towards a PhD degree of the respective university. EU-funding covers 3 successive cohorts of 8 fellows.

CONCLUSIONS:
see explanations in the background box

PRESENTED BY: DR NORBERT SCHWARZ

POSTER SESSION **ABSTRACTS**

20100233 Poster International health

Keywords: Chagas disease, Europe, epidemiology, prevalence, congenital transmission

Chagas disease in European non-endemic countries

L. Basile (1), J. M. Jansà (2), P. Albajar (3), Chagas Disease's European working group (4)

AFFILIATIONS:
1. Departament de Salut. Generalitat de Catalunya
2. Agencia de Salut Pública de Barcelona
3. Departament for Control of Neglected Tropical Diseases, WHO, Geneve
4. Epidemiologists and experts on Chagas Disease from different European countries.

BACKGROUND:
Chagas disease (CD) affects 8 million people all over the world. In 2008 it was estimated 4 million people from endemic areas living in Europe. The goal of this study is to estimate the expected and observed prevalence of CD in 2009 in European countries participating in the project, the annual incidence of congenital transmission and the estimated rate of under diagnosis.

METHODS:
Ecological study of aggregate data by country, realized for Belgium, France, Germany, Italy, Portugal, Spain, Switzerland, Netherlands and UK. Official and informal data sources have been used to estimate the population of endemic countries resident in Europe including the diagnosed cases of CD and the annual births of mothers from endemic countries. The expected and observed prevalence and the incidence of congenital transmission are calculated using infection rates of endemic countries. The index of sub diagnosis is calculated as the ratio between observed and expected prevalence.

RESULTS:
Through the year 2009, 4290 positive cases have been diagnosed and it have been estimated between 68.000 and 122.000 cases. The expected prevalence rate by 1000 immigrants from endemic countries is higher in not regularized residents (28-54) than in regularized ones (18-28) while the total observed prevalence rate is 1.3 cases. It is estimated between 65 and 122 newborns with E. congenital CD in the countries studied each year. The annual incidence rate of congenital transmission on 1000 newborn of pregnant women from endemic countries is 1-2 cases per year. The sub diagnosis index is between 94% to 96%.

CONCLUSIONS:
It's necessary to create an European surveillance system to increase the detection, management and control of CD, with special emphasis in the most affected countries in Europe.

PRESENTED BY: MR LUCA BASILE

20100231 Poster International health

Keywords: Field Epidemiology Training, Africa

Field Epidemiology (and Laboratory) Training Programs – Africa's answer to public health workforce deficiency: the AFENET story

David Mukanga, Rebecca Babirye, Norbert Georg Schwarz

AFFILIATIONS:
African Field Epidemiology Network, AFENET, Kampala, Uganda
Bernhard Nocht Institute for Tropical Medicine, Hamburg, Germany

This presentation is linked to the presentation 'APARET (African Programme for Advanced Research Epidemiology Training)' by Norbert Georg Schwarz et al.

Actually these presentations do not really fit into the ESCAIDE abstract assessment criteria as our presentation are not about scientific topics. However we think that APARET and AFENET are of interest for European Epidemiologists and therfore want to introduce these programmes to the ESCAIDE audience.

BACKGROUND:
see # in Affiliation box

METHODS:
see #

RESULTS:
FE(L)TPs are modeled along the United States Centers for Disease Control and Prevention (CDC) 's Epidemic Intelligence Service (EIS) that has been in existence since 1951. The first Field Epidemiology Training Program (FETP) in sub-Saharan Africa was established in Zimbabwe, then called Public Health Schools Without Walls (PHSWOWs) and then in Uganda (1994) and Ghana (1995). These and newly created programs then formed a networking organization called the African Field Epidemiology Network (AFENET) in 2005. Today, AFENET comprises ten member programs, in East, West and Southern Africa. The nature of the programs has evolved over time, with a change in focus from being purely applied epidemiology to include public health laboratory practice and veterinary public health in newer programs. The programs are hinged on partnerships between Ministries of Health and academic institutions which accredit trainees' qualifications. Approximately 75% of trainees' time is spent on field work activities, where they directly build and strengthen public health systems that serve communities. Such partnerships between government, academic and international institutions create a powerful mechanism for addressing difficult public health problems by leveraging on the strengths of different partners. With the growing threat of cross-border diseases, AFENET has boosted inter-country collaboration among African nations. To date, more than 500 persons have graduated from FE(L)TPs within the region and now serve in various positions in ministries of health, local and international non-governmental organizations, and academic institutions. The success of FE(L)TPs has resulted in a resounding desire by ministries of health in Africa to start their own program. This year a new programme started in Rwanda, and two others will start in Angola and Mozambique.

CONCLUSIONS:
see #

PRESENTED BY: DR DAVID MUKANGA

20100176 Poster International health

Keywords: Seroepidemiologic Studies, Behavioral Research, Prostitution, Homosexuality Male, Sexually Transmitted Diseases, Sampling Studies

Integrated HIV/STIs bio-behavioural survey in an "isolated" low level concentrated epidemic setting: lesson learned from Vanuatu Island

Isabel BERGERI (1), S. BULU (2), T. KWARTENG (1)

AFFILIATIONS:
1. Burnet Institute, Melbourne, VIC, Australia;
2. Wan Smol Bag (WSB), Port Vila, Vanuatu

BACKGROUND:
Outside of PNG, the HIV epidemic in most Pacific Islands can be described as low level. Vanuatu has only detected five HIV infections, but underestimation is well-known. In such epidemic setting, the recommendation is to focus prevention efforts on populations at greatest risk such as sex workers (SW) and men who have sex with men (MSM). However nothing or so little is known about these highly stigmatized populations, so these programs are "flying blind" in more than one way.

METHODS:
Our study is the first integrated bio-behavioural survey among two supposedly key populations-at-higher risk in Vanuatu. We used Respondent driven sampling (RDS) to reach a probability sample from these ´hidden´ populations using peer referral (targeted sample size of 100 for each group). RDS will start with five seeds. It aims at gathering information on the trends over time and levels of HIV/STIs infection and high-risk behaviour. Both unweighted and weighted data analysis will be performed.

RESULTS:
Data collection will start in August 2010. Working with MSM and SW in Vanuatu is possible having political support of health authorities, but also field community organizations which managed to develop a strong relationship and gain trust of the targeted stigmatized population. There are certain advantages to collecting behavioural and biological data together from the same individuals at the same time as we are doing. Further results will be available in October 2010 when the study will end.

CONCLUSIONS:
According to recommendations for core surveillance in low level concentrated epidemic like Vanuatu, integrated biobehavioural surveys like this one should be repeated regularly. RDS is a promising way for reaching hard-to-reach populations for other "isolated' territories or regions in Europe or worldwide.

PRESENTED BY: DR ISABEL BERGERI

20100082 Poster International health

Keywords: malaria, prevention, health service

Patterns of malaria prophylaxis for travelers from Greece visiting malaria-endemic countries

Androula Pavli (1), S.Hadjianastasiou (1), A. Spiliotou (1), P. Katerelos (2), P. Smeti (1), A. Vakali (1), G. Saroglou (2), HC. Maltezou (3)

AFFILIATIONS:
1. Travel Medicine Office. Hellenic Centre for Disease Control and Prevention
2. Hellenic Centre for Disease Control and Prevention
3. Department for Intervention in Health Care Facilities. Hellenic Centre for Disease Control and Prevention

BACKGROUND:
International travel is changing the epidemiology of imported malaria in Greece. The aim of the study is to identify patterns of malaria prophylaxis of travelers visiting malaria- endemic countries.

METHODS:
A prospective study was conducted from 01/2008 to 12/2009 in 57 health departments. Data were collected using a standardized individual form including demographic characteristics, travel related information and travel counseling information from travelers seeking pre-travel medical advice.

RESULTS:
2700 travelers traveling to malaria- endemic countries of Asia, Africa, Central and South America, South Pacific and Middle East attended the health departments during the study period. Malaria prophylaxis information was available in 2337 (86.5%) travelers (to 60.2% of them malaria chemoprophylaxis was recommended). Of them, 33% traveled to sub-Saharan Africa, 25.1% to South America, 11.8% to Indian subcontinent, 12.4% to Middle East and 4% to Southeast Asia; malaria chemoprophylaxis was recommended to 77.4%, 64%, 80.6%, 4.8% and 73.5% of them respectively. According to purpose of travel, chemoprophylaxis was recommended to 62% of those traveling for recreation, 85.4% of those traveling for work, and 75.2% of those visiting friends and relatives. Malaria prophylaxis was advised to 68.5%, 66.2%, 61.5%, and 18.9% to those staying at local people's homes, in camping, at hotels and on cruise ships respectively. Recommendation of chemoprophylaxis was statistically significantly associated with destination countries, purpose of travel, and type of residence in endemic areas.

CONCLUSIONS:
Our results show that there is lack of adequate malaria prophylaxis for travelers to malaria endemic countries. This indicates the need for increasing awareness and education of professionals providing travel health care services in terms of correct recommendations of malaria prevention for travelers seeking pre-travel advice.

PRESENTED BY: DR ANDROULA PAVLI

POSTER SESSION **ABSTRACTS**

20100153 Poster International health

Keywords: Field epidemiology, training, collaboration

The Field Epidemiology Manual (FEM) Wiki: A Collaborative eLearning Online Portal

Vladimir Prikazsky (1), Arnold Bosman (1), Patty Kostkova (2), Martin Szomszor (2)

AFFILIATIONS:
1. European Centre for Disease Prevention and Control, Stockholm, Sweden
2. City eHealth Research Centre (CeRC) of the School of Community and Health Sciences (SC&HS), City University, London, UK

BACKGROUND:

Creating a training centre is one of the key remits specified in the funding regulations and agency mandate of the European Centre for Disease Prevention and Control (ECDC). Consequently, the Field Epidemiology Manual (FEM) training resource has been developed to support the European Programme for Intervention Epidemiology Training (EPIET). Trainers, scientific coordinators, and facilitators created 17 draft chapters on field epidemiology based on the lectures they delivered during the EPIET introductory courses.

METHODS:

The aim of the FEM wiki project (www.femwiki.com) is to make the training manual available online using a collaborative Web 2.0 platform that takes advantage of user-generated input while simultaneously certifying the scientific content through an editorial and review process. An Editorial Board containing domain experts was established to convert the existing single document chapters into a set of hyperlinked wiki pages, each describing key epidemiological concepts. The training structure of the original chapters is preserved, and linked to a set of forums that support commenting and discussion.

RESULTS:

The target audiences for the FEM wiki include not only EPIET and the wider field epidemiology training community, but also anyone working in disciplines related to epidemiology. In addition, the development process may be of interest to anyone that requires an online collaborative eLearning tool.

CONCLUSIONS:

The FEM wiki portal will be launched at ESCAIDE 2010 and opened to the public. The portal structure ensures the ECDC-recognised content, approved by the Editorial Board, is available alongside user-generated and organically expanding pages. The vision for the portal is that it will attract a large online community of experts, expanding the content to establish it as the key online resource for epidemiologists around the world.

PRESENTED BY: MR VLADIMIR PRIKAZSKY

20100155 Poster International health

Keywords: Transportation of patients; Ambulances, Communicable diseases, Infection control, Patient isolation

Transportation capacities for patients with highly infectious diseases within the European Union (EU): a survey in 14 member states.

Stefan Schilling (1); HC Maltezou (2); FM Fusco (3); H-R Brodt (1); B Bannister (4); P Brouqui (5); V Puro (3); R Gottschalk (6); G De Iaco; and G Ippolito (3) for the EuroNHID study-group

AFFILIATIONS:
1. Goethe University, Frankfurt, Germany
2. HCCDC, Athens, Greece
3. INMI, Rome, Italy
4. Royal Free Hospital, London, UK
5. URMITE, Marseilles, France
6. Health Authorities, Frankfurt, Germany

BACKGROUND:

Highly Infectious Diseases (HID) are defined as communicable, life-threatening illnesses and present a serious public hazard. A harmonised response to natural, accidental or deliberately released HIDs is crucial in their management. To date, no data on HID patients transport capacities in the EU are available.

METHODS:

The European Network for HIDs conducted a cross-sectional analysis of hospitals responsible for HID patients. Based on checklists, 46 centres in 14 countries were evaluated between 2009 and 2010.

RESULTS:

50% of evaluated centres have guidelines for the transportation of HID patients (n=23/46). Transportation of HID patients by specifically designed ambulances only is recommended in Germany, Luxembourg and Italy. Most centres transport patients by reserved standard ambulances (n=14/23). Overall, either ground ambulances or stretcher isolator exist in 24 centres. 21 centres provide reserved or specifically designed ambulances and 3 centres stretcher isolators, only. Exclusive pathways for the admission of patients and transport within the isolation facility exist in most centres (n= 31/43 and 29/42, respectively). Protocols for disinfection of ambulances and equipment exist in 33 and 29 centres, respectively. 13 centres without dedicated ambulances have disinfection protocols. Adherence to correct practice while transporting patents is monitored in 29/42 centres. To promote performance, lectures and practical exercises are used most often at a median of 6 months.

CONCLUSIONS:

Half of evaluated centres provide specific or reserved ground vehicles. Within the EU, quantity and technical quality of ground vehicles broadly differ. Awareness of this problem is high as centres without dedicated vehicles do have procedures for disinfection. As rapid and short-distance relocation are most desirable for HID patients, regulations for national and cross-border transportation to the closest HLIU should be harmonised throughout the EU.

PRESENTED BY: DR. PAOLA SCOGNAMIGLIO

20100274 Poster International health

Keywords: Vaccination Coverage; Surveys; Sierra Leone; Yellow Fever

Use of clustered-LQAS and two-stage cluster surveys to monitor and evaluate a yellow fever vaccination campaign at health district level in Sierra Leone, November 2009

L. Pezzoli (1), I. Conteh (2), W. Kamara (3), M. Gacic-Dobo (4), R. F. Lewis (5).

AFFILIATIONS:
1. Epidemiology Consultant for WHO, Geneva, Switzerland
2. Immunization Vaccine Development, World Health Organization, Freetown, Sierra Leone
3. Statistics Sierra Leone, Freetown, Sierra Leone
4. Immunization, Vaccines and Biologicals, World Health Organization, Geneva, Switzerland
5. Epidemic Readiness and Intervention, World Health Organization, Geneva, Switzerland

BACKGROUND:
In November 2009, Sierra Leone conducted a preventive yellow fever vaccination campaign in six health districts. During the campaign, we used clustered lot quality assurance sampling (clustered-LQAS) to identify areas of low coverage to recommend timely mop-up actions; then two-stage cluster surveys were conducted to evaluate post-campaign coverage and results compared with LQAS classifications.

METHODS:
Based on geo-demographic criteria, districts were divided in 12 non-overlapping lots. In each lot 5 clusters of 10 eligible individuals (aged >9 months) were selected. The upper threshold was set at 90% and the lower at 75%. A lot was classified with low coverage if more than 7 unvaccinated individuals (not presenting vaccination card) were found. The 95% confidence intervals of the post-campaign coverage estimations were used to compare results of the two methods.

RESULTS:
During the vaccination campaign three lots in two districts were rejected by the clustered-LQAS as not achieving the desired thresholds. One district was still under the lower threshold after vaccination mop-up activities. Two districts accepted by the clustered-LQAS during the campaign were found to have coverage significantly below the thresholds by the two-stage cluster survey after the campaign. This discrepancy did not appear when verbal report of vaccination status was accepted.

CONCLUSIONS:
Clustered-LQAS during the vaccination campaign was informative to identify areas requiring mop-up activities; classic two-stage cluster surveys served to assess whether these additional measures were well addressed. A failure in the distribution or retention of vaccination cards may explain why two districts were rejected based on card-verified vaccination status but accepted if relying on verbal report. The districts where mop-up activities seemed to be unsuccessful may have had logistical difficulties that should be investigated and resolved.

PRESENTED BY: DR LORENZO PEZZOLI

20100351 Poster International health

Keywords: World Health Organization, laboratory-based surveillance, capacity building, foodborne disease, enteric disease, training

WHO Global Foodborne Infections Network (WHO GFN), A Decade of Progression in Global Disease Surveillance and Outbreak Detection

Danilo Lo Fo Wong (1), J.H. Powell (2), A.P. Wright (3), S. M. DeLong (4), and WHO Global Foodborne Infections Network Steering Committee Partners and Members

AFFILIATIONS:
1. World Health Organization, Geneva, Switzerland
2. Oak Ridge Institute for Science and Education, Oak Ridge, Tennessee and Centers for Disease Control and Prevention, Atlanta, Georgia, USA
3. Atlanta Research and Education Foundation, Decatur, Georgia, USA and Centers for Disease Control and Prevention, Atlanta, Georgia, USA
4. IHRC, Inc, Dunwoody, Georgia, USA and Centers for Disease Control and Prevention, Atlanta, Georgia, USA

BACKGROUND:
The Global Foodborne Infections Network (GFN), formerly known as WHO Global Salm-Surv, aims to enhance countries' capacity to detect, control, and prevent foodborne and other enteric infections, as well as foster multi-disciplinary collaboration (veterinary, public health, food disciplines) in these efforts.

METHODS:
Capacity is built through network elements, including international and national training courses, the External Quality Assurance System (EQAS), Global Salmonella Country Databank (CDB), Reference Testing, and the Electronic Discussion Group (EDG).

RESULTS:
Since its inception in 2000, GFN has expanded its focus from Salmonella to include many other foodborne pathogens to ensure its' mission is realized; in 2001, Campylobacter was added to the training platform and over the years, other pathogens such as E.coli, V. cholera, Shigella, and MRSA were also added. The first joint training was conducted in 2002 bringing together both microbiologists and epidemiologists. The content of the training has evolved over time and increases in complexity with each training cycle; now, topics may also include outbreak surveillance, burden of illness, and attribution.To date, GFN has conducted 70 international training courses for >1,200 participants in over 140 countries. EQAS has expanded from 44 participating laboratories in 2000 to over 180 in 2009. As of July 2010, the Country Databank contained 1061 datasets from 84 countries and 1619 members from 179 nations.

CONCLUSIONS:
Over the past decade, GFN has enhanced laboratory capacity and forged lasting partnerships within the veterinary, food and public health community worldwide. In the coming decade, GFN will continue to develop new mechanisms to further enhance the global community's capacity to prevent foodborne and enteric infections.

PRESENTED BY: MR DANILO LO FO WONG

POSTER SESSION **ABSTRACTS**

20100177 Poster Intervention Studies in Public Health

Keywords: H1N1, intervention trial, face masks, children

Adherence to and tolerability of face mask use by paediatric cases of pandemic influenza (H1N1) 2009 and healthy children

Thorsten Suess (1), C. Remschmidt (1), S. Schink (1), W. Haas (1), G. Krause (1), U. Buchholz (1)

AFFILIATIONS:
1. Department of Infectious Disease Epidemiology, Robert Koch Institute, Berlin, Germany

BACKGROUND:
Recommendations for the use of face masks during a pandemic need to take into account their tolerability – especially by children. In autumn 2009, we investigated (i) if face masks are tolerated by paediatric influenza patients (aged 2-14 years), and healthy children in general and (ii) the type and frequency of side effects.

METHODS:
In the context of a cluster-randomized intervention trial we provided surgical face masks to families with laboratory confirmed influenza index patients for use during an 8 day period after symptom onset of the index patient. Masks were to be used when index and household contact were in the same room. Adherence was recorded daily.

RESULTS:
We recruited 28 index patients and 70 household contacts. Median age was 7 years for index patients (interquartile range (IQR): 5-10) and 34 years for household contacts (IQR: 17-42). Among 26 paediatric index patients and 70 household contacts adherence to face mask use peaked at 73% (day 4) and 68% (day 6), respectively, but dropped somewhat towards the end of the study period. There was neither a statistically significant difference in daily adherence between paediatric influenza index patients and (initially) healthy household contacts aged <14 years nor between the latter and (initially) healthy adults. 51 (60%) of 85 participants reported no problems with mask wearing; most frequent complaints were "feeling heat" (20% (17/87)), only 4 (5%) out of 87 participants reported difficulty breathing.

CONCLUSIONS:
Even sick children appear to tolerate face masks well – adherence is as good as in healthy children and healthy adults. However, approximately 30-40% of participants did not use masks. The main side effect is the feeling of heat.

PRESENTED BY: DR THORSTEN SUESS

20100071 Poster Intervention Studies in Public Health

Keywords: Waste Management, Highly Infectious Diseases, Isolation

Management of infectious waste deriving from patients with Highly Infectious Diseases: European Network for Highly Infectious Diseases (EuroNHID) survey of 45 isolation facilities in 15 European countries

Francesco Maria Fusco (1), S. Schilling (2), P. Brouqui (3), G. De Iaco (1), H.-R. Brodt (2), R. Gottschalk (4), B. Bannister (5), H.C. Maltezou (6), G. Thomson (7), V. Puro(1), G. Ippolito (1), EuroNHID group (8)

AFFILIATIONS:
1. National Institute for Infectious Diseases "L. Spallanzani", Rome, Italy
2. University Hospital Frankfurt, Frankfurt am Main, Germany
3. CHU Nord AP-HM, Marseille, France
4. Public Health Office, Frankfurt am Main, Germany
5. Royal Free Hospital, London, UK
6. Hellenic Centre for Disease Control and Prevention, Athens, Greece
7. Health Protection Agency, London, UK
8. Multiple affiliations

BACKGROUND:
The hazards from clinical waste are injuries by contaminated sharp objects, and exposure to airborne infections: even small-scale waste compaction can generate infectious aerosols. According to the European Hazardous Waste Directive, waste from infectious patients must be separately packaged, and incinerated. Particularly about waste from Highly Infectious Diseases (HIDs, such as viral haemorrhagic fevers) patients, decontamination of solid waste by autoclaving is suggested by experts, while disposal into regular drain system of liquid waste is considered safe, despite some experts suggest to decontaminate liquids also

METHODS:
The EuroNHID project conducted surveys in 45 isolation facilities, referral centers for HIDs, in 15 European countries. Data where collected through specific checklists during on-site visits, in March-October 2009

RESULTS:
Out of 45 facilities, 10 reported to manage solid waste from HID patients as other infectious hospital waste. Among those facilities reporting specific procedures, before incineration solid waste are autoclaved within isolation area in 10, and transported to an external autoclave in 4. In the remaining, HID solid waste are directly transported in special secure containers to incineration. About liquid waste, 12 facilities dispose them into regular drain system without decontamination, while liquids are decontaminated in 33: pre-treatment with chemical/physical processes is the most used solution, while in 13 facilities liquid waste are jellified and managed as solid

CONCLUSIONS:
Despite suggested by expert panels, in 35 of surveyed facilities HID solid waste are not decontaminated before exit from the isolation facility. Conversely, liquid waste is decontaminated in 33 facilities, despite most experts consider their direct disposal into regular drain system as safe. This survey highlights the presence of different policies for waste management: standardization of procedures and sharing of good practices is strongly advisable

PRESENTED BY: DR. PAOLA SCOGNAMIGLIO

20100073 Poster Intervention Studies in Public Health

Keywords: Personal Protective Equipments, Highly Infectious Diseases, Isolation

Personal Protective Equipments (PPE) management and policies: European Network for Highly Infectious Diseases (EuroNHID) survey of 47 isolation facilities giving care to Highly Infectious Diseases in 15 European countries

Giuseppina De Iaco (1), F. M. Fusco (1), S. Schilling (2), H.-R. Brodt (2), R. Gottschalk (3), B. Bannister (4), P. Brouqui (5), H. C. Maltezou (6), G. Thomson (7), V. Puro(1), G. Ippolito (1), EuroNHID group (8).

AFFILIATIONS:
1. National Institute for Infectious Diseases "L. Spallanzani", Rome, Italy
2. University Hospital Frankfurt, Frankfurt am Main, Germany
3. Public Health Office, Frankfurt am Main, Germany
4. Royal Free Hospital, London, UK
5. CHU Nord AP-HM, Marseille, France
6. Hellenic Centre for Disease Control and Prevention, Athens, Greece
7. Health Protection Agency, London, UK
8. Multiple affiliations

BACKGROUND:
Correct use of Personal Protective Equipment (PPE) is crucial for the safe management of patients with Highly Infectious Diseases (HIDs, i.e. viral haemorrhagic fevers)

METHODS:
The EuroNHID project conducted surveys in 47 isolation facilities, referral centers for HIDs, in 15 European countries. Data were collected through specific checklists during on-site visits, in March-October 2009

RESULTS:
All surveyed facilities but one report to have procedures for PPE selection in case of HIDs, and 44 to have procedures for PPE donning and removal. In 36 facilities different level of PPE are used, according to a risk-assessment, while in 9 high-level PPE (complete positive air-filtered suites) are always used if HIDs are suspected. In 2 facilities another approach is used: HIDs are treated in plastic bed-isolators, with semi-suites included in the plastic draping (Trexler units). Among the 36 facilities where applicable, fit-test of respirators is performed in 16. Seal-check before entering in patient room is recommended in 22. Strategies for promoting/monitoring the correct use of PPE are in place in 41 facilities, mainly through visual signals, cross-check and supervision. Protocols defining the maximum length of time PPE would be worn are available in 28 facilities. In case of sudden increase of PPE need, 43 facilities have procedures for their rapid supply, and 14 have procedures for decontamination and re-use of some PPE

CONCLUSIONS:
The majority of surveyed facilities have enough attention to PPE selection, donning and removal, and supply. In most of them, strategies for the promoting of PPE correct use are available, while some aspects as the application of fit-test and seal-check are still poorly diffused. Policies vary between and within different countries and the implementation of common practices is advisable

PRESENTED BY: DR. PAOLA SCOGNAMIGLIO

20100364 Poster Intervention Studies in Public Health

Keywords: emerging infectious diseases, crossborder, real-time data exchange, surveillance system

Strengthening surveillance, detection and control of emerging infectious diseases in a Dutch-German crossborder area using a real-time information exchange system

HLG ter Waarbeek (1), CJPA Hoebe (1), H. Freund (3), V. Bochat (3), C. Kara-Zaïtri (3)

AFFILIATIONS:
1. Department of Infectious Diseases, South Limburg Public Health Service and the Maastricht University Medical Center, the Netherlands
2. Public Health Service Aachen, Germany
3. Independent consultant in health informatics, UK

BACKGROUND:
International outbreaks, with zoonotic disease as the most prevalent, are occurring much faster than before and require rapid transnational detection and response. Improved crossborder collaboration on both human and animal health, together with harmonisation of surveillance and response systems is now of the essence despite varying legislations.

METHODS:
In the Euregion Maas Rhine, Public Health Services of South Limburg (NL) and Aachen (D) have partly realised this close collaboration using two web-based decision-support system for infectious diseases control: HPZone at the local level, and HPVista at the crossborder level. The latter is a integrated collaborative tool for sharing important epidemiology and laboratory data for defined transnational cases, contacts and sources in real-time.

RESULTS:
Agreed euregional protocols for meningitis, measles, Q-fever, hantavirus infection, hepatitis A and B were consolidated in HPZone. Agreements were reached on key data exchange (diagnosis, date of onset, age, sex, municipality and context) visible in HPVista, including the underlying risk assessment model to account for transborder spread and euregional impact. HPVista provided real-time surveillance alerts based on predefined triggers with GIS mapping of cases, contacts and associated contexts (e.g. schools, care homes) thus enhancing the visualisation of crossborder outbreaks, facilitating analysis, and providing secure communication and messaging between (health) professionals. Lessons learned are captured and disseminated through crossborder training.

CONCLUSIONS:
Securing agreements on information exchange and embedding these in local and crossborder collaborative tools for real-time surveillance have readily facilitated the systematic management of crossborder health incidents in a continuously changing environment. It has enhanced efficiency and effectiveness of public health operations, by sharing structured data between the countries and allowing faster and better detection, verification, investigation and control of outbreaks.

PRESENTED BY: MISS HENRIËTTE TER WAARBEEK

POSTER SESSION **ABSTRACTS**

20100294 Poster Molecular epidemiology

Keywords: Acinetobacter baumannii, OXA-23, OXA-24/40, Portugal

Clonal dissemination of multidrug-resistant Acinetobacter baumannii strains in Portuguese Hospitals

Vera Manageiro, D. Jones-Dias, E. Ferreira, D. Louro, ARSIP, M. Caniça

AFFILIATIONS:
National Reference Laboratory of Antimicrobial Resistance, Department of Infectious Diseases, National Institute of Health Dr. Ricardo Jorge, Lisbon, Portugal

BACKGROUND:
Infections caused by multidrug-resistant A. baumannii strains are difficult to treat. Our purpose was to evaluate the genetic relatedness of OXA-type producing A. baumannii from different geographic regions of Portugal and correlate with carbapenem resistance.

METHODS:
A total of 83 A. baumannii strains were randomly selected from a collection recovered in Portuguese hospitals (72 from Apr2009-Apr2010; 11 from 2005-2008). The identification of strains was confirmed by PCR (based on the presence or absence of OXA-51-like genes). Antimicrobial susceptibility was screened by TSA. The presence of blaOXA genes was confirmed by multiplex-PCR. Genetic relatedness of A. baumannii was examined by PFGE (all strains) and MLST (typing of 25 isolates representative of different PFGE-clusters).

RESULTS:
Overall, 68.7% of isolates were confirmed to be OXA-23-producers and 24.1% expressed OXA-24/40 enzyme. All strains were identified as OXA-51-type-producers. PFGE analysis revealed that 81 isolates clustered into six clones and 2 presented unique profiles. A clonal dissemination was present in each hospital D, E and G. The most widespread clone was ST118, disseminated in 2009/2010. ST98 and ST92 were also founded, although associated to strains since 2005. All clones presented the carbapenemase OXA-24/40, while OXA-23 was absent among ST98. An OXA-71-producer belonged to ST1. A new MSLT profile was encountered in a strain co-expressing OXA-104, with 187 silent mutations, and OXA-24/40 beta-lactamases.

CONCLUSIONS:
So far, OXA-48-producer ST98 clone had been described as endemic in Portugal. This study suggests an emergence of multidrug-resistant A. baumannii strains in Portugal with blaOXA-23 associated to ST118, and a clonal relatedness characterized by different PFGE-profiles and sequence types. These strains, only susceptible to colistin, are of great epidemiological importance.

PRESENTED BY: MRS VERA MANAGEIRO

20100021 Poster Molecular epidemiology

Keywords: Bordetella pertussis, genotyping

Diversity of Bordetella pertussis in Poland

Monika Zawadka, Ewa Augustynowicz, Anna Lutyńska

AFFILIATIONS:
National Institute of Public Health – National Institute of Hygiene, Warsaw, Poland

BACKGROUND:
In the study B. pertussis strain population isolated in Poland within 1960-2005 in respect to vaccine strains used for production of the national DTP vaccine with the use of pulsed-field gel electrophoresis (PFGE) procedure performed according to EUpertstrain guidelines was described.

METHODS:
148 B. pertussis strains including 9 vaccine strains and 7 reference B. pertussis strains were investigated. PFGE profiles were analyzed by using GelCompar software version 5.1 (Applied Math, Belgium). Serotype analysis was performed by using a microplate agglutination assay with monoclonal antibodies against fimbriae type 2 – Fim2 and Fim3. Parts of the genes encoding surface protein pertussis toxin S1 subunit (ptxS1) and pertactin (prn) were sequenced.

RESULTS:
B. pertussis strains isolated in Poland, differently from strains of other European communities, were not so commonly found in PFGE groups of IVα, IVβ, and IVγ. Most of isolates (66%) were found in the newly recognized clusters, A, B, C1, C2 and D. All currently used vaccine strains were found in the III group. In the period of 1995-2005, compared with the period from 1960 to 1977, frequency of strains belonging to group IV and cluster A and C2 increased and new cluster C1 appeared.

CONCLUSIONS:
Higher level of heterogeneity of B. pertussis strains observed in Poland as found by PFGE might result from several different pressures induced with different vaccine strains, what could increase population diversity. Differences observed in B. pertussis populations circulating in Poland and other EU countries might result from different vaccine composition strategy used in Poland since the beginning of routine pertussis vaccination.

PRESENTED BY: MISS EWA MOSIEJ

20100368 Poster Molecular epidemiology

Keywords: HTLV 1 Bcell ATLL

Human T-lymphotropic virus type I associated to T and B-cells disorders

N. Ortiz (1), F. Marco (2), F. Simón (3), J. M. Beltran (2), A. Días (3), R. Cisterna (4)

AFFILIATIONS:
1. Centro Nacional de Epidemiología (Programa de epidemiología Aplicada de campo) ISCIII Madrid
2. Servicio de Hematología y Hemoterapia Hospital de Basurto
3. Centro Nacional de Epidemiología ISCIII Madrid
4. Servicio de Microbiología Clínica y Control de Infección, Basurto Hospital, Bilbao

BACKGROUND:

Human T lymphotropic virus type 1 (HTLV-1) is among pathogenic agents of adult T-cell leukaemia/lymphoma (ATLL). HTLV-1 was not associated with B-cell leukemia/lymphoma. A single retrospective study in Japan showed the presence of HTLV-1 in early stages of B-cell lymphoma. The aim of this study was to detect the presence of HTLV-1 in patients with lymphoid malignancies, other than ATLL and describe the clinical evolution of HTLV-1 infected patients.

METHODS:

We studied the presence of HTLV-1 in a all 61 patients (42 male and 19 female) with T and B-cell malignancies attending hematology service of Basurto Hospital between April 2006 and May 2008. Median age was 60.8 (range: 27 – 89). A real time PCR assay using standardized MT2 cell line DNA for HTLV-1 was established. Results were confirmed by sequence. Patient evolution was obtained from clinical records.

RESULTS:

We detected the presence of HTLV-I in 5 (8.19%) patients: 3 presented B-cell malignancies (2 out of 13 with B-Chronic lymphoid leukemia (B-CLL), 1 out of 8 with diffuse large B-cell lymphoma) and 2 presented ATLL.. The two cases with B-CLL did not response to treatment protocols evolving to stable disease. One of them developed an immune thrombocytopenia after Fludarabine therapy and died. The patient with B-cell lymphoma died before treatment. The patient with T-ALL achieved complete remission after chemotherapy,.

CONCLUSIONS:

We found an unexpected high rate of HTLV-1 infection among our patients. We identified HTLV-1 in patients presenting B-cell malignancies. HTLV-1 infected patients presented a more aggressive disease. Our results suggest the interest of testing for HTLV-1 infection among leukemia/lymphoma patients in order to develop and apply specific treatment protocols.

PRESENTED BY: DR NATALIA ORTIZ

20100308 Poster Molecular epidemiology

Keywords: Leptospirosis, Azores, rodent isolates, serogroup, genotyping

Leptospira in Azorean Rodents versus Human Infection Risk

Mónica Nunes (1, 2), A. T. Gonçalves (1), T. Carreira (1, 2), M. L. Vieira (1, 2), M. Collares-Pereira (1, 2)

AFFILIATIONS:
1. Unidade de Leptospirose e Borreliose de Lyme, Instituto de Higiene e Medicina Tropical (IHMT), Universidade Nova de Lisboa (UNL), Lisboa, Portugal;
2. Centro de Recursos Microbiológicos (CREM), Faculdade de Ciências e Tecnologia, UNL, Lisboa, Portugal

BACKGROUND:

Leptospirosis, a re-emergent infectious disease caused by pathogenic Leptospira species, is a relevant public health problem in the Azores Archipelago, showing the highest incidence rate (11.1/100,000 population), about 10 times greater than mainland Portugal. In São Miguel and Terceira islands the human and livestock populations are the most affected by leptospires since the contact with rodent urine is the major source for spirochete transmission. Identification of the genomic Leptospira species circulating in these islands is crucial in order to understand its pathogenicity and therefore, evaluate the risk of human and animal infection. The aim of this study was to determinate Leptospira infection rate in captured rodents from São Miguel and Terceira islands, and to genotype the obtained isolates.

METHODS:

1,856 rodents were trapped and kidney culture was performed in selective medium. The obtained isolates were genotyped through a polymerase chain reaction based assay, which amplifies repetitive DNA fragments present within Leptospira genomes.

RESULTS:

Leptospires were isolated in 60% (1,102/1,856) of rodents. 715 isolates were genotyped and two species were identified as Leptospira borgpetersenii, serogroup Ballum and L. interrogans sensu stricto, serogroup Icterohaemorrhagiae, both with a similar distribution pattern regarding the reservoir species. The house-mouse (Mus musculus) was the major Leptospira carrier for Ballum isolates (82%; 597/715), whereas Icterohaemorrhagiae was mostly maintained by two species (Rattus rattus and R. norvegicus).

CONCLUSIONS:

These small mammals, acting as wild reservoirs, are a serious risk to human and animal health in these islands, since the identified serogroups are the same as those found in humans. The genotyping technique used provided a simple and rapid method for Leptospira spp identification at the serogroup level, proving to be an important tool in large epidemiological surveys.

PRESENTED BY: MISS MÓNICA NUNES

POSTER SESSION **ABSTRACTS**

20100088 Poster Molecular epidemiology

Keywords: Group A Streptococcus, enhanced surveillance, molecular characterisation

MICROBIOLOGICAL CHARACTERISATION OF GROUP A STREPTOCOCCAL ISOLATES FROM AN INVASIVE DISEASE UPSURGE IN ENGLAND

Juliana Coelho, Aruni De Zoysa, Roger Daniel, Chenchal Dhami, Theresa Lamagni, Robert George, Androulla Efstratiou.

AFFILIATIONS:
Health Protection Agency (HPA), London, United Kingdom

BACKGROUND:
In response to an upsurge of invasive GAS (iGAS) infections in England in December 2008, enhanced surveillance was initiated alongside characterisation of isolates submitted to the national reference laboratory to evaluate any changes in the microbiology of these infections. An analysis of emm types among the iGAS isolates received from cases in England between December 2008 and December 2009 was undertaken.

METHODS:
T and OF typing were performed on all iGAS isolates submitted to the Streptococcus and Diphtheria Reference Unit by laboratories in England. M/emm types were determined by immunoprecipitation, or a capture Enzyme Immunosorbent Assay (EIA). Emm sequencing was performed on isolates that were non-typable with the previous two methods.

RESULTS:
A total of 1441 isolates from sterile sites were examined; 84% were from blood. Emm 3, 1, 89 and 28 were the most prevalent types (25%, 18%, 13% and 7%, respectively). Emm 3 comprised 23% to 35% of isolates from December 2008 to April 2009 decreasing to 7% in October, in contrast, emm 1 was more common in later months, from 13% in March 2009 to 27% in December 2009. The non-typable strains (10%) comprised a diverse range of emm types; emm 25, 29, 32, 33, 43, 57, 60, 63, 65, 69, 73, 74, 80, 81, 82, 94, 100, 104, 106, 110, 113, 118, 61/44.

CONCLUSIONS:
Molecular epidemiological data can inform the development of GAS vaccine candidates and benefit the evaluation of the impact of potential emm/M polyvalent vaccines. On the basis of the available data, the inclusion of M-types 1, 3, 28 and 89 in a polyvalent vaccine would have provided coverage for 63% cases of the invasive cases.

PRESENTED BY: DR JULIANA COELHO

20100388 Poster Molecular epidemiology

Keywords: PMQR, beta-lactamases, veterinary, Portugal

Molecular characterization of fluoroquinolone resistance mediated by plasmids in Enterobacteriaceae isolated from food-producing animals in Portugal

Daniela Jones-Dias, V. Manageiro, A. Francisco, E. Ferreira, M. Caniça

AFFILIATIONS:
National Reference Laboratory of Antimicrobial Resistance, Department of Infectious Diseases, National Institute of Health Dr. Ricardo Jorge, Lisbon, Portugal

BACKGROUND:
Antibiotic resistance developed in food-producing animals is easily transferred to humans through food consumption or direct contact. Thus, we aimed to investigate the presence of plasmid mediated quinolone resistance determinants and beta-lactamases amongst Enterobacteriaceae isolates from veterinary origin.

METHODS:
In this work we investigated a collection of Escherichia coli (n=70) and Salmonella spp (n=92) isolates recovered from several types of consumable meat (n=36) and from samples collected from food-producing animals received from diagnostic (n=126). Antibiotic susceptibility testing was performed by the disk diffusion method and interpreted according to SFM veterinary guidelines. Molecular characterization of the isolates included PCR detection of PMQR determinants followed by identification through nucleotide sequencing. Beta-lactamase encoding genes were also surveyed when the susceptibility testing suggested their production.

RESULTS:
Overall, we detected fifteen PMQR determinants, namely nine QnrS1 isolated from poultry. Two of these strains also carried TEM-1 beta-lactamase and one of them carried ESBLs TEM-135 and SHV-108. Among the four QnrB detected, we identified one QnrB19 from an E. coli collected from a pig and three QnrB2 genes from Salmonella spp isolates, collected from embryonated eggs. We also have detected two Aac-(6')-Ib-cr in E. coli isolates, collected from broilers. None of the isolates revealed the presence of QnrA, QnrC, QnrD or QepA genes. Regarding beta-lactamases, we detected isolates carrying DHA-type AmpC beta-lactamase, and the ESBLs SHV-12 and TEM-135.

CONCLUSIONS:
This investigation has demonstrated that PMQR determinants are present in different types of isolates from food-producing animals in Portugal, and some also co-produce beta-lactamases, contributing to the scenario of multidrug-resistance in animal production facilities. The present information describes a worrying situation providing a wakeup call in terms of public health.

PRESENTED BY: MRS DANIELA JONES-DIAS

20100091 Poster Molecular epidemiology

Keywords: invasive meningococcal disease

Molecular epidemiology of invasive meningococcal disease and recommended vaccination strategy in the Czech Republic in 2009

Pavla Krizova, Martin Musilek

AFFILIATIONS:
NRL for Meningococcal Infections, NIPH, Prague, Czech Republic

BACKGROUND:
Enhanced surveillance of invasive meningococcal disease (IMD) has been conducted in the Czech Republic since 1993. Molecular methods for the characterization of Neisseria meningitidis used in the National Reference Laboratory for Meningococcal Infections (NRL) allow precise assessment of the epidemiological situation.

METHODS:
The case definition is consistent with the EU case definition. Notification is compulsory and is performed by local epidemiologists. Strains of N. meningitidis isolated from IMD cases are referred by the field laboratories to the NRL to be characterized by serogrouping, PorA and FetA sequencing and multilocus sequence typing (MLST) (http://pubmlst.org/neisseria/).

RESULTS:
The disease was caused mainly by serogroup B meningococci (69.4 %) in 2009, followed by serogroups C (11.8 %). Serogroup Y was found in low percentage of IMD cases (1.2%), but caused high case fatality rate in the period of active surveillance (20.7 %). The most frequent clonal complexes were cc41/44 (17.4 %), cc269 (17.0 %), cc18 (8.7 %) and cc32 (6.5 %), all typical for serogroup B. Clonal complex cc11 (typical for serogroup C) was found in 8.7 % isolates only. MenB vaccine is needed for infants, but the sero/subtype coverage by the currently developed porin-based vaccines is low for the Czech meningococcal isolates.

CONCLUSIONS:
There is no indication for mass vaccination with MenC conjugate vaccine in the Czech Republic, but MenB vaccine and tetravalent conjugated ACYW135 vaccines are required. Other than porin-based vaccine effective against N. meningitidis B needs to be developed.

PRESENTED BY: DR PAVLA KRIZOVA

20100387 Poster Molecular epidemiology

Keywords: Plasmid-mediated AmpC beta-lactamases, Portugal, CMY-46, CMY-50

Molecular survey of plasmid-mediated AmpC beta-lactamases among clinical Enterobacteriaceae isolates from Portuguese Hospitals

Vera Manageiro, D. Jones-Dias, E. Ferreira, D. Louro, ARSIP, M. Caniça

AFFILIATIONS:
National Reference Laboratory of Antimicrobial Resistance, Department of Infectious Diseases, National Institute of Health Dr. Ricardo Jorge, Lisbon, Portugal

BACKGROUND:
In Portugal, little is known on plasmid-mediated AmpC beta-lactamases. In this study, we purpose to search for plasmid-mediated AmpC beta-lactamases (PMAB) in clinical Enterobacteriaceae isolates lacking inducible chromosomal ampC genes.

METHODS:
A total of 2576 clinical isolates of various species of Enterobacteriaceae were collected between January–June 1999 and March 2004–August 2009 from patients in Portuguese hospitals. Screening of antimicrobial susceptibility of clinical isolates was performed by disc diffusion method. Clinical isolates with decreased susceptibility to cefoxitin, showing synergism between boronic acid and clavulanic acid and/or between cloxacillin and ceftazidime (and/or cefoxitin) were considered presumptively PMAB. The presence of acquired ampC genes was confirmed by multiplex-PCR and sequencing.

RESULTS:
Among all isolates, 6.4% (109 Escherichia coli, 43 Klebsiella pneumoniae, 11 Klebsiella oxytoca, 2 Proteus mirabilis and 1 Pantoea agglomerans) were assumed to be PMAB and were selected for further analysis. Seventy-six of the 166 positive isolates (45.8%) were confirmed to be PMAB-producers (52 blaDHA-, 24 blaCMY-2-, 5 blaMIR, 1 blaACT- and 1 blaFOX-type genes). From that, 5 E. coli strains and 1 P. mirabilis co-produced more than one PMAB. Two new CMY-type beta-lactamases encountered in this study, namely CMY-46 and CMY-50, differed from CMY-2 by nine and thirteen mutations, respectively.

CONCLUSIONS:
AmpC beta-lactamases are a major group of enzymes of clinical importance. This study documents for the first time the occurrence and dissemination of these enzymes in Portuguese hospitals. As noticed in other countries, PMAB was described mostly in K. pneumoniae and E. coli isolates, with DHA-1 beta-lactamase predominant, followed by CMY-2. Infection with AmpC producing bacteria is of great concern, and detection of such enzymes is consequently of epidemiological importance.

PRESENTED BY: MRS VERA MANAGEIRO

POSTER SESSION **ABSTRACTS**

20100195 Poster Molecular epidemiology

Keywords: Hepatitis A Virus, disease outbreaks, sewage, molecular epidemiology

Molecular typing and comparison of Hepatitis A virus strains recovered from urban sewage and from patients involved in an outbreak in Greece

Apostolos Vantarakis, P. Ziros, Y. Babounakis, S. Fillipidou, P. Kokkinos

AFFILIATIONS:
Environmental Microbiology Unit, Department of Public Health, Medical School, University of Patras, Greece

BACKGROUND:
HAV is the first causative agent for acute hepatitis with a worldwide distribution. It is primarily transmitted by person-to-person contact through faecal contamination, but common source epidemics from contaminated food and water may also occur.

METHODS:
In total, one hundred (100) sewage samples were collected and analyzed from two Greek cities. Fifty (50) sewage samples were collected from Patras (Southwestern Greece) and fifty (50) sewage samples derived from Alexandroupolis (North eastern Greece). Also, in parallel, HAV isolated from 7 sera samples of patients involved in a large outbreak in North eastern Greece were analysed to study the molecular epidemiology of HAV in Greece. The HAV outbreak involved populations from three neighbouring prefectures of North eastern Greece, Xanthi, Rodopi, and Evros. In all samples, HAV particles were concentrated and detected by nested RT–PCR. Positive HAV samples were confirmed by sequencing of the PCR product. To determine the relatedness between the different isolated sequences, a phylogenetic tree was constructed by the neighbour-joining (NJ) method using MEGA 4.0.2 software. Multiple sequence alignment of sequences of HAV strains was performed by Clustal W2.

RESULTS:
Results showed a 100% prevalence of genotype I, and particularly subgenotype IA. The analyzed strains were closely related between them with the percentage of nucleotide identity ranging between 96% and 100%.

CONCLUSIONS:
The study revealed circulating strains of IA genotype and underlined the usefulness of molecular methods for the detection and typing of viruses in both environmental and clinical samples. The present study is to our knowledge the first one depicting the circulating HAV strains in Greece using environmental and clinical samples simultaneously.

PRESENTED BY: DR APOSTOLOS VANTARAKIS

20100140 Poster Molecular epidemiology

Keywords: Leishmania strains; microsatellite markers; genetic diversity; Epidemiology; Portugal

Multilocus microsatellite typing applied to genetic diversity of Leishmania sp. in Portugal

Sofia Cortes (1), L. Campino (1)

AFFILIATIONS:
1. Unidade de Leishmanioses, Instituto de Higiene e Medicina Tropical (IHMT), Universidade Nova de Lisboa (UNL), Lisboa, Portugal

BACKGROUND:
Leishmania infantum is considered the main ethiological agent of visceral leishmaniasis in the Mediterranean region. Presently epidemiology of leishmaniases is rapidly evolving around the Mediterranean region, as in other regions of the world, because of several risk factors, with consequent epidemiological implications. Several genetic studies have shown heterogeneity on L. infantum MON-1 the main zymodeme of the Mediterranean region and Portugal. Microsatellite markers have been used successfully for characterizing and detecting genetic variation in diferent leishmanial species and strains. In this study we used Multilocus microsatellite typing (MLMT) for epidemiological and genetic diversity study of portuguese Leishmania strains.

METHODS:
A total of 171 Leishmania strains, 136 from Portugal and 35 from other countries, were analysed by MLMT using 24 microsatellite markers recently developed for L. infantum and L. major. Microsatellite-based genetic distances were calculated with MSA and POPULATIONS software.

RESULTS:
A main cluster of L. infantum MON-1 strains was individualised. Intraspecific variation was observed within this group. Another cluster of strains other than MON-1 included isolates from south Europe and East Africa. It was observed heterozigoty in some strains, namely from Portugal.

CONCLUSIONS:
The results from this study allow us to conclude that Leishmania parasites in Portugal presently show higher variability than previously observed by other methodologies. Strains isolated from humans and vector present higher genetic diversity than domestic and silvatic reservoirs. In addition, this study confirmed the existance of heterozigoty which is consistant with genetic recombination events in Leishmania. Funding: EU project Leishmania Genotyping (QLK2-CT-2001-01810) and FCT fellowship (SFRH / BPD / 44450 / 2008).

PRESENTED BY: MS SOFIA CORTES

20100214 Poster New laboratory methods to assist in epidemiologic investigations

Keywords: Brucella, PCR

EVALUATION OF THE REAL TIME PCR FOR DIAGNOSIS OF BRUCELLA SPP.: DIFFERENTIATION BETWEEN BRUCELLA ABORTUS AND BRUCELLA MELITENSIS

Ana Pelerito, Sofia Núncio

AFFILIATIONS:
Unit for Emergence Response and Biopreparedness, Instituto Nacional de Saúde Doutor Ricardo Jorge (National Institute of Health), Lisboa

BACKGROUND:
Brucellosis is considered to be an emerging infection in some regions of the world, including Portugal. Some epidemiological, microbiological and clinical parameters of Brucella spp., as for example the small inoculum needed to induce human disease, traditionally described in the levels of 10-100 microorganisms. In Portugal, brucellosis is endemic and became a notifiable disease in 1949. Surprisingly, probably due to the underreporting problem, already detected in other similar diseases, only a few cases are reported each year, which does not allow consistent analysis of risk factors and the impact on public health. According with the data, between 2003-2007, 590 cases were notified in Portugal.

METHODS:
To be able to identify the Brucella species present in a biological sample, using fast and reliable molecular methods is crucial to differentiate between endemic cases, caused endogenous strains and clinical cases due to the deliberate dissemination of a highly pathogenic variant. In the present study, we describe the evaluation of the recently established real-time PCR assay that allows not only the rapid detection of the Brucella genus (IS711) but also the differentiation between two species, B. melitensis and B. abortus.

RESULTS:
We tested several bacterial genera and determine a 100% of specificity. Amplification of 10 fold serial dilution of each strain revealed linearity from 107 to 10 copies for both the genus corresponding an sensitivity of 10 copies/ml.

CONCLUSIONS:
We conclude that this protocol could be a valuable tool for the detection of B. abortus and B. melitensis in biological samples because it allows a rapid and accurate diagnosis and could be used as a valid method for laboratory diagnosis of Brucellosis in endemic cases and bioterrorism situations.

PRESENTED BY: DR ANA PELERITO

20100200 Poster New laboratory methods to assist in epidemiologic investigations

Keywords: HIV, antibody avidity, ROC curve, incidence

Identifying recent HIV infections with the HIV avidity index: accuracy of different cutoffs using a 4th generation immunoassay

Vincenza Regine (1), M. Raimondo (1), A. Rodella (2), C. Galli (3), N. Manca (2), M.C. Salfa (1), L. Camoni (1), B. Suligoi (1)

AFFILIATIONS:
1. Istituto Superiore di Sanità, Rome, Italy
2. Spedali Civili di Brescia, Brescia, Italy
3. Abbott Diagnostics Division, Rome, Italy

BACKGROUND:
The identification of recent HIV infections (RHI, ≤6 months from seroconversion) is important to accurately estimate HIV incidence, and to monitor HIV spread. The Avidity Index (AI) of anti-HIV antibodies has been shown to be useful in identifying RHI. Previous studies were conducted using 3rd generation enzyme immunoassays (EIA). The objective of the present study is to analyze the accuracy of different cutoffs for AI values, using a 4th generation EIA.

METHODS:
We collected 175 serum samples from 82 HIV-positive individuals for whom the date of seroconversion was estimated as the midpoint of the interval between the last negative and the first positive HIV test. Specimens positive for the Ag p24 and specimens collected when the individual was under anti-retroviral treatment were excluded from the analysis. AI assay was performed using Architect HIV Ag/Ab Combo (Abbott). We analyzed the accuracy of three AI cutoff values (0.75, 0.80, 0.85) by ROC analysis.

RESULTS:
A total of 81 specimens (46.3%) were collected within 6 months after seroconversion. The following results were obtained:
– cutoff 0.75 = sensitivity 84.0%, specificity 94.7%, ROC area 89.3%;
– cutoff 0.80 = sensitivity 91.4%, specificity 90.0%, ROC area 90.9%;
– cutoff 0.85 = sensitivity 95.1%, specificity 85.1%, ROC area 90.1%.

CONCLUSIONS:
The choice of the cutoff value would depend on the specific objectives (epidemiological or clinical purposes). This study shows that a cutoff of 0.80 yields the best overall accuracy and should be employed for epidemiological purposes (incidence estimate and surveillance).

PRESENTED BY: DR VINCENZA REGINE

POSTER SESSION **ABSTRACTS**

20100032 Poster New laboratory methods to assist in epidemiologic investigations

Keywords: Q fever, Diagnosis, Serology, Immunoglobulin M

Predictive value of solitary IgM phase II positive serology in acute Q fever; comparison of IFA and ELISA

Stijn Raven (1, 2), J. L. A. Hautvast (1), T. Herremans (3), A. C. A. P. Leenders (4), P.M. Schneeberger (4)

AFFILIATIONS:
1. Academic Collaborative Center for Public Health AMPHI, Radboud University Nijmegen Medical Centre, The Netherlands.
2. Community Health Service Region West-Brabant, The Netherlands
3. National Institute for Public Health and the Environment (RIVM), The Netherlands
4. Department of Medical Microbiology and Infection Control, Jeroen Bosch Hospital, Den Bosch, The Netherlands

BACKGROUND:
Since 2007 a large outbreak of Q fever is ongoing in the Netherlands. Diagnostic screening strategies for IgM phase II have been implemented to cope with large number of Q fever diagnostics. A few percent of this serology is solitary positive for IgM phase II. Such result may point to a presumptive diagnosis but may also be non-specific. We compared the predictive value of solitary positive IgM phase II detected with indirect immunofluorescence assay (IFA) and enzyme-linked immunosorbent assay (ELISA) for acute Q fever.

METHODS:
A data set collected between 2007-2009 from a laboratory in a tertiary referral hospital was used. Data from 2007 and 2008 contained IFA testing, whereas data from 2009 contained ELISA testing. IFA cut off values of 1:32 for both phases I and II were used. Initial and follow-up sera were included if initially only IgM phase II tested positive with IFA (N= 93) (ELISA not done), or IFA and ELISA (N=46), or ELISA positive (IFA negative) (N=24). A Seroconversion for Q fever was defined as an initial sample being IgG phase II negative and positive in the reconvalescent sample.

RESULTS:
Isolated IgM ELISA resulted in 4% acute Q fever seroconversions. Isolated IFA resulted in 68% seroconversions. Confirmation of ELISA by IFA resulted in 65% seroconversions.

CONCLUSIONS:
Isolated IgM phase II positive serology either detected by ELISA or IFA appeared not to adequately predict acute Q fever. Serological follow up sera are therefore obligatory for adequate diagnosis. It cannot be used as a diagnostic criterion nor should it be included in public health notification without confirmation with other markers or a follow up serum sample.

PRESENTED BY: MR STIJN RAVEN

20100098 Poster New laboratory methods to assist in epidemiologic investigations

Keywords: real-time PCR, sequencing and genotyping

Real-Time PCR followed by Fast Sequencing allows Rapid Genotyping of Microbial Pathogens

Tara Wahab (1, 4), Johan Ankarklev (2, 3), Marianne Lebbad (2, 4), Steve Glavas (5), Staffan Svärd (3), Daniel Palm (1)

AFFILIATIONS:
1. Centre for Microbiological Preparedness, Swedish Institute for Infectious Disease Control, Solna, Sweden
2. Department of Parasitology, Mycology and Environmental Microbiology, Swedish Institute for Infectious Disease Control, Solna, Sweden
3. Department of Cell and Molecular Biology, Uppsala University, Uppsala, Sweden
4. Department of Microbiology, Tumor and Cell Biology, Karolinska Institute, Sweden
5. Department of Bacteriology, Swedish Institute for Infectious Disease Control, Solna, Sweden

BACKGROUND:
In this study we describe a novel protocol for rapid molecular analysis of patient samples using a combination of Real-Time PCR and Sanger sequencing. A diagnostic laboratory normally need two working days to perform these steps, but using this protocol the process can be completed within three hours using equipment normally found in a diagnostic laboratory. The innovative steps in this protocol are sequencing of the product generated in the diagnostic Real Time PCR, addition of a sequencing tail to the PCR primer which increases the quality of sequence without loosing sensitivity or specificity and optimization of the hands on- and instrument steps using modern chemistries. The read length of the sequencing step is routinely 250 nucleotides which is substantially longer than existing rapid sequencing methods, increasing the chances to cover several genetic markers within one analysis. As proof of concept, we use detection and genotyping of the intestinal parasite Giardia lamblia, but the protocol can be applied to any PCR and sequence-based analysis.

METHODS:
Real-time PCR and sequencing.

RESULTS:
In this study we have developed an innovative protocol for combining Real-Time PCR and rapid Sanger sequencing. Detection and genotyping of the intestinal parasite Giardia lamblia was selected as proof of concept.

CONCLUSIONS:
All-in-all, this method is considerable if applied on cases where rapid screening and genotyping is required. The entire optimized pipeline and universal aspect opens up the possibility to perform detection and sequenced based genotyping within one working day and to use existing laboratory resources more efficient.

PRESENTED BY: MRS TARA WAHAB

20100235 Poster Novel methodological approaches to outbreak investigations and surveillance

Keywords: Sexually Transmitted Diseases, Data linkage, Australia, Epidemiology, Population Surveillance, Chlamydia

A multi-network automated surveillance system to tackle STIs? Lesson learned after 3 years from ACCESS (the Australian Collaboration for Chlamydia/STIs Enhanced Sentinel Surveillance)

BERGERI Isabel (1), GUY R. (2), BOYLE D. (5), KONG F. (1), GOLLER J. (1), BOWRING A. (1), FRANKLIN N. (2), SULLIVAN L. (3), WARD J. (2), KALDOR J. M. (2), DIMECH W. (4), DONOVAN B. (2), HELLARD M. (1)*

AFFILIATIONS:
1. Centre for Population Health, Burnet Institute, Melbourne, VIC, Australia;
2. National Centre in HIV Epidemiology and Clinical Research, University of New South Wales, Sydney, NSW, Australia
3. National Perinatal Statistics Unit, Sydney, NSW, Australia
4. National Serology Reference Laboratory, Australia, Melbourne, VIC, Australia
5. Primary Care Research Unit, Department of General Practice, University of Melbourne, Melbourne, VIC, Australia;

BACKGROUND:

Passive surveillance suggests that STIs, and especially chlamydia, are a substantial and growing problem in Australia. However, no systematic means of measuring changes in testing levels in specific groups or assessing time trends with confidence is yet available. Also Indigenous status is often missing. We report on a new surveillance system (ACCESS) that aims to ease interpretation of current data in an innovative, ethical and semi-automated way.

METHODS:

Established in 2008, ACCESS involves six separate but complementary surveillance networks representing a variety of Primary Health Care (PHC) sectors and subsequently a range of priority populations. The approach is to monitor chlamydia positivity rates as a surrogate for prevalence, in addition to testing rates. Most data are automatically extracted from existing patient management systems using GRHANITE™ software. Extracted data is de-identifiable but record linkable.

RESULTS:

As of May 2010, 92 operational sites gave information on 677,576 episodes of care. ACCESS showed that it was feasible to establish a multi-states, multi-priority populations and multi-PHC sectors, collecting standardized and linkable data. ACCESS added values include providing evidence of a true increase in transmission in women, information on new variables (sex of sexual partner), estimates in MSM at less cost than a cohort study, and quality measurements in Indigenous people. ACCESS is designed to be flexible and reactive so that it could easily be extended to monitor other STIs.

CONCLUSIONS:

ACCESS has considerable potential as a nation-wide mechanism supporting a better understanding of long-term trends in STIs in an automated, ethical and cost-efficient way thereby enhancing our capacity to respond to and control these infections. It also provides robust baseline data to evaluate new prevention programs or compliance with guidelines.

PRESENTED BY: DR ISABEL BERGERI

20100135 Poster Novel methodological approaches to outbreak investigations and surveillance

Keywords: outbreak transmission probabilistic model

Combining molecular and epidemiological data: who infected whom?

Rolf Ypma (1), A. M. A. Bataille (2), W. M. van Ballegooijen (1)

AFFILIATIONS:
1. National Institute for Public Health, Bilthoven, The Netherlands
2. Utrecht University, Utrecht, The Netherlands

BACKGROUND:

One of the key goals in outbreak research is to identify who infected whom. Often epidemiological parameters such as day of symptom onset, age and/or place of residence are known for cases, but links between them cannot be established. Another rich source of information can be obtained by sequencing pathogens sampled from cases. Methods exist to assess both kind of datasets separately, but systematic methods that combine all data in one analysis are mostly lacking.

METHODS:

We develop a simple mathematical method to infer transmission links between cases based on epidemiological and genetic data. The method also quantifies the uncertainty in these inferences. We apply the method to an outbreak of avian influenza in The Netherlands in 2003 which infected 240 farms.

RESULTS:

For each pair of farms we obtain a probability of transmission between them. This allows us to quantify risk factors such as proximity of farms and type of animals kept, and to assess the probability of spread of the virus by means of the people involved in control efforts.

CONCLUSIONS:

We present a method to incorporate epidemiological and genetic data to reconstruct transmission links between cases. We show how the results obtained can be used to evaluate control measures and assess risk factors.

PRESENTED BY: MR ROLF YPMA

POSTER SESSION **ABSTRACTS**

20100146 Poster Novel methodological approaches to outbreak investigations and surveillance

Keywords: Epidemic Intelligence, Early Warning, Italy

EpiInt: building on national capacity to introduce Epidemic Intelligence in Italy

Flavia Riccardo (1), Donato Greco (1), Maria Grazia Dente (1), Caterina Rizzo (1), Maria Grazia Pompa (2), Loredana Vellucci (3), Sandro Bonfigli (2), S. Declich (1)

AFFILIATIONS:
1. Istituto Superiore di Sanità – ISS (Italian National Institute of Health) National Centre for Epidemiology, Surveillance and Health Promotion Rome, Italy
2. Italian Ministry of Health, Directorate General of Prevention 5th Office Rome, Italy
3. Italian Ministry of Health, Directorate General of Prevention 3rd Office Rome, Italy

BACKGROUND:
Epidemic Intelligence (EI) includes all activities related to early identification, verification, assessment and investigation of potential health hazards finalized at recommending control measures. It integrates traditional (indicator-based) surveillance and alternative sources of information monitoring (event-based). Whilst Italy has developed syndromic surveillance of emergency admissions for early-warning purposes, it does not yet systematically perform event-based surveillance.

METHODS:
In 2009, Italy started developing event-based EI through a pilot project called EpiInt, financed by the MoH, dedicating national staff. Contextually, lessons learned from the GHSAG Early Alerting and Response Project where Italy is involved as threat analyst and project evaluator, were useful when elaborating tools for Italian purposes. Events that occur in Italy and selected international events are scored based on a dedicated risk assessment matrix to be sent as alerts "real time" with a relevance index based on empirical thresholds. Events occurring in Italy are validated at central and/or Regional level. As of July 2010, the EpiInt network was composed by MoH, NIPH, and representatives of each Region in Italy.

RESULTS:
Each week EpiInt monitors almost 2000 events from the media in addition to 5 epidemiological platforms and ECDC reports, issuing a newsletter containing the main events of interest for Italy selected according to geographical relevance, public health impact and potential bioterrorist threat. 23 newsletters have been issued and to date 79 recipients receive them regularly. Three alerts for validation have been issued to members of the EpiInt Network.

CONCLUSIONS:
Introducing EI in Italy has proved feasible through the joint effort of MoH and NIPH, by building on national capacity and international expertise. Sustainability now needs to be guaranteed in order for it to translate into a public health service.

PRESENTED BY: DR FLAVIA RICCARDO

20100379 Poster Novel methodological approaches to outbreak investigations and surveillance

Keywords: Public health surveillance, syndrome, emergency medical service, volcanic eruptions, Influenza A Virus H1N1 Subtype, Geographic Information Systems

European syndromic surveillance system SIDARTHa detects A/H1N1 influenza pandemic earlier and confirms no health impact of volcanic ash cloud

Alexandra Ziemann (1), N. Rosenkoetter (2), T. Krafft (1), H. Brand (2), L. Garcia-Castrillo Riesgo (3), G. Vergeiner (4), J.B. Gillet (5), A. Meulemans (5), M. Fischer (6), F. Lippert (7), A. Kraemer (8), P. Pinheiro (8), on behalf of the SIDARTHa projec

AFFILIATIONS:
1. GEOMED Research Forschungsgesellschaft mbH, Bad Honnef, Germany
2. Department of International Health, Faculty of Health, Medicine and Life Sciences, Maastricht University, Maastricht, Maastricht, The Netherlands
3. Department of Emergency Medicine, University of Cantabria, Santander, Spain
4. Dispatch Centre for the State of Tyrol, Innsbruck, Austria
5. Dept of Emergency Medicine, University Hospitals Leuven, Leuven, Belgium
6. Department of Anaesthesiology and Operative Intensive Medicine, Hospitals of the County of Goeppingen, Goeppingen, Germany
7. Department of Planning and Development, Capital Region of Denmark, Hillerod, Denmark
8. Department of Public Health, University of Bielefeld, Bielefeld, Germany

BACKGROUND:
The European Commission co-funded project SIDARTHa (Grant Agreement No. 2007208) implements and tests a real-time GIS-based syndromic surveillance system (SSS) in four regions that automatically analyses routinely collected pre-hospital emergency medical dispatch (EMD), emergency physician service and emergency department (ED) data. The pilot SSS performance (timeliness, flexibility, sensitivity, specificity) was assessed for the A/H1N1 influenza pandemic in 2009 and the volcanic ash cloud in April 2010.

METHODS:
Spatial and temporal detection algorithms (e.g., C1, C2, C3) were applied on the daily volume of Influenza-Like Illness (ILI) cases. Results were compared to sentinel data of the regional public health authorities. For the volcanic ash cloud assessment the number of cases with respiratory and cardiovascular syndrome cases as well as traffic accidents were assessed.

RESULTS:
The temporal analysis showed an increase in ILI in ED data in week 39 (Leuven/Belgium) and 43 (Cantabria/Spain) with a peak in week 43 (Leuven/Belgium) and 44 (Cantabria/Spain). This distribution correlated with respective reference data (Cantabria/Spain: $r=0.75$ ($p<0.001$), $R2=56.5\%$). No epidemic curve was visible in EMD data. Signals were issued earlier or at the same time as compared to sentinel data (Cantabria/Spain: Sensitivity=55.6%; Specificity=81.3%). During the volcanic ash cloud period no specific increase in cases was detected compared to reference data of 2009. The analysis resulted in one signal on respiratory syndrome (Tyrol/Austria: n=11 on 19-4-2010). No spatial cluster was identified.

CONCLUSIONS:
As already demonstrated for other SSS for seasonal influenza the ED represented in SIDARTHa provided timely and sensitive information on the onset of the pandemic. Assumptions connecting the signal to the ash cloud cannot be drawn. The SSS was adapted immediately after the volcanic eruption showing the capability of SSS for ad-hoc surveillance.

PRESENTED BY: MS ALEXANDRA ZIEMANN

20100147 Poster Novel methodological approaches to outbreak investigations and surveillance

Keywords: E.coli O157, Social networks

Investigation of an E.coli O157 outbreak in a primary school using social network mapping

Delan Devakumar (1), Aileen Kitching (1), Dominik Zenner (1, 2), Alma Tostmann (3, 4), Lucy Thomas (1), Margie Meltzer (1)

AFFILIATIONS:

1. Health Protection Agency (HPA), North West London Health Protection Unit (NWLHPU)
2. HPA, Centre for Infections
3. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
4. HPA, South West Region Epidemiology Unit

BACKGROUND:

In early 2010, NWLHPU investigated an outbreak of Verocytotoxin-producing Escherichia coli O157 (VTEC) in a primary school, using exploration of social networks to establish the extent and nature of person-to-person transmission to inform tailored public health action.

METHODS:

All school staff, pupils, and family contacts of cases were screened with two stool samples. A cohort study of pupils and staff was conducted using standard questionnaires, with further in-depth questioning of early cases to identify any common exposures. Social networks of cases and contacts were mapped in diagrams to identify possible transmission routes. Environmental samples from the school classrooms, kitchen, toilets and sandpits were taken.

RESULTS:

Stool samples were tested from 481 persons (356 children, 61 staff and 64 family contacts). Fifty-nine possible cases were identified, of whom 13 pupils or family members had confirmed VTEC infection. Two children were hospitalised with haemolytic uraemic syndrome. The mapping of contact patterns identified extensive social networks, possibly explaining all but two cases. Neither the cohort study nor in-depth interviews pointed towards a common source or exposure. All 21 environmental samples were negative for VTEC.

CONCLUSIONS:

This school outbreak of VTEC was controlled through public health action including immediate school closure, exclusion of cases identified through screening of staff and pupils and deep cleaning of the school. Social network mapping supported the outbreak investigations, illustrated links to explain secondary transmission and helped target control measures. Use of similar mapping could help inform decisions about the targeting of screening in future outbreaks.

PRESENTED BY: DR DELAN DEVAKUMAR

20100191 Poster Novel methodological approaches to outbreak investigations and surveillance

Keywords: Field epidemiology/Laboratory/Training toolkit/Capacity building/Human resources strengthening

Laboratory issues for Epidemiologists Training Toolkit

Maïna L'Azou, P. Gomez, A. Berger, P. Nabeth

AFFILIATIONS:

World Health Organization, Health Security and Environment cluster, Department of International Health Regulations Coordination, National Surveillance and Response Strengthening unit

BACKGROUND:

Field epidemiology and laboratory are closely interrelated disciplines for disease surveillance and investigation. However, they are not optimally connected on a functional and organizational level.

METHODS:

To improve this, in 2007 the World Health Organization (WHO) and Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET) partners released the 'Laboratory issues for Epidemiologists' training toolkit in English. It is designed to facilitate communication and understanding between the two disciplines, to give the field epidemiologist a better understanding of microbiology techniques and analysis of results, and to convey a laboratory perspective of investigations to field epidemiologists in order to improve collaboration and to enhance the quality of field investigations. The material provided is for a 5-day face to face workshop. Topics are communication, sampling, transport, microbiological methods, typing, antimicrobial resistance, role of the laboratory in surveillance, quality control and interpretation of results. The toolkit was disseminated widely within the network of Field Epidemiology (and laboratory) Training Programs (FE(L)TP) and is available upon request (lazoum@who.int). The opinion of FETP Directors about the toolkit was collected in March 2010.

RESULTS:

The use of the toolkit was poor despite its large diffusion among FETPs. When used, the toolkit contributed to increase key player motivation, helped building networks, and the proportion of outbreaks confirmed by laboratory investigations increased. One of the main challenges for FETPs is to find sufficient time to incorporate a laboratory component in the programme and to adapt the contents to countries needs.

CONCLUSIONS:

In order to respond to needs expressed by field epidemiologists, more and more FETPs integrate a laboratory component. Our toolkit can contribute to this objective but its dissemination and communication need to be improved.

PRESENTED BY: MISS MAÏNA L'AZOU

POSTER SESSION **ABSTRACTS**

20100306 Poster Novel methodological approaches to outbreak investigations and surveillance

Keywords: vector-borne diseases, tropical fever, multiplex detection, PCR, electrical microarray,

Rapid and sensitive multiplex detection of mosquito-transmitted pathogens through combination of PCR and electrical microarray

Marco Kaiser (1, 2), Markus Ulrich (1, 2), Anna Löwa (1), Gundula Piechotta (3), Ralf Wörl (4), Heinz Ellerbrok (1)

AFFILIATIONS:
1. Robert Koch-Institut ZBS1, Berlin, Germany
2. GenExpress GmbH, Berlin, Germany
3. Fraunhofer Institut für Siliziumtechnologie ISIT, Itzehoe, Germany
4. AJ eBiochip GmbH, Itzehoe, Germany

BACKGROUND:
Over 300 million people are infected every year with pathogens transmitted by mosquitoes, with 3.3 billion at risk, mainly in tropical and subtropical regions. Most cases are infections with different Flaviviridae, Chikungunya Virus or Plasmodia. International travel and climate changes increase the risk that these vectors establish themselves in new environments and/or to transmit pathogens to competent local vectors. Standard tests for these pathogens are serological assays for viral infections and blood smear tests for Malaria diagnosis. Early, fast and specific diagnosis is vital for efficient treatment of these infections, but serological tests usually remain negative during viremic and early symptomatic phase. Antibodies show broad cross-reactivity between Flaviviruses. Smear tests do not allow detection of low level Plasmodia infections.

METHODS:
For patients with unspecific symptoms as well as for vector surveillance a broad range of pathogens has to be considered. While real-time RT-PCR is highly specific and sensitive it has limitations in parallel detection of multiple pathogens. Micro arrays tend to be less sensitive but have the potential to detect and discriminate a broad range of pathogens. We developed and optimized a highly sensitive multiplex PCR approach for parallel amplification of Dengue, Yellow Fever, West Nile, Japanese Encephalitis, Chikungunya viruses and Plasmodia. Amplicons are differentiated on an electrical microarray. Specificity and sensitivity of the multiplex assay was determined and compared to specific real-time RT-PCR assays.

RESULTS:
The combination of a broad PCR approach with differentiation on the electrical microarray is a simple, specific, and sensitive tool for detection and differentiation of a broad range of vector-borne diseases.

CONCLUSIONS:
The approach can be used for early differential diagnosis for mosquito-transmitted tropical fevers and for sensitive and specific detection of vector-born pathogens.

PRESENTED BY: DR HEINZ ELLERBROK

20100124 Poster Novel methodological approaches to outbreak investigations and surveillance

Keywords: Population Surveillance, Outbreak, Cluster analysis, Space-Time Clustering, Spatial scan technique

Spatial cluster detection – a useful tool to detect Salmonella Outbreaks in Lower Saxony, Germany

Alexandra Hofmann (1, 2, 3), J. Dreesman (2)

AFFILIATIONS:
1. Postgraduate Training for Applied Epidemiology (PAE, German FETP), Robert Koch Institute, Berlin, Germany
2. Governmental Institute of Public Health of Lower Saxony, Hannover, Germany
3. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden

BACKGROUND:
The local public health departments (LPHD) report notified salmonella cases and outbreaks (›=2 cases with epidemiological link) in their district electronically to the state health department of Lower Saxony. There the spatial Scan Program SaTScan™ is applied weekly to identify spatial clustering of Salmonella cases. A cluster alarm (CA) is generated if the incidence of reported salmonella cases in one or several adjacent districts is significantly higher, based on a Poisson distribution, compared to the remaining districts. This study aims to compare the clusters detected with this scan technique with outbreaks recognized and forwarded by the LPHD.

METHODS:
The CA were matched to the outbreaks if they occurred in the same time period and districts. Successfully matched outbreaks were compared with unmatched outbreaks with respect to their size (case numbers), duration and affected districts using Wilcoxon-Mann-Whitney-Test and Fisher-Exact-Test.

RESULTS:
Between 2003 and 2009 SaTScan™ identified 482 CA, while 1,393 outbreaks were detected by LPHD. Of those, 502 (36%) could be matched to CA. On average, these outbreaks had more cases (5.7 versus 2.9, $p<0.001$), affected more districts (1.2 versus 1.0, $p<0.001$) and had a longer duration (2.0 versus 1.8 weeks, $p<0.02$) compared to unmatched outbreaks. The proportion of matched outbreaks increased with the number of cases in the outbreak (2-5 cases per outbreak: 32.2%; 6-10 cases: 45.6%; 11-20 cases: 89.6%; ›20 cases: 96%, $p<0.001$). Twenty-five (5.2%) CAs could not be matched to LPHD outbreaks.

CONCLUSIONS:
SaTScan™ could reliably detect outbreaks with more than 10 cases, which are more likely outbreaks with a high public health impact. Therefore, this scan technique is a useful tool not only to detect large outbreaks, but also involving outbreaks with ›1 district.

PRESENTED BY: MRS ALEXANDRA HOFMANN

20100172 Poster Novel methodological approaches to outbreak investigations and surveillance

Keywords: novel methodologies, food outbreaks, epidemiology

Till receipts – A novel approach to outbreak investigation? Evaluating a large Salmonella Enteritidis PT14b outbreak in a West London takeaway

Dominik Zenner (1, 3), Julia Zollner (2, 4), Will Maimaris (2, 5), Chris Lane (1), Andre Charlett (1), J.Yimmy Chow (2)

AFFILIATIONS:
1. Centre for Infections, Health Protection Agency
2. North West London Health Protection Unit
3. London School of Hygiene and Tropical Medicine
4. Northwick Park Hospital, London
5. NHS Harrow

BACKGROUND:
Identifying controls for analytical outbreak investigations can be difficult. Till receipts are often available on food premises, but their applicability has not been explored. The aim of the study was to evaluate the use of till receipts to assess possible associations between sales and illness.

METHODS:
Cases were identified through local case-finding to whom a standardised exposure questionnaire was administered. Microbiological and environmental investigations included the analysis of stools, environmental and food samples. Till receipts over the affected time period were analysed. These were used to estimate food exposures from sales which were compared to case exposures. Further, chicken sales before cases exposures were studied contrasting them to the same time for the previous and subsequent day.

RESULTS:
S. Enteritidis PT14b with indistinguishable plasmid profile were isolated from case stool samples, two environmental samples and leftover chicken from the takeaway. There was strong association between illness and consumption of rotisserie chicken (OR 2.75, CI 1.7-4.5 p<0.0001) from the analysis of till receipts. Furthermore, there was on average an estimated increase of 3.7 (CI 2.2-5.3, p<0.0001) extra quarters of rotisserie chicken sold in the hour immediately prior to the consumption in the cases.

CONCLUSIONS:
The study demonstrated an association between illness and chicken sales and quantified the risk of becoming a case depending on timing and quantity of chicken sales. The feasibility of this novel approach to obtain exposures in the population has been demonstrated. It will need further validation by comparing results to a concurrent case control study.

PRESENTED BY: DR DOMINIK ZENNER

20100219 Poster Novel methodological approaches to outbreak investigations and surveillance

Keywords: Vaccination, Child, France, HPV, Hepatitis B, Pneumococcus

Use of healthcare consumption data in estimating vaccination coverage

Laure Fonteneau (1), J. P. Guthmann (1), D. Lévy-Bruhl (1)

AFFILIATIONS:
1. Institut de Veille Sanitaire (French Institute for Public Health Surveillance), Saint-Maurice, France

BACKGROUND:
In France, vaccination coverage in children is estimated using health certificate data and through school surveys. However, both tools allow the estimation of vaccination coverage only several years after the vaccination is performed. The purpose of this analysis was to validate a new tool for the estimation of vaccination coverage, which is likely to improve the timeliness of coverage measurement.

METHODS:
We analyzed data from the “Echantillon Généraliste des Bénéficiaires” (EGB), a database which contains socio-demographic and healthcare consumption data from a representative sample (n=534 049) of the population affiliated to the French social security system. The database enables the linkage of each individual to his/her past vaccine reimbursements. We analyzed coverage of two newly introduced vaccinations (HPV, pneumococcal conjugate vaccination (PCV)) and also infant hepatitis B (HBV) coverage since the reimbursement of the hexavalent vaccine in March 2008. We estimated coverage in children born in 2008 (HBV, PCV) and in girls aged 14 to 17 years (HPV).

RESULTS:
Of children born in 2008, 59.9% (95%CI: [58.7-61.2]) had started HBV vaccination by the age of six months and 40.5% (95%CI: [39-41.8]) had completed their 3-dose HBV vaccination scheme by the age of eighteen months (27.1%, 95%CI: [24.8-29.4] born in 2006). Of children who were born in 2008, 30.4% (95%CI: [29.2-31.6]) had completed their PCV vaccination by the age of fifteen months. In girls aged 14-17 years, 37.2% (95%CI: [36.3-38.1]) had begun HPV vaccination and 23.5% (95%CI: [22.7-24.3]) had received a full scheme vaccination in April 2010.

CONCLUSIONS:
This tool allows recent and regularly updated vaccination coverage estimations to be obtained, which is particularly useful for new vaccines. This should improve vaccination coverage monitoring.

PRESENTED BY: MISS LAURE FONTENEAU

POSTER SESSION **ABSTRACTS**

20100115 Poster Outbreaks

Keywords: Salmonella, outbreak, continuous source, cohort study

A large Salmonella Typhimurium outbreak in a primary school in London

O le Polain de Waroux (1, 2), M. King (3), A. Brock (3), E. Legister (4), N. Prematarne (3)

AFFILIATIONS:
1. Health Protection Agency (HPA), London Region Epidemiology Unit
2. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
3. HPA, South East London Health Protection Unit (SEL HPU)
4. London borough of Southwark Environmental Health department

BACKGROUND:
On 16 September 2009 the Health Protection Agency was informed of a gastrointestinal outbreak in a primary school. Salmonella Typhimurium o4hi was isolated from stool samples of the first cases. We conducted an investigation to assess the magnitude of the outbreak and its possible source in order to implement control measures accordingly

METHODS:
A retrospective cohort study including all 360 pupils and 55 staff was done. Cases were defined as anyone reporting diarrhoea (3 or more stools per day) after 1 September. Questions were asked about food or drinks consumed at the school. Parents were asked which food item their child would not eat as it was thought that memories of food eaten two weeks previously would not be accurate. We performed descriptive and univariable analysis as well as multivariate log-binomial regression to obtain adjusted risk ratios (aRR) and their 95% Confidence Interval (CI)

RESULTS:
Of the 290 responders (response rate 70%), 60 were ill (attack rate 20.7%), with onset date between 7 and 24 September. Those who ate school meals were nearly 10 times more likely to be ill (48/97) than those who did not (10/193) (aRR = 9.6; 95%CI 5.1–18). The risk was similar across school grades and sex, was constant throughout the epidemic period and was not associated with one particular food item.

CONCLUSIONS:
Our results suggest a common extended source with no particular food aetiology. The kitchen was closed and cleaned as a result. The results were hampered by the long recall period and the difficulties in obtaining valid information on food consumption in young children.

PRESENTED BY: DR OLIVIER LE POLAIN

20100015 Poster Outbreaks

Keywords: Outbreaks

Alerts/Outbreaks Attended by the Epidemic Investigation Cell, National Institute of Health, Islamabad Pakistan, 2005–2009

Jaleel Kamran (1), Muhammad Safdar (2), Sohail Zadi (1), Mumtaz Khan (1), Muazam Ranjha (1)

AFFILIATIONS:
1. National Institute of Health, Islamabad
2. Field Epidemiology and Laboratory Training Program, Pakistan

BACKGROUND:
Faced with double disease burden, Pakistan encounters frequent disease outbreaks. Epidemic Investigation Cell (EIC), NIH is the only federal unit involved in investigation and response which regularly receives outbreak alerts from provincial and district health departments. We are reporting frequency, time and geographical distribution of various outbreak alerts during 2005-2009 to prioritize preparedness activities.

METHODS:
Review data, records and correspondence pertaining to outbreaks alerts and response by EIC from 1st January 2005-31st December 2009.

RESULTS:
EIC received reports of 499 outbreaks (19,748 cases with 53.4% being lab. confirmed. Majority alerts were Air-borne infections 193(38.6%), food & water borne153(30.6%) and Insect-borne infections 146(29.2%). Air borne disease alerts mainly related to Influenza; H5N1 (51.8%) and H1N1 (35.2%). 25.7% suspected samples of Influenza-A were found lab. positive. among Gastroenteritis, Vibrio cholerae(87%), E. coli(6%), Shigella (3.2%) and Salmonella (2.7%) were main identified pathogens. Main insect borne diseases included Dengue fever (66.4%) and Crimean Congo Hemorrhagic Fever (28.7%).Maximum alerts for air borne diseases were reported from Islamabad(37.8%) and KPK province (32.6%). KPK also reported maximum food & water borne disease (32%) whereas Insect borne outbreaks were mainly reported from Punjab(41.7%). Local health authorities were the main source of first information (71%) followed by the National Institute of Health Laboratories(14.4%), Community(8.2%) and press(5.8%). Acute Watery Diarrhea reports were mainly received during the months of May-August(64%), Avian Influenza during February-April(82%), Viral hemorrhagic fever July – September (40.7%).

CONCLUSIONS:
Local health authorities are main source of information on outbreak alerts in Pakistan. Knowing the seasonality of diseases helps in preparedness and is especially important in areas with limited lab facilities. Strengthened surveillance, setting outbreak thresholds for priority diseases and improved coordination among stakeholders is recommended for effective prevention & control.

PRESENTED BY: MR JALEEL KAMRAN

20100097 Poster Outbreaks

Keywords: Salmonella, sprouts, outbreak

Alfalfa sprouts causing a nationwide outbreak of Salmonella Bovismorbificans, Finland 2009

Ruska Rimhanen-Finne (1), T. Niskanen (2), T. Kauko (1), T. Johansson (2), M. Sjöman (2), T. Korhonen (1), S. Guedes (1, 3), H. Kuronen (2), M.J.Virtanen (1), A. Siitonen (1), M. Kuusi (1)

AFFILIATIONS:
1. National Institute for Health and Welfare (THL), Finland
2. Finnish Food Safety Authority Evira, Finland
3. European Programme for Intervention Epidemiology Training (EPIET)

BACKGROUND:
On 16 June 2009, the National Salmonella Centre at the National Institute for Health and Welfare reported eight S. Bovismorbificans strains isolated in different parts of the country. Trawling interviews indicated that the factor connecting the cases was sprouts.

METHODS:
Questionnaires on illness and exposure-history were sent to persons with domestic salmonellosis reported to the National Infectious Disease Registry, and to three controls obtained from the National Population Registry. From this database, a case was defined as a person whose faecal specimen, taken between 19 May and 19 August 2009, was tested positive for S. Bovismorbificans SBVSXB.0001. Environmental investigations were conducted by the Finnish Food Safety Authority.

RESULTS:
We identified 36 cases: 28 cases and 48 controls were included in the case-control study. Alfalfa sprouts were the only risk factor for the illness (OR= 35.2, 95% CI 2.8-435, p=0.006). The suspected sprouts were tested negative for Salmonella before retail sale. The first cases fell ill one week after the sprouts had been introduced for sale. When the suspected batch was withdrawn temporarily, a decrease in the number of cases was seen. After rigorous sampling, S. Bovismorbificans SBVSXB.0001 was detected in one sprouts sample germinated in the laboratory, and in the soaking and rinsing water samples. After final withdrawal, no further cases were detected.

CONCLUSIONS:
The outbreak was strongly associated with exposure to alfalfa sprouts. Since contamination rate in seeds may be low, and salmonella cells unevenly distributed in the batch or hidden under the seed coat, the laboratory analysis should be targeted at the soaking/rinsing water samples and on sprouts germinated in a laboratory since these are the states where salmonella is most likely to be found.

PRESENTED BY: DR RUSKA RIMHANEN-FINNE

20100016 Poster Outbreaks

Keywords: Hepatitis A, MSM

An outbreak of hepatitis A in men who have sex with men living in or near Bristol

Maya Gobin (1), C Irish (2), L Knight (1), I Oliver (1)

AFFILIATIONS:
1. South West Health Protection Agency, Gloucestershire, England
2. Avon Health Protection Unit, Bristol, England

BACKGROUND:
Between January and May 2010, Avon and Gloucestershire Health Protection Units were notified of twelve cases of hepatitis A in men aged 30 to 56. This compares with a total annual average notification of 13 cases for the same area (2007-2009)

METHODS:
A questionnaire was developed to collect data on risk factors including travel, food and sexual behaviour. Serum samples were sent to Health Protection Agency Centre for Infections for molecular typing.

RESULTS:
The twelve cases reported sexual contact with other men (MSM) as the only risk factor. Six MSM reported unprotected casual sex with strangers and three men reported visiting the same gay sauna in Bristol. The majority of sexual contacts were untraceable. Of the twelve MSM cases, the nine so far sequenced had a genotype 1A strain indistinguishable from that implicated a 2008/09 MSM outbreak in Barcelona. One case, with an onset date well after the start of the outbreak, had visited the Canary Islands but no cases had travelled to mainland Spain. Only two men reported having previous Hepatitis A vaccination.

CONCLUSIONS:
This is the first known outbreak in MSM in England caused by this outbreak strain of genotype 1A. A local, targeted health promotion campaign working through the Terrence Higgins Trust is underway to raise awareness of hepatitis A and to encourage immunisation in MSM, complemented by some national online promotion of these messages, through the charity. There is ongoing case finding through the Regional Microbiology Networks, Health Protection Units and Genito Urinary Medicine clinics nationally to identify cases of Hepatitis A in MSM beyond the Avon and Gloucestershire environs that may be part of this outbreak.

PRESENTED BY: DR MAYA GOBIN

POSTER SESSION **ABSTRACTS**

20100226 Poster Outbreaks

Keywords: Foodborne outbreaks, cuisine, risk

Choose your menu wisely – Cuisine associated food poisoning risks in the food service sector.

F.J. Gormley, C.L. Little, N. Rawal and I.A. Gillespie

AFFILIATIONS:
Department of Gastrointestinal, Emerging and Zoonotic Infections, Health Protection Agency, Centre for Infections, London NW9 5EQ, UK

BACKGROUND:
The food service sector continues to be the most common setting for foodborne disease outbreaks. Using restaurant-associated foodborne outbreaks reported to the Health Protection Agency (HPA) in England and Wales from 1992 to 2009, risk factors were determined for different cuisine types.

METHODS:
The HPA electronic Foodborne and non-foodborne gastrointestinal Outbreak Surveillance System (eFOSS) collects a minimum outbreak dataset through a standardised questionnaire. These outbreaks were analysed using trend statistics and univariate analyses to determine associations with cuisine type.

RESULTS:
Of 677 restaurant outbreaks, 11,795 people were affected and Chinese, Indian, British and Italian cuisines were most commonly implicated (26%, 16%, 13% and 10% respectively). Salmonella spp. accounted for most outbreaks, in particular those linked to Chinese (77%) and Italian (55%) cuisine. Poultry meat was most frequently implicated in outbreaks associated with Indian (30%), Chinese (21%), and British (18%) cuisines whilst for Italian cuisine, desserts and cakes were more frequently implicated (33%). Consumption of rice dishes was highly associated with outbreaks at restaurants serving Chinese (22%) and Indian (16%) cuisine. Cross contamination was most often associated with Chinese (46%), British (33%) and Indian (30%) cuisines whereas inadequate cooking (38%) and using eggs in lightly cooked or uncooked food (35%) were more often associated with Italian cuisine. Over the surveillance period, the proportion of Salmonella Enteritidis PT4 outbreaks in Chinese restaurants significantly decreased ($p<0.0001$) mirrored by an increase in S. Enteritidis non-PT4 outbreaks ($p<0.0001$).

CONCLUSIONS:
Contributory factors such as cross contamination and inadequate cooking have continued to cause outbreaks throughout the 18 years. Stratifying risk factors associated with restaurants by cuisine type provides specific evidence of food control failures that can be used to target foodborne illness reduction strategies.

PRESENTED BY: DR FRASER GORMLEY

20100024 Poster Outbreaks

Keywords: Hemolytic-Uremic Syndrome, Shiga-Toxigenic Escherichia coli, Escherichia coli O157, Disease Outbreaks, Epidemiology, Case-Control Studies

Desperately seeking diarrhea: Outbreak of hemolytic uremic syndrome caused by emerging sorbitol-fermenting Escherichia coli O157 – Germany, 2009

Stine Nielsen (1, 2, 3), Christina Frank (3), Angelika Fruth (4), Anke Spode (5), Rita Prager (4), Andrea Graff (6), Anita Plenge-Bönig (6), Sebastian Loos (7), Marc Lütgehetmann (7), Dirk Müller-Wiefel (7), Dirk Werber (3)

AFFILIATIONS:
1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
2. Postgraduate Training for Applied Epidemiology (PAE, German FETP)
3. Robert Koch Institute, Dept. Infectious Disease Epidemiology, Berlin, Germany
4. Robert Koch Institute, Branch Wernigerode, Germany
5. Local Health Dept. Altona, Hamburg, Germany
6. Institute for Hygiene and Environment, Hamburg, Germany
7. University Medical Center Hamburg-Eppendorf, Hamburg, Germany

BACKGROUND:
A rare sorbitol-fermenting variant of Shiga toxin-producing E. coli O157 (sf-STEC O157) with an unknown reservoir has emerged in Europe causing outbreaks clinically dominated by hemolytic uremic syndrome (HUS). Most outbreaks have been scattered in time and space making it difficult to determine the number of associated diarrheal infections. In summer 2009, four young boys living in the same Hamburg suburb developed HUS caused by sf-STEC O157, one died. An investigation was launched to identify the source, control the outbreak and delineate its extent, particularly to ascertain diarrhea-only sf-STEC O157 infections.

METHODS:
We conducted extensive case-finding in potentially exposed groups, and an age-restricted (2-9y) case-control study using the four HUS-patients and 25 controls identified through day-care centers and community-distributed flyers. Stool and environmental samples were investigated for STEC presence. Case-patients were suburb residents diagnosed with HUS or sf-STEC O157 infection between July 24 – August 25, 2009.

RESULTS:
We identified eight case-patients (seven boys) aged 0-9 years (median four). Sf-STEC O157 isolates from case-patients had an indistinguishable PFGE-pattern. By screening 220 contact-persons' stool, we identified only four additional cases: two asymptomatic and two with diarrhea-only. Explorative interviews revealed no common food-exposure, but all HUS-patients had visited a local playground shortly before symptom onset. In the case-control study, HUS was strongly associated with visiting the playground on July 16 (odds ratio=42.7, 95%CI: 3.7-+INF, p-value=0.002). All 24 environmental samples tested negative for STEC.

CONCLUSIONS:
Place of infection in this outbreak was likely a local playground. As numbers of diarrheal cases in sf-STEC O157 outbreaks appear to be small, detection of and response to this virulent pathogen should rely on clinical and microbiological HUS-surveillance, not yet in place in many countries.

PRESENTED BY: MS STINE NIELSEN

20100270 Poster Outbreaks

Keywords: norovirus – outbreak – food-borne – cohort study, hotel

Disentangling a food-borne Norovirus-outbreak in a hotel, Germany, June 2010

Steffen Geis (1, 2, 3), A Holz-Bremer (4), R Stepan (4), H Uphoff (1), A. M. Hauri (1)

AFFILIATIONS:

1. Hesse State Health Office, Department for Health Protection, Dillenburg, Germany
2. Postgraduate Training in Applied Epidemiology (PAE), Department for Infectious Disease Epidemiology, Robert Koch-Institute, Berlin, Germany
3. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
4. Public Health Authority of Fulda, Germany

BACKGROUND:

In June 2010, an outbreak of acute gastroenteritis occurred among hotel-guests in Hesse, Germany. Our investigation aimed to describe the outbreak's extent, identify mode of transmission and source of infection.

METHODS:

We conducted a retrospective cohort study among hotel-guests collecting information on their food consumption. To identify the suspected meal we defined cases as hotel-guests with onset of diarrhoea and/or vomiting between June 4–11. We analyzed food consumption of hotel-guests who ate at the restaurant in detail by restricting cases to those with early onset of symptoms, namely who developed diarrhoea and/or vomiting within the next 50 hours. We calculated relative risks (RR) using Chi-square test, attack rates (AR) and attributable fractions (AF). Food served on June 3–4 and stool specimens of patients, service/kitchen workers were microbiologically tested.

RESULTS:

A total of 216/286 (75%) guests completed self-administered questionnaires. Overall AR was 49% (106/216). We identified the dinner on Thursday as the source of the outbreak with RR of 1.8 (95%-confidence interval [95%CI]=1.2-2.6) and AF of 83% (88/106 cases). When restricting the analysis to early cases, we observed an association of salad (RR=2.5, 95%CI=1.5-4.1; AF=52/66=79%) and rice consumption (RR=1.7, 95%CI=1.2-2.4; AF=24/66=36%) with illness. After stratifying for salad consumption, most strongly associated in crude analysis, the RR among those who did not eat salad increased to 4.0 (95%CI=1.5-10.8). Norovirus was found in the stool of 23/106 patients, 2/19 employees. None of the canteen workers reported vomiting or diarrhoea. All food samples were negative.

CONCLUSIONS:

Our investigation suggests that norovirus-contaminated salad buffet and a rice-dish caused the outbreak. The mode of contamination and original source remain unclear. After closure of the hotel for new guests and disinfection of the kitchen no new cases occurred.

PRESENTED BY: DR STEFFEN GEIS

20100108 Poster Outbreaks

Keywords: outbreak response, outbreak assistant laboratory network, influenza, evaluation

Evaluating the response of the Dutch Outbreak Assistant Laboratory network to the Influenza A (H1N1) 2009 pandemic

Sabine Dittrich (1, 2), H. Bijlmer (1, 3), M. van der Lubben(1), M. Koopmans (1)

AFFILIATIONS:

1. Centre for Infectious Disease Control, National Institute for Public Health and the Environment, Bilthoven, Netherlands
2. European Public Health Microbiology Training Program (EPIET/EUPHEM), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
3. Department of Clinical Microbiology and Infection Control, Bronovo hospital, The Hague, Netherlands

BACKGROUND:

The multidisciplinary effort to control transmission of (H1N1) 2009 requiring increased diagnostic needs. In the Netherlands, a coordinated outbreak assistant laboratory (OAL) network was deployed for the first time. The participating laboratories had agreed to provide maximum capacities, shared quality control (QC) and surveillance data in case of a large respiratory virus outbreak. We evaluated the performance of the network to learn from the pandemic experience and improve the laboratory response to a large outbreak.

METHODS:

Epidemiological and laboratory Influenza databases were analyzed to estimate sample load for each laboratory. Laboratory representatives were asked to complete an online questionnaire on sample load, logistics, communication and sustainability of response which was developed with laboratory and outbreak response staff. Statistical analysis was performed using Excel and GraphPad.

RESULTS:

Between June and September 2009, OALs received a mean of 11.7 times (1.1-33.3) more samples than in the same period in 2008. This corresponded at peaks to 28% (10%-35%) of the maximum network capacity. Nevertheless, most laboratories needed to train additional staff to cope with the sample surge, and an estimated 20 times (5-25) increase in overtime was accumulated in those month. All laboratories considered the shared QC an asset while the amended logistic and communication routes complicated things. Generally, all OALs are willing to participate in a similar coordinated network in the future.

CONCLUSIONS:

Our study shows the importance of an organized laboratory structure that bridges between the needs of laboratories routinely dealing with individual diagnostic and public health professionals. Overall, the network approach in the Netherlands was a success leading to a coordinated diagnostic scale-up which ensured high quality diagnostics and surveillance data, both absolutely crucial in an outbreak situation.

PRESENTED BY: DR SABINE DITTRICH

POSTER SESSION **ABSTRACTS**

20100113 Poster Outbreaks

Keywords: gastroenteritis, seafood, cohort study

Gastroenteritis outbreak linked to seafood consumption in a Northern Aegean island, Greece, February 2010.

Marios Detsis (1), I. Karagiannis (1), K. Gkolfinopoulou (1), D. Pervanidou (1), K. Mellou (1), T. Sideroglou (1), S.Bonovas (1), T. Panagiotopoulos (1, 2)

AFFILIATIONS:
1. Department of Epidemiological Surveillance and Response, Hellenic Centre for Diseases Control and Prevention (HCDCP), Athens, Greece
2. National School of Public Health, Athens, Greece

BACKGROUND:
On 18 February 2010, the Hellenic Centre for Disease Control and Prevention (HCDCP) was informed about a gastroenteritis outbreak in an island of the Northern Aegean Sea.

METHODS:
A retrospective cohort study was conducted, using the whole population of the island as a cohort; because seafood is massively consumed on Ash Monday (15/2/2010) around Greece, seafood items were suspected to be the vehicle of the outbreak. Participants were interviewed face-to-face via a structured questionnaire. People who were absent on 15/2/2010 were excluded from the study. A primary case of gastroenteritis was defined as any person who had at least two episodes of diarrhoea or vomiting in the 72 hours following the noon of 15/2/2010. Any person who developed symptoms later on, was defined as a secondary case.

RESULTS:
Of the island's residents, 181 (91.9%) were interviewed; 87 (48.1%) of them were female and the median age was 42 years (3 months–97 years); 64 (35.4%) reported gastroenteritis symptoms: diarrhoea (81.2%), abdominal pain (79.7%), vomiting (68.8%), fatigue (52.4%), myalgia (44.4%), nausea (35.9%) and fever (29.7%). People who consumed raw seafood were 21.5 (95% C.I.: 8.9-51.8) times more likely to develop gastroenteritis, within three days, compared to those who did not. Four stool samples were tested for common enteropathogens and one was further tested for Norovirus. Results were negative. No testing was performed on seafood leftovers due to limited laboratory capacity on the island.

CONCLUSIONS:
Laboratory and environmental sampling and backtracing were not optimal in this study because of geographical restrictions. However, there was strong epidemiological evidence that seafood items consumed around Ash Monday were the vehicle of the outbreak, and public health measures were recommended accordingly.

PRESENTED BY: MR MARIOS DETSIS

20100365 Poster Outbreaks

Keywords: institutionial, gastroenteritis, outbreak investigation

Importance of regional surveillance and diagnosis of institutional gastroenteritis outbreaks

HLG ter Waarbeek (1, 2), NHTM Dukers-Muijrers (1, 2), PFG Wolffs (2), IHM van Loo (2), CJPA Hoebe (1, 2)

AFFILIATIONS:
1. Department of Infectious Diseases, South Limburg Public Health Service
2. Department of Medical Microbiology, Maastricht Infection Centre, Maastricht University Medical Centre (MUMC+), School for Public Health and Primary Care (CAPHRI)

BACKGROUND:
Viral gastroenteritis is highly infectious and outbreaks are very common. Outbreaks regularly occur in institutional settings such as nursing homes and childcare centres, whose vulnerable population is at risk for complications like dehydration, and can be difficult to control. Often norovirus is supected to be the cause, and general advice and assistance on controlling further spread is given, without further testing being carried out.

METHODS:
During the first 6 months of 2010, 23 gastroenteritis outbreaks (5 or more persons with symptoms of vomiting and/or watery diarrhea) in nursing homes and 10 outbreaks in childcare centres were reported to the South Limburg Public Health Service. Institutions were offered microbiological testing to confirm the outbreak and identify its cause. Real-time-PCR was performed on fecal samples for 5 viruses, including adenovirus, rotavirus, a combined PCR on norovirus I and norovirus II, and a combined PCR on astrovirus and sapovirus.

RESULTS:
Samples from 3 nursing homes were analysed showing one rotavirus-norovirus II and two rotavirus clusters. Samples from 4 childcare centres were tested as well, showing two rotavirus infections, one adenovirus-rotavirus infection, and one adenovirus-rotavirus-sapovirus-astrovirus cluster.

CONCLUSIONS:
This study, however small, underscores the importance of further investigation of institutional gastroenteritis infections. Not norovirus, but mostly rotavirus and also other viruses turned out to be the cause of these outbreaks. It is necessary to identify the cause of a gastroenteritis outbreak as soon as possible in order to timely advice on adequate preventive measures (e.g., desinfection with chlorine vs alcohol, or recommendations on vaccination). Public health services should therefore motivate institutions to notify their outbreaks and cooperate on investigation, and discuss testing methods with their laboratories that enable rapid results.

PRESENTED BY: MISS HENRIËTTE TER WAARBEEK

20100145 Poster Outbreaks

Keywords: measles, outbreak, MMR vaccine, Ireland

MEASLES OUTBREAK IN IRELAND 2009–2010

S. Gee (1), S. Cotter (1), D. O'Flanagan (1) on behalf of the national measles outbreak control team

AFFILIATIONS:
1. HSE-Health Protection Surveillance Centre, Dublin 1, Ireland

BACKGROUND:

Measles is a highly infectious disease that can result in serious complications. The only way to prevent infection is through measles vaccination. Measles vaccine was introduced in Ireland in 1985; this was followed by the introduction of the combined measles-mumps-rubella (MMR) vaccine in 1988. Since the national collation of cohort based immunisation uptake data commenced in Ireland in Quarter 1 1999, MMR uptake (dose 1) at 24 months has ranged between 69% (Quarter 4, 2001) and 91% (Quarter 3, 2009). While MMR uptake rates are ‹95% measles transmission and outbreaks will occur in Ireland.

METHODS:

Measles figures presented here are based on measles notification data for Week 31, 2009 to Week 18, 2010 and are provisional.

RESULTS:

There was an outbreak of measles in Ireland between August 2009 and early May 2010 (Weeks 31 2009 and 18 2010), with 466 cases notified. Nearly two-thirds of these cases (n=301) were unvaccinated. A third (n=154) of the cases were hospitalised and probable nosocomial transmission was also reported. In the early stages of the outbreak a substantial number of cases were linked to the Irish Traveller community with some cases also reported among the Roma community, other citizens from eastern Europe and children whose parents objected to vaccination. By February 2010, the outbreak had spread to the wider community.

CONCLUSIONS:

This outbreak highlights once again the need for high levels of MMR coverage among all sections of the population, including national and migrant groups who may be hard to reach. A national MMR catch-up campaign has been recommended for all children who have not had two MMR doses to mop up these pockets of susceptibility.

PRESENTED BY: DR SARAH GEE

20100144 Poster Outbreaks

Keywords: Mumps, Disease Outbreaks

Mumps outbreak in Ireland 2008–2009

Suzanne Cotter (1), S Gee (1), D O'Flanagan (1)

AFFILIATIONS:
1. HSE- Health Protection Surveillance Centre, Dublin, Ireland

BACKGROUND:

Mumps vaccine (Measles-Mumps-Rubella [MMR] vaccine) is recommended and provided for Irish children since 1988. The largest mumps outbreak since reporting began (in 1988) occurred in 2008-2009. Data on uptake of two doses of MMR is not routinely collected.

METHODS:

Clinicians and laboratories notify mumps cases to regional Departments of Public Health. Data is entered onto a national Computerised Infectious Disease Reporting (CIDR) system. Data was extracted from CIDR on 04/06/2010. We analysed these notification data to identify risk factors associated with mumps infection to inform control activities and develop strategy.

RESULTS:

Between January 2008 and December 2009, 4986 mumps cases were notified; 55% were male. The highest age specific incidence rates (ASIR) were reported in the 15-19 and 20-24 year age groups; 25.2/100,000 and 27.6/100,000 in 2008 and 63.2/100,000 and 79.3/100,000 in 2009 (respectively). MMR vaccination information was available for 40% of notifications; 23%, 33%, 44% of cases reported 0,1, 2 doses of MMR respectively. Information on hospitalisation status was available for 33% of cases; of whom 8% were hospitalised.

CONCLUSIONS:

The 2008/2009 mumps outbreaks was the largest mumps outbreak ever reported in Ireland since notification began in 1988 and affected many fully,partially and non-vaccinated individuals. A combination of inadequate vaccination coverage, vaccine efficacy or waning immunity appears to have contributed to this outbreak. Lack of accurate immunisation information on most cases and birth cohorts hinders efforts to assess vaccine effectiveness in the Irish population. In view of the high proportion of un- or partially vaccinated cases a national school based MMR catch up campaign for all children was recommended. Further research is needed to understand mumps epidemiology in the era of vaccination.

PRESENTED BY: DR SUZANNE COTTER

POSTER SESSION **ABSTRACTS**

20100050 Poster Outbreaks

Keywords: infectious disease outbreaks, norovirus, diabetes

Not so innocent after all? – A Norovirus Infection Outbreak at a Diabetes Conference

Thale C. Berg (1, 2), H. Kløvstad (1), T. Jenssen (3), K. Nygård (1)

AFFILIATIONS:
1. Norwegian Institute of Public Health
2. Norwegian Field Epidemiology Training Programme (Nor-FETP)
3. Oslo University Hospital Rikshospitalet

BACKGROUND:
Acute gastroenteritis can have severe consequences for a person with diabetes due to dehydration and concurring hyperglycemia. An outbreak of foodborne norovirus infection at a hotel during a diabetes conference was reported to the Norwegian Institute of Public Health in September 2008. The objective of this study was to describe the course of illness in people with and without diabetes in order to better understand the impact of a norovirus outbreak in a vulnerable population.

METHODS:
We conducted a cohort study among the conference participants. Cases were defined as participants who reported gastrointestinal illness during or after the conference. We compared attack rates, proportions of hospitalisation and physician consultations and duration of illness in the two groups.

RESULTS:
Out of 233 participants, 217 (93%) replied to the questionnaire, of which 116 (53%) had diabetes. A total of 155 reported gastroenteritis. The attack rates in both the diabetic and non-diabetic groups were 73%. Twenty-three (28%) of the cases with diabetes were hospitalised vs. 2 (3%) of the cases without diabetes, giving a relative risk (RR) of 10.0 (95% CI 2.4-40.9). Thirty-three (40%) of the cases with diabetes consulted a physician vs. 14 (19%) of the cases without diabetes (RR 2.0, 95% CI 1.2-3.5). Duration of illness was 48 hours or more in 54 (65%) of the cases with diabetes vs. 32 (44%) in cases without diabetes.

CONCLUSIONS:
Although the attack rates were the same in both groups, the norovirus infection seemed more severe among persons with diabetes, leading to more hospitalisations and a higher burden on health care services. We recommend increased awareness of the consequences of community norovirus outbreaks in vulnerable groups.

PRESENTED BY: MS THALE C. BERG

20100047 Poster Outbreaks

Keywords: Disease Outbreaks, Zoonoses, Epidemiology, Campylobacter, Cryptosporidium, Bicycling

Outbreak of gastroenteritis after a large mountain bike race in Norway 2009

Tone Bruun (1,2), B. T. Heier (1), K. Nygård (1)

AFFILIATIONS:
1. Norwegian Institute of Public Health (NIPH)
2. Norwegian Field Epidemiology Training Programme (Nor-FETP)

BACKGROUND:
A large mountain bike race, Birkebeinerrittet, is organized every autumn in Norway with around 19000 participants during two days. In 2009 the track became extremely muddy because of heavy rainfall. One week after the race, the Norwegian Institute of Public Health (NIPH) was alerted about a possible diarrhoeal outbreak among participants through a race chat forum on the Internet. We conducted an investigation in order to assess the extent of the outbreak, identify risk factors and preventive measures.

METHODS:
We conducted a retrospective cohort study using a web-based questionnaire. A case was a Birkebeinerrittet 2009 participant who developed diarrhoea lasting more than one day within 11 days after the race. Diarrhoea cases reporting respiratory symptoms were excluded. We collected data on illness and potential risk factors like food, drinks, behaviour during the race and analysed the data with multivariable logistic regression analysis.

RESULTS:
Of 15312 participants receiving the questionnaire, 85% replied and were included in the study. 1873 participants fulfilled the case definition, 167 cases sought medical help and 41 submitted stool samples. Three reported Campylobacter and one Cryptosporidium. Mud-splashes in the face was the strongest risk factor of diarrhoeal illness with odds ratio 6.3 (95%CI 3.7-10.6). Risk of illness increased with mudsplash frequency.

CONCLUSIONS:
Mud ingestion during bike races in wet conditions can cause outbreaks of gastroenteritis, and information about risk and prevention measures should be provided. The outbreak was not detected by our surveillance system, which is of concern with such large outbreak. With nearly 1900 cases, only four positive samples were found. Many laboratories test for Campylobacter but not for Cryptosporidium, and this parasite may be largely underdiagnosed. In this outbreak probably more than one pathogen caused disease.

PRESENTED BY: MRS TONE BRUUN

20100362 Poster Outbreaks

Keywords: Lead Poisoning,

OUTBREAK OF LEAD POISONING AMONG YOUNG CHILDREN‹ ZAMFARA STATE, NIGERIA

S. Haladu, C. Dooyema, O. Biya, S. Gidado,G. Tolough, P. Nguku, P. Lo, J. Durant, G. Poggensee, N. Sani-Gwarzo, C. Bartem, I. Van Lindern, L. Davis, B. Devermont, A. Neri. H. Akpan

AFFILIATIONS:
Nigeria Field Epidemiology and Laboratory Training Program (NFELTP)

BACKGROUND:
On 8 May 2010 the Nigerian Federal Ministry of Health recieved a report of suspected cases of lead poisoning in children less than 5 years associated with gold mining activities in Zamfara State. The cases presented non-specific symptoms such as vomiting and convulsions. An outbreak investigation was performed by a rapid response team to describe the outbreak and to provide expertise in the control of the outbreak

METHODS:
We conducted cross-sectional survey in two villages from 25 May to 4 June By a structured questionnaire, based on result of explorative interviews, information on household participation in ore processing and history of child deaths was gathered. We collected venous blood from select children less than 5 years for lead testing and soil samples were analyzed with X-ray fluorescence spectrometer for soil lead contamination.

RESULTS:
As of 4 June 2010, 355 cases of acute lead poisoning with 163 deaths (Case fatality rate 45.9%) 95% of 100,000 ppm). 79 (66%) of these households participated in ore processing activities. In all 204 venous blood samples collected high lead levels were detected, 198 children (97%) met criteria for chelation therapy.

CONCLUSIONS:
This outbreak of childhood death and illness was caused by acute lead poisoning affecting all children under 5 years living in the villages. The environmental contamination and timing of the outbreak was likely related to increase and domestication of ore-processing activities in the past year.

PRESENTED BY: DR HALADU AHMED

20100022 Poster Outbreaks

Keywords: Dysentery, Shigella sonnei, outbreak, gastroenteritis

Outbreak of Shigella sonnei infections in the observant Jewish community of Antwerp, Belgium, 2008

Koen De Schrijver (1), S. Bertrand (2), I. Gutiérrez (3), D. Van den Branden (1), J. Van Schaeren (4), E. Van Meervenne (2)

AFFILIATIONS:
1. Department of Infectious Disease Control, Antwerp, Belgium
2. National Reference Centre for Salmonella and Shigella, Scientific Institute of Public Health, Brussels, Belgium
3. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control, Stockholm, Sweden
4. Department of Microbiology Hospital Gasthuiszusters Sint – Vicentiusziekenhuis, Antwerp, Belgium

BACKGROUND:
In 2008, an ongoing outbreak of Shigella sonnei infections occurred in the observant Jewish community in Antwerp, Belgium. Previously, former registered shigellosis outbreaks were limited and of short duration. Epidemiological and microbiological investigations were undertaken to describe the epidemic and determine the cause.

METHODS:
To measure the extent of the outbreak a descriptive study was conducted using standardised questionnaires and case finding. A confirmed case was a patient belonging to the observant Jewish community of Antwerp, with a positive culture-confirmed S. sonnei, in the period between the beginning of April and the end of August 2008. Pulsed Field Gel Electrophoresis (PFGE) was used to evaluate the genetic relatedness of the strains. A retrospective cohort study to identify risk factors was conducted among the affected households.

RESULTS:
Forty-two cases were identified, and the characterized specimens had the same PFGE profile. Most probably the father of the first registered case contracted the disease during his stay in Tel Aviv. The secondary attack rate among household contacts (15/175) was 8.5% (95% confidence interval 4.31-12.71). Using multivariable analysis (binomial regression) we identified the following independent risk factors: more than three children RR 9.17 (95% confidence interval 1.21-69.13), children under the age of 5 years in the household RR 5.45 (95% confidence interval 2.44-12.62) and children under 12 years assisting their parents by cleansing younger siblings RR 5.45 (95% confidence interval 2.44-12.17).

CONCLUSIONS:
An outbreak with one single strain could be identified. Visiting friends and relatives in areas with higher risk of shigellosis might be the seeding event. Hand washing and excluding symptomatic children from schools for a minimum of 48 hours after symptom-free may prove effective in reducing shigellosis.

PRESENTED BY: DR KOEN DE SCHRIJVER

POSTER SESSION **ABSTRACTS**

20100255 Poster Outbreaks

Keywords: trichinosis, outbreak

Outbreak of trichinosis caused by wild boar sausages in Lithuania, June 2009

Jurgita Pakalniskiene (1), A. Bartuliene (2), G. Aleksiene (3), V. Motiejuniene (3)

AFFILIATIONS:
1. State Public Health Service under the Ministry of Health, Vilnius, Lithuania
2. Centre for Communicable Diseases and AIDS, Vilnius, Lithuania
3. Vilnius Public Health Centre, Vilnius, Lithuania

BACKGROUND:
Trichinosis is a notifiable disease in Lithuania. In 1999-2008, there were 359 cases registered, including 42 outbreaks. On 11 June, 2009 five suspected trichinosis cases were reported in Ukmerge district. An investigation was organized to determine the extent of the outbreak, identify the source and introduce control measures. Interview of the first cases revealed consumption of specific wild boar sausages.

METHODS:
A case was defined as a person who had consumed wild boar sausages, produced on 16 May 2009 in company X and presented with fever (>38°C), myalgia, or facial or orbital oedema:
– and had positive serology for Trichinella (confirmed);
– or/and presented with hypereosinophilia (probable).
Active case finding was organized interviewing each suspected trichinosis patient reported by healthcare institutions. Persons who had consumed suspected meat were referred for laboratory examination and medical observation. On 11 June remainder of suspected sausages from cases households were collected for laboratory investigation.

RESULTS:
Hundred twenty-eight persons who had consumed suspected sausage were identified in six municipalities; 107 fulfilled confirmed (13.1%) or probable (86.9%) case definition; fifty-five (51.4%) were hospitalized; majority were adults (88.8%). On 12 June around 20 Trichinella larvae were found in 1g of sausage samples.

CONCLUSIONS:
The wild boar cold-smoked sausages caused the outbreak. Several wild boars were hunted on 10 May and not inspected for Trichinella. On 16 May, 50 kg of sausages were produced in company X for private consumption and distributed to huntsmen who ate this meat themselves and distributed among family and friends. All slaughtered pigs and hunted wild boars in Lithuania must be examined for Trichinella. However, consumption of uninspected meat occurs. Public education, especially for small pig breeders and hunters, is needed.

PRESENTED BY: MS JURGITA PAKALNISKIENE

20100259 Poster Outbreaks

Keywords: Infectious Disease Outbreaks; epidemiology; Gastroenteritis; Case-Control Studies

Retrospective epidemiological investigation of a gastroenteritis outbreak in the Allgäuer alps, Bavaria

Katharina Schönberger (1), B. von Wissmann (1, 3, 4), W. Hautmann (1), L. Walters (2), C. Höller (1), M. Wildner (1)

AFFILIATIONS:
1. Bavarian Health and Food safety authority (LGL), Oberschleißheim;
2. Local health authority of Oberallgäu, Sonthofen
3. Postgraduate Training for Applied Epidemiology (PAE, German FETP) Robert Koch Institute, Dept. Infectious Disease Epidemiology, Berlin, Germany
4. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden

BACKGROUND:
On 07.08.09, the local health authority of Oberallgäu, Bavaria, was informed about a cluster of gastroenteritis cases amongst hill-walkers frequenting three mountain bothies, following the failure of the UV-water treatment device at one of the bothies (Rappensee Hütte), a few days previously. The aim of the study was to investigate whether there was an association between the defective UV-disinfection device for drinking water at the Rappensee Hütte and the gastroenteritis outbreak.

METHODS:
A retrospective unmatched case-control design using structured questionnaires was employed. Cases were defined as people who visited any of the three affected bothies (Rappensee Hütte, Kemptener Hütte and Prinz-Luitpold-Haus) between 29.07.09 (defective UV-device) and 11.08.09 (maximum incubation period) and fell ill with gastroenteritis. Controls were defined as people visiting the affected bothies in the same time-period who remained healthy.

RESULTS:
The overall response rate was 87.5% (350/400 questionnaires), with 60.3 male and 37.1 female respondents. Bivariate analysis showed significantly increased odds of gastroenteritis for people visiting the Rappensee Hütte (OR=13.5, 95%CI: 5.3-33.5), having drunk something (OR=15.6, 95%CI 6.0-40.3) or having used the toilet (OR=13.5 95%CI: 5.3-33.6). Multivariable logistic regression showed significantly increased odds of gastroenteritis for people having drunk something (OR=5.4; 95%CI: 1.87-13.6) and having taken along water from the Rappensee Hütte (OR=5.7 95%CI: 2.4-13.5).

CONCLUSIONS:
To correctly interpret the apparent association between drinking water from the Rappensee Hütte and gastroenteritis it must be taken into consideration that nearly all people visiting the bothy drank something or took water with them. In the absence of data on contact behaviour, person-to-person contact could not be included as a risk factor in the analysis. Therefore this route of transmission can not be excluded based on the available data.

PRESENTED BY: MISS KATHARINA SCHÖNBERGER

20100298 Poster Outbreaks

Keywords: Pandemic flu, H1N1, outbreak, school, China, holiday, vaccine, isolation

Series of 2009 H1N1 Influenza Outbreaks and control measure in Schools of prefecture D, Yunnan, China, 2009

Liu Xiaoqiang (1, 2), L. Lin (1), Y. Jun (1), H. Yongshou (1), V. Chongsuvivatwong (3), V. Sornsrivichai (3), Z. Guang (4), C. Jiraphongsa(2)

AFFILIATIONS:
1. Yunnan Provincial Centers for Disease Control and Prevention, China
2. International Field Epidemiology Training Program-Thailand, Bureau of Epidemiology, Ministry of Public Health, Thailand
3. Epidemiology Unit, Faculty of Medicine, Prince of Sonkha University, Hadyai, Thailand
4. China Centers of Disease Control and Prevention, Beijing, China

BACKGROUND:
During October 10–15, 3 H1N1 influenza school outbreaks had been reported to Yunnan CDC by county X of prefecture D. Twenty laboratory-confirmed cases included 18 students and 2 physicians. Field investigation was conducted by IFETP trainee and local CDCs during October 15-November 3. We implemented control measure and evaluated its effect.

METHODS:
Notifiable disease surveillance, ILI surveillance and school surveillance were strengthened. We identified cases by reviewing medical records in hospitals and body-temperature-measure in schools. Case definition was fever (≥38°C) with cough or sore throat and confirmed by RT-PCR. All cases in 5 schools were interviewed. All schools with outbreak were isolated. Ill students and healthy students were separated within the school. Chinese medicine was given. For each new ILI outbreak, 5-20 throat swabs were collected.

RESULTS:
Prefecture D is a plateau area. Until November 3, 2,459 cases were identified from 15,931 students in 19 schools and no death. 69.1% (85/123) of specimens from students were confirmed with H1N1. Besides fever, main clinical presences of confirmed cases were cough (88.5%), sore throat (84.6%), headache (61.5%), body-pain (38.5%), and running-nose (30.8%). Clinical presence of suspect cases was similar to confirmed cases. Attack rates in primary schools (median=40.6%) were higher than secondary schools (median=10.6%) (p-value=0.02). Median duration of outbreaks was 21 days and 10 days in secondary and primary schools, respectively.

CONCLUSIONS:
2009 H1N1 Influenza spread in 3.4% of schools in the high-altitude prefecture D. Integrated control measure was implemented. Moreover, 22,000 doses of vaccine were given, making a 38.2% of vaccine coverage in students. Characteristics of outbreaks are different between secondary and primary schools. Timely diagnosis was likely to reduce the duration of outbreaks.

PRESENTED BY: MR LIU XIAOQIANG

20100066 Poster Outbreaks

Keywords: Shigellosis, Disease Outbreaks, Epidemiology, Matched Case-Control Studies

Shigellosis outbreak linked to canteen-food consumption in a public institution in Flemish Brabant, Belgium, September – November 2009: a matched case-control study

Ignacio Gutiérrez (1, 2), M. Naranjo (3), A. Forier (4), R. Hendriks (5), K. De Schrijver (6), S. Bertrand (3, 7), K. Dierick (3), E. Robesyn (8), S. Quoilin (2).

AFFILIATIONS:
1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control, Stockholm, Sweden
2. Operational Direction for Surveillance and Public Health, Scientific Institute of Public Health, Brussels, Belgium
3. Operational Direction for Transmissible and Infectious Diseases, Scientific Institute of Public Health, Brussels, Belgium
4. Infectious Disease Control Unit, Department of Public Health Surveillance, Flemish Agency for Care and Health, Limburg, Belgium
5. Infectious Disease Control Unit, Department of Public Health Surveillance, Flemish Agency for Care and Health, Flemish Brabant, Belgium
6. Infectious Disease Control Unit, Department of Public Health Surveillance, Flemish Agency for Care and Health, Antwerp, Belgium
7. National Reference Centre for Salmonella and Shigella, Scientific Institute of Public Health, Brussels, Belgium
8. Infectious Disease Control Unit, Department of Public Health Surveillance, Flemish Agency for Care and Health, Brussels, Belgium

BACKGROUND:
On 13 November 2009, health authorities were alerted about a potential outbreak by Shigella sonnei in a public institution in Flemish-Brabant. Re-interviewing notified cases since October confirmed this link. The provincial service for disease control (ToVo) and the Institute of Public Health started a study to assess the extent of the outbreak, and to test whether canteen-food consumption was associated with shigellosis.

METHODS:
We defined employees with diarrhoea and fever or abdominal pain, for at least two days as probable cases. Confirmed cases were those with a positive culture for S. sonnei. We searched cases through an e-mail questionnaire sent to all employees. We performed a 1:2 case-control study, matching on sex and department to control confounding. We used conditional logistic regression to calculate matched-odds ratios (mOR) and 95% confidence intervals (CI). We interviewed food handlers. Water and food handlers´ stools were tested for shigella. The reference laboratory characterized the notified cases´ specimens.

RESULTS:
Amongst 708 employees, 374 (52.8%) responded to the questionnaire. We identified 44 probable and seven confirmed cases in 25/35 departments between 25th September and 22nd November. Cases were more likely to have consumed canteen-food than controls (mOR 3.84; 95% CI 1.02- 14.44). An asymptomatic food handler travelled to Morocco before detection of the first confirmed case. Food handlers´ stools and water samples tested negative. Confirmed cases presented a common PFGE profile.

CONCLUSIONS:
The results suggest that foodborne transmission occurred though a link to food handlers could not be ascertained. The ToVo and the food safety authority supervised procedures in the institution's canteen and gave hygienic advice to all employees on 17 November. Interviewing notified cases in depth should improve timely detection of clusters.

PRESENTED BY: DR IGNACIO GUTIÉRREZ

POSTER SESSION **ABSTRACTS**

20100197 Poster Outbreaks

Keywords: Infectious disease outbreaks, Zoonoses, Campylobacter, Escerichia coli

Two outbreaks of diarrhoea in kindergartens, during a national EHEC outbreak

Janne Møller-Stray, H. M. Eriksen, L. Vold

AFFILIATIONS:
Norwegian Institute of Public Health, Department of Infectious Disease Epidemiology

BACKGROUND:
During a nationwide outbreak of E.coli SFO157, The Norwegian Institute of Public Health was notified of diarrhoea outbreaks in two kindergartens in Sauda and Nannestad in spring 2009 following farm visits. A link to the nationwide outbreak was suspected and investigated.

METHODS:
We performed retrospective cohort studies in both kindergartens focusing on disease symptoms, food consumption, participation at the farm visit, animal contact and hand washing prior to eating. We defined children with symptoms as suspected and those with symptoms and laboratory confirmation as confirmed cases. Faecal samples were obtained from children with symptoms and initially tested for Campylobacter, Salmonella, Yersinia, Shigella and pathogenic E. coli. Positive samples were further characterised. We collected faecal samples from farm animals, and farm water samples from Sauda.

RESULTS:
In Sauda, 12 children reported symptoms. All four analysed faecal samples were positive for Campyloabcter jejuni with the same MLVA-profile. The same strain was isolated from the faecal samples of lambs on the farm, whereas water samples were negative. In Nannestad, nine children reported symptoms, of these EHEC O26 was isolated from one child with bloody diarrhoea. Five other children tested positive of EPEC O76, with an identical MLVA-typing profile. EHEC O26 was isolated from faeces of seven farm animals, with an MLVA-profile similar to the human case. Due to the convincing microbiological results, no further epidemiological analysis was conducted.

CONCLUSIONS:
In both outbreaks, the pathogens isolated differed from the national outbreak. Animals and children were infected with the same pathogen, which suggests animal faeces as the source of the outbreaks. This incident highlights the importance of precise lab diagnostics and the need to insist on hygiene messages to prevent similar outbreaks .

PRESENTED BY: MISS JANNE MØLLER-STRAY

20100056 Poster Public Health Issues in Mass Gathering Events

Keywords: Mass gatherings, Disease Outbreaks/prevention & control, Emergency preparedness, Special Events

Handling Pandemic Influenza: Report from a Dance Festival in Portugal, August 2009

Ricardo Mexia

AFFILIATIONS:
EPIET Fellow, Folkehelseinstituttet, Oslo, Norway

BACKGROUND:
Every August, an estimated 11.000 participants flood the small 200-inhabitants village of Carvalhais for the week-long Andanças international dance and music festival. The ongoing 2009 influenza pandemic and the public's increased risk perception raised the need for the Festival Organizing Committee to design a pandemic preparedness plan, providing stakeholders with adequate tools to face this Public Health challenge.

METHODS:
A pandemic preparedness plan was created in cooperation with local health authorities, according to scientific literature review and the available directives and best practices. It was designed around 3 main topics: Information to participants, structural/environmental changes, and handling suspected cases according to the National Health Authority case definition for A(H1N1) influenza.

RESULTS:
During the 2009 event 13.575 tickets were sold. The preparedness plan was fully implemented, creating: information posters and leaflets on hand hygiene and respiratory etiquette; hand washing stations and promoting adequate ventilation of the indoor venues; a festival emergency hotline, a triage process (with the Red Cross), a quarantine room, and a validation process by the existing national hotline with eventual transfer to appropriate health care facilities. Referral to the national hotline was particularly troublesome and lengthy due to high national demand. Five suspected cases were handled, of which three were evacuated to health care facilities. Only one case was lab confirmed. Informally, the Organizing Committee heard of four more lab confirmed cases among participants.

CONCLUSIONS:
The preparedness plan, created on such short notice and using minimal resources, enabled effective cooperation and trust between the stakeholders involved. By improving active case finding, delivering more information to participants and creating better local basic health care facilities, we expect to improve both care and notification for following editions.

PRESENTED BY: DR RICARDO MEXIA

20100292 Poster Respiratory diseases

Keywords: endotoxin – air sampling – respiratory function test – influenza like syndrome – airborn pathogens

Exposure to Bio-Aerosols in swine workers

Matteo RICCO'; Pietro MANOTTI; Valeria TRABACCHI; Anna ODONE; Carmine BOCCUNI; Tijana LALIC; Rosanna ANTOLINI; Carlo SIGNORELLI

AFFILIATIONS:
Università degli Studi di Parma, Dipartimento di Sanità Publica, Sezione di Igiene

BACKGROUND:
Swine Farm workers (SFWs) are professionally exposed to bioaerosol which health effects are not fully defined. The aim of this study was to investigate work-related health effects and symptons in these workers, in particular at respiratory level.

METHODS:
Thirty-five male SFWs were initially rectruited: all subjects more than 45 years old, with previous history of respiratory disease or smoke habit were subsequently excluded (n=15). Respiratory signs and symptoms of the remaining 20 subjects fullfilling inclusion criteria were collected through clinical examination and a specific questionnaire. During work, air samples were collected by personal and fixed (Duostaff100) samplers. A fixed Respiratory Function Tests (RFT) were also performed on workplace and repeated 12 months after the first evaluation. Controls (n = 60) were recruited among clerical male workers fullfilling the same inclusion criteria for cases.Statistical analywas was performed through Student t-test and Fisher's exact test, where appropriated. Odds ratios (OR) and relative 95% Confidence Intervals (95%CI) were also calculated.

RESULTS:
Mean exposure of SFWs to endotoxin was 12.5 EU/m3, whereas mean bacterial exposure was 1,215 CFU/m3. They complained higher prevalence for systemic and respiratory simptoms than control group, in particular more frequenlty sneezing (OR 7.6) and cough (OR 23.2), with higher prevalence of Flu-like symptoms ($p < 0.001$). RFT showed a statistically significant ($p < 0.01$) reduction for FEV1 and PEF values in cases both between cases and controls, than in controls only at the follow-up.

CONCLUSIONS:
Our results confirm previous reports, suggesting the exposure to bioaerosols as associated with a wide range of respiratory symptoms. Our data suggest that prolonged exposures to bio-aerosols may chronically impairs respiratory function with mild but progressive worsening of RFT.

PRESENTED BY: MR MATTEO RICCÒ

20100005 Poster Respiratory diseases

Keywords: Diphtheria, Corynebacteria, MALDI-TOF

Laboratory diagnosis of diphtheria in Germany, 1997–2010

Andreas Sing (1, 2), A. Berger (1, 2), R. Konrad (1, 2), R. Kugler (1, 2), V. Boschert (2), S. Hörmansdorfer (2)

AFFILIATIONS:
1. German Consultant Laboratory for Diphtheria, Oberschleißheim, Germany
2. Bavarian Health and Food Safety Authority, Oberschleißheim, Germany

BACKGROUND:
Since its establishment in 1997, 146 Corynebacterium spp. isolates were sent to the Diphtheria Consultant Laboratory for identification or confirmation of microbiological findings. Of these, 23 were positive for the diphtheria toxin (DT) gene (12 C. diphtheriae Biovar-Mitis and 13 C. ulcerans).

METHODS:
While classical pharyngeal diphtheria caused by toxigenic C. diphtheriae is rare in industrialized countries, toxigenic C. ulcerans strains are increasingly isolated in association with both pharyngeal and cutaneous diphtheria. Therefore, the reliable detection of toxigenic Corynebacterium spp. including C. ulcerans is essential for clinical diagnosis and surveillance of diphtheria. Thus, we developed a novel real time PCR assay reliably detecting all known C. diphtheriae- and C. ulcerans-tox genes. Moreover, MALDI-TOF was implemented for rapid identification of potentially toxigenic Corynebacterium spp.

RESULTS:
Data on the incorporation of both assays in the laboratory routine of the German Consultant Laboratory for Diphtheria will be presented. Moreover, while all toxigenic C. diphtheriae isolates imported, all toxigenic C. ulcerans strains were acquired in Germany. More than half of the toxigenic C. ulcerans patients had animal contact. In one case molecular data suggested a zoonotic transmission between human and pigs. In another case, a toxigenic C. ulcerans was isolated from wild boar. This prompted us to perform a study on C. ulcerans carriage among pigs in Bavarian pig-producing farms. So far, preliminary data on more than 2700 coryneform strains isolated from 400 pigs originating from 40 farms indicate that no C. ulcerans strain was found.

CONCLUSIONS:
The proposed algorithm of MALDI-TOF and tox-real-time PCR allows the rapid diagnosis of potentially toxigenic corynebacteria. An overview of the German situation of diphtheria with special respect to C. ulcerans is given.

PRESENTED BY: DR ANDREAS SING

POSTER SESSION **ABSTRACTS**

20100020 Poster Surveillance

Keywords: Event reporting, IHR, healthcare workers

A toolkit to improve reporting of unusual public health events targeting frontline healthcare workers

Emily MacDonald (1), Katrine Borgen (1), Dounia Bitar (2) and Preben Aavitsland (1)

AFFILIATIONS:
1. Norwegian Institute of Public Health, Oslo, Norway
2. Institut de Veille Sanitaire, Paris, France

BACKGROUND:
The International Health Regulations (IHR 2005) require countries to notify WHO of any event which may constitute a public health emergency of international concern. This notification relies on reports of unusual events originating at the local level reaching national public health authorities. Our objective was to develop a toolkit to improve the reporting of unusual events of public health significance from frontline healthcare workers (HCW) to public health authorities.

METHODS:
An investigation of obstacles and incentives to reporting health events was carried out through expert consultations, a systematic literature review, and standardized interviews with public health officials from various European countries. This process highlighted three priority areas for efficient reporting: professional engagement, communication and infrastructure. Using qualitative Framework analysis, we analyzed the interview data and extracted examples of successful and unsuccessful public health event reporting.

RESULTS:
We have developed a toolkit targeted at clinicians and laboratory staff and a guidance document targeted at IHR National Focal Points, using evidence from expert consultations, 79 scientific publications and seven qualitative interviews. The toolkit, adaptable to country-specific needs, includes leaflets, wallet cards and training material. It emphasizes what to report, the reporting process and the resulting follow-up, supported by real-life examples illustrating theses steps in the reporting chain. The toolkit will be piloted in the fall of 2010.

CONCLUSIONS:
This toolkit emphasizes the importance of mutual exchange of information and will potentially increase frontline healthcare workers' awareness of their role in reporting of unusual events of public health concern. Further research on attitudes and perception towards event reporting among frontline HCW and public health authorities would be beneficial.

PRESENTED BY: MS EMILY MACDONALD

20100102 Poster Surveillance

Keywords: MRSA, travel, surveillance, risk

Analysis of the risk of MRSA acquisition when travelling to different countries outside Sweden

Alastair Donachie (1), S. Ivarsson (2), M. Löfdahl (2), A. Wallensten (2), Tomas Söderblom (2)

AFFILIATIONS:
1. Södertörn University, Huddinge, Sweden
2. Department of Epidemiology, Swedish Institute for Infectious Disease Control, Solna, Sweden

BACKGROUND:
Sweden has a low but rising incidence of methicillin-resistant Staphylococcus aureus (MRSA). The proportion of imported cases in Sweden, approximately 30 %, is of concern for potential subsequent domestic transmission. The aim of this study was to relate the five most frequently reported countries of infection for imported MRSA to Swedish travel data in order to compare travel associated risks.

METHODS:
Information about country of infection, age and transmission route for notified imported cases of MRSA, 2000-2009, was analyzed alongside travel data from the Swedish Travel and Tourist Database (TDB) for the same period. TDB contains information on Swedes travel habits based on 2000 monthly phone interviews. The overall travel associated risk of MRSA, cases per 100 000 journeys, was calculated for Thailand, USA, Philippines, Spain and Iraq. Data was stratified according to age and all trends were analyzed for statistical significance. The result was evaluated in relation to the routes of transmission reported.

RESULTS:
The travel associated risk increased during the study period for all investigated countries. The highest incidence was observed in travelers returning from the Philippines with on average 509 cases per 100,000 journeys compared to 1-5 for the other studied countries. An elevated age related risk was seen for 15-29 year olds returning from Thailand and 60-74 year olds from Spain. Differences in the reported routes of transmission could be noted. The relationship between travel associated risk and route of transmission need further investigation.

CONCLUSIONS:
Combining surveillance and travel data may identify high risk destinations for MRSA acquisition. The results from these kinds of studies can be used for health and travel recommendations as well as to aid prioritization in MRSA screening programs.

PRESENTED BY: MS SOFIE IVARSSON

20100260 Poster Surveillance

Keywords: acute gastroenteritis; performance of surveillance system; foodborne disease outbreaks; Italy

Analysis of the surveillance activity for acute gastroenteritis in Lombardy and Piedmont regions (Italy) from 1992 to 2007

Lapo Mughini Gras (1), F. Biorci (2, 3), A. Pavan (4), R. Magliola (3), C. Graziani (1), A. Ricci (5), L. Busani (1)

AFFILIATIONS:
1. Dipartimento di Sanità Pubblica Veterinaria e Sicurezza Alimentare. Istituto Superiore di Sanità. Roma, Italy
2. Dipartimento di Sanità Pubblica e Microbiologia. Università degli Studi di Torino. Torino, Italy
3. Direzione Sanità Pubblica, Regione Piemonte. Torino, Italy
4. Struttura Profilassi Malattie Infettive, Igiene Alimenti e Nutrizione. Direzione Generale Sanità. Regione Lombardia. Milano, Italy
5. Istituto Zooprofilattico Sperimentale delle Venezie. Legnaro, Italy

BACKGROUND:
In developed Countries the impact of acute gastroenteritis (AG) on public health is greatly underestimated. In 2007, the AG incidence in Italy was 17.4/100000 inhabitants, remarkably lower than EU. In 2002 and 2004, respectively Piedmont and Lombardy developed surveillance systems more sensitive towards detection of AG cases (Lombardy) and foodborne disease outbreaks (FDO) (Piedmont). We evaluated the performance of these two surveillance systems comparing AG cases and FDO in the two regions and in the rest of Italy.

METHODS:
For all Italian regions, the number of officially notified AG cases between 1992 and 2007, and the number of FDO from 1996 to 2007 were collected. Population data (by year, age and gender) were also collected. Temporal trends were assessed by Cuzick's test.

RESULTS:
Overall, we collected 246424 AG cases and 7180 FDO with 54982 individual cases involved. A significant decreasing trend was observed in AG incidences in Piedmont and in other regions, but not in Lombardy. When the period after the surveillance implementation is considered, the average of AG incidences in Lombardy and Piedmont was respectively +48.6% and +15.5% compared to the rest of Italy. The FDO decreasing trend was significant in Lombardy and in the rest of Italy, but not in Piedmont, where since 2001 the number of FDO was always above the national average. The mean number of individual cases per FDO decreased significantly over time, but not in Lombardy.

CONCLUSIONS:
In Piedmont and Lombardy the surveillance systems improved the detection of AG cases and FDO, but their different objectives made comparisons difficult. Further analyses will provide information on possible harmonization and extension of the surveillance activities of these two regions to the rest of Italy

PRESENTED BY: MR LAPO MUGHINI GRAS

20100152 Poster Surveillance

Keywords: Legionnaires' disease, diagnostic reagent kit, epidemiology, disease notification

Apparent increase in Legionnaires' disease in Hong Kong attributed to rapid diagnostic kits

Yat-Hung Tam (1), M Wong (1), S Chuang (1)

AFFILIATIONS:
1. Field Epidemiology Training Programme, Centre for Health Protection, Department of Health, Hong Kong SAR, China

BACKGROUND:
We investigated potential common sources of infection and causes of increase in number of cases of Legionnaires' disease (LD), which was statutorily notifiable to the Centre for Health Protection in Hong Kong, from 11-16 in previous four years to 37 in 2009.

METHODS:
We compared clinical and epidemiological characteristics including smoking habit, chronic illnesses, disease severity, residences and travel history of cases recorded in 2009 with those reported in previous four years. We collected environmental samples of possible sources of infection of individual patients and compared Legionella isolates with those obtained from patients using sequence-based typing. We described the changes of laboratory diagnostic methods used in 2009.

RESULTS:
The LD cases reported in 2009 included 33 men and 4 women with age ranging between 38-92 years. The clinical and epidemiological features of cases reported in 2009 were similar to those of 51 cases in previous four years. Cases' residences were not clustered geographically. Legionella pneumophila serogroup 1 strains were isolated from respiratory specimens of 10 cases. They belonged to 7 different types and differed from the environmental isolates. Comparing with previous four years, the proportion of cases diagnosed by urinary Legionella antigen test (UAT) instead of serology and bacterial culture increased from 59% to 73% in 2009, while the number of specimens tested per year by UAT rose from around 700 to 1350. Nonetheless, the proportion of UAT with positive result did not increase in 2009.

CONCLUSIONS:
The results did not suggest common source of infection. UAT allowed rapid, convenient and accurate diagnosis comparing with conventional methods. The apparent increase was possibly attributable to increased use of UAT in diagnosis and thus increased number of cases being identified.

PRESENTED BY: DR YAT-HUNG TAM

POSTER SESSION **ABSTRACTS**

20100046 Poster Surveillance

Keywords: Chlamydia, sexually transmitted infections, surveillance, evaluation

Chlamydia trachomatis surveillance in Sweden 1997–2008: results from the system evaluation

M. Riera-Montes (1, 2), I. Velicko (2)

AFFILIATIONS:

1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
2. Department of Epidemiology, Swedish Institute for Infectious Disease Control (SMI), Solna, Sweden

BACKGROUND:

Chlamydia trachomatis(Ct) infections are notifiable by law in Sweden since 1988. Laboratories and clinics must report all confirmed cases anonymously within 24 hours of diagnosis. We evaluated the Ct surveillance system to assess its performance and make recommendations for improvement.

METHODS:

Based on CDC Guidelines for Evaluating Public Health Surveillance Systems, usefulness, simplicity, flexibility, data quality, acceptability, representativeness, timeliness and stability of the system were evaluated using 1997-2008 data. We interviewed staff from the Swedish Institute for Infectious Disease Control, the National Board of Health and Welfare and one county medical officer (CMO). We conducted a survey among laboratories, CMOs, and a random sample of clinics.

RESULTS:

All 21 CMOs, 26/29 laboratories (90%) and 183/300 clinics (61%) returned the questionnaire. We could not identify any particular documents stating specific objectives of the Chlamydia surveillance system. Data from the system prompted the implementation of a new national plan for Chlamydia infection control in 2009. Satisfaction with the system was good for 86% of CMOs, all laboratories and 99% of clinics. Data completeness was 100% for compulsory variables but 16 to 92% for non-compulsory variables. Logical errors were under 1%. The proportion of notifications received within 24 hours was 1% for laboratory notifications and 9% for clinical notifications but 73% were notified within 7 days and 90% within 30. The system was stable with few technical problems reported.

CONCLUSIONS:

The Ct surveillance system is perceived as useful by stakeholders with high acceptability although timeliness doesn't meet the current statutory requirements. The objectives for Ct surveillance should be clearly defined to better evaluate the impact of control measures implemented. System requirements should be adapted to simplify data collection and improve timeliness.

PRESENTED BY: DR MARGARITA RIERA

20100011 Poster Surveillance

Keywords: Decision Making, Computer-Assisted Evaluation, Statistical Data Analysis, Infectious Disease Outbreaks

Enabling smooth evaluations of computer supported outbreak detection algorithms

Anna-Maria Kling (1), M. Grünewald (1), K. Hebing (1), A. Hulth (1)

AFFILIATIONS:

1. Swedish Institute for Infectious Disease Control, Stockholm, Sweden

BACKGROUND:

Computer Assisted Search for Epidemics (CASE) is a framework for computer supported outbreak detection, developed at the Swedish Institute for Infectious Disease Control and applied to data from the national registry of notifiable diseases. The system supports several statistical algorithms and allows for different parameter settings for the various diseases. The automated analyses are performed daily. If CASE detects a potential outbreak, an email is sent to the epidemiologist(s) in charge. CASE is available as open source software. Here we build on previously reported work by introducing an evaluation module for computer supported outbreak detection algorithms.

METHODS:

For CASE to run satisfactorily, algorithms and parameter settings have to be chosen carefully for each disease. So far, these have been selected by a statistician in collaboration with epidemiologists. For a smoother process, we have extended CASE to include an evaluation module to allow for more informed decisions.

RESULTS:

The evaluation module allows users to run retrospective analyses for several consecutive days. Data source, time period, algorithms and parameter settings, and summary evaluation measures are chosen in the graphical interface. Algorithms with various parameter settings can be run in parallel. Several descriptive summary measures are provided. The output is presented graphically in the interface. Text files containing day-by-day results and raw data are also generated; these can be used for further evaluations in an external program.

CONCLUSIONS:

Tools for evaluating algorithms and their parameter settings for computer supported outbreak detection are crucial. Feedback from epidemiologists as well as resources to respond to such feedback is also essential. By developing an evaluation module for CASE, we have a tool for customising the settings to better suit the epidemiologists' needs.

PRESENTED BY: MS ANNA-MARIA KLING

20100355 Poster Surveillance

Keywords: surveillance, network, public health, evaluation

European Union (EU) public health added value – first attempts to assess the impact of dedicated surveillance networks (DSNs)

Johanna Takkinen (1), A. Ammon (1).

AFFILIATIONS:
Surveillance Unit, European Centre for Disease Prevention and Control, Stockholm, Sweden

BACKGROUND:

EU-wide surveillance has been set up through EU-funded DSNs until establishment of the European Centre for Disease Prevention and Control (ECDC) in 2005. Seventeen dedicated surveillance networks (DSNs) have undergone an evaluation and assessment process as part of the long term EU surveillance strategy for 2007-2013. Preliminary analyses of public health impact of DSNs were performed.

METHODS:

The data collected in network member user surveys was used. Uniform questionnaires were administered to DSNs but some questions were different for epidemiologists and laboratory experts. Four common questions addressed use of data/information (17 DSNs) and three epidemiology questions impact on national surveillance, prevention and control policies, and public health interventions (15 DSNs, excluding two laboratory networks). Variation among proportions of positive replies was estimated by chi-square test for unordered categories. Mean and standard deviation (SD) of proportions per question was calculated.

RESULTS:

Network members per DSN ranged from 28 to 92 (median=51). Total response rates ranged from 43% to 77% (median=61%). Of 17 networks, a high proportion of members had used data/information produced by the network (DSN mean=86%, SD=18%) although the variation among networks was significant for all four questions ($p<0.001$). Among 15 networks, proportions of positive replies regarding contribution to short and long term prevention and control policies did not vary significantly but the positive percentages were detected at a lower level (DSN mean=28%, SD=12%).

CONCLUSIONS:

The use of data by network members reflects usefulness and further distribution of knowledge, which is of added value. The DSNs influence on prevention and control policies in the countries was relatively limited. The assessment of public health value produced by the DSNs will be used to develop EU level surveillance further.

PRESENTED BY: DR JOHANNA TAKKINEN

20100333 Poster Surveillance

Keywords: Influenza, Sentinel, Oro-/nasopharyngeal swab

Evaluation of Influenza Surveillance System in Nigeria, May 2010

Maina L. (1), Nguku P. (1), Ekanem E. (2), Dalhat I. (2), Gubio A. (3), Shehu M. (4), Ademola-Majekodunmi F. (5)

AFFILIATIONS:
1. Nigeria Field Epidemiology and Laboratory Training program
2. National Influenza Sentinel Surveillance coordinators, CDC Nigeria
3. National Influenza Reference Laboratory
4. Faculty of Medicine, Ahmadu Bello University Zaria
5. Special Duties Department, Federal Ministry of Health

BACKGROUND:

In 2006, Nigeria confirmed a human case of avian influenza and subsequently a national influenza sentinel surveillance system was established in 2007 in four states in order to characterize the epidemiology of human influenza in Nigeria. Oro-/ nasopharyngeal swab samples are obtained for all cases of Severe Acute respiratory infections and four samples daily of Influenza-like illnesses in all the sentinel sites. We evaluated the system to describe its operation and assess its attributes.

METHODS:

We evaluated simplicity, acceptability, positive predictive value and timeliness using the CDC Updated Guidelines for evaluating Public Health Surveillance systems (2001). We interviewed ten key stakeholders from the national and sub-national level and from partner agencies. We reviewed sentinel site registers, National Influenza Reference laboratory records and the system's operational protocol. We analyzed surveillance data from 2008 – 2009.

RESULTS:

Staff at sentinel sites understood system well and felt that system is useful. It has a simple case definition, all samples taken met the case definitions, with a clear reporting and feedback mechanism. A standard data format and integration to the integrated surveillance system indicate the flexibility of the system. Data quality is good with 95% completeness of weekly data reporting. The system has 90.1% positive predictive value. It employs courier services for sample delivery and results dissemination. Out of 770 samples submitted to the reference laboratory, 55 (7.1%) were Influenza A positive [8 H1 and 33 H3 subtypes]. 85.2% patients were children<15years. Partner agencies provide 80- 85% of the operating resources.

CONCLUSIONS:

The system is simple, timely, acceptable, but geographical coverage is insufficient, and is donor driven. The Nigerian Government should assume more ownership of the system to ensure sustainability of sentinel sites.

PRESENTED BY: MRS LILIAN MAINA

POSTER SESSION **ABSTRACTS**

20100204 Poster Surveillance

Keywords: influenza, surveillance, specificity, representativeness

Evaluation of the Austrian Influenza Surveillance System for the seasons 2004/05–2008/09: results on specificity and representativeness

Yu-Lun Liu (1, 2), D. Schmid (1), F. Allerberger (1)

AFFILIATIONS:
1. Austrian Agency for Health & Food Safety, Vienna, Austria
2. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control, Stockholm, Sweden

BACKGROUND:
The Austrian influenza surveillance relies on a clinical and a virological surveillance system. Clinical data are provided by sentinel physicians reporting influenza-like illness (ILI) cases weekly and virological data by other sentinel physicians sending swabs from ILI cases to the national influenza reference-laboratory for influenza testing. The objectives of evaluation were to assess whether our surveillance system is capable of reliably estimating the influenza morbidity.

METHODS:
Based on CDC guidelines, we evaluated specificity and representativeness for 2004/05-2008/09. ILI as clinical indicator is more specific but less sensitive to measure influenza activity than acute-respiratory infection (ARI). Specificity was assessed by comparing Austrian data on ILI incidence estimates with national data on ILI and ARI incidence of neighboring countries. The representativeness by age was assessed by comparing the weekly age-specific population samples (%) against the ECDC recommended sample size of at least 0.5% per age-group. We evaluated regional representativeness by examining the spatial distribution of the ILI-physicians.

RESULTS:
The ILI-incidence estimates (mean: 1054.8/100.000 population [range: 314.4-2519.3/100.000]) were similar to ARI incidence estimatesofGermany(mean:1164.1/100.000[range:609-2356/100.000]) and by 10 times higher than estimates of ILI- case reporting Czech Republic and Hungary. Overall, 43% of the weekly population samples from the ≥15 year-olds were below the 0.5% threshold compared to 8% of the weekly population samples from the 0-14 year-olds below this threshold. The sentinel ILI physicians represent mainly urban areas.

CONCLUSIONS:
The findings suggest low specificity and low representativeness by age and region of the clinical surveillance system. Cases fitting the ILI definition should be reported only. An increase of sentinel ILI-physicians representing the ≥15 year-olds and the rural population is required.

PRESENTED BY: DR YU-LUN LIU

20100174 Poster Surveillance

Keywords: Surveillance system, outbreak, Dengue

Evaluation of the National System of Surveillance in Health (SNVS) during an outbreak of Dengue. Catamarca, Argentina 2009

Agustina M. Marconi (1), J. Antman (2), C. Maidana (3)

AFFILIATIONS:
1. Epidemiology Direction. Surveillance Area. Health Ministery Argentina.
2. National System of Surveillaince in Health referent. Health Ministery Argentina.
3. Catamarca's Epidemiology Deparment Director.

BACKGROUND:
Dengue is a viral disease that affects over 100 million people yearly around the world. Between January and April 2009, Argentina notified 22037 cases of dengue. Until this outbreak dengue's surveillance was individual and immediate. The virus was isolated for the first time in Catamarca, a Northern Province of Argentina. From the beginning of the outbreak, the province created a nominal data base and notified to the official system of surveillance (SNVS). In addition to this, other numerical notification were implemented

METHODS:
This analysis of surveillance data compared cases declared to the official system with data generated alternatively from February to April 2009. For this evaluation Sensitivity was considered excellent if 90% or more cases were notified to the official system; acceptable if 89- 80% and poor if less than 79% were reported. Timeliness was considered excellent if the delay in the notification was 0 to 2 weeks; acceptable 3 weeks and poor 4 or more weeks. Predictive value positive (PVP), was considered optimum if the proportion of cases identified as such had the condition under surveillance in 80% or more of the notifications

RESULTS:
713 cases of dengue were notified in the SNVS; 4850 were included in the nominal province date base and 7901 were informed numerically by mail. Comparing SNVS with local data base, the sensitivity was 17, 2% (713/4137) and with numerical data, 10% (713/7188). Timeliness means was 5 weeks delay and PVP 27, 6% (197/713).

CONCLUSIONS:
Neither Sensitivity nor Timeliness or PVP were good during the outbreak. Due to these results, and in order to improve official data quality, Argentinean official surveillance system modified the way of notifying dengue during outbreaks from individual notification to numerical.

PRESENTED BY: DR AGUSTINA MARCONI

20100370 Poster Surveillance

Keywords: reporting completeness, hepatitis B, notifiable diseases

Extent of hepatitis B underreporting in the province of South Holland, the Netherlands.

Martijn Stip (1), C. M. Swaan (1), J.E. van Steenbergen (1)

AFFILIATIONS:

1. Preparedness and Response Unit, Centre of Infectious Disease Control, National Institute for Public Health and the Environment (RIVM), Bilthoven, the Netherlands.

BACKGROUND:

Notification of infectious diseases by physicians or diagnosing laboratories is essential for MHS to initiate control measures. There is little insight in completeness of reporting to the MHS in the Netherlands. We investigated the extent of hepatitis B underreporting on a local level, in the province of South Holland.

METHODS:

A literature study was performed to inventory research methods, and rates of hepatitis B underreporting abroad. Identified as most feasible method for the Dutch setting, a comparison of anonymised records was conducted between hepatitis B registers of diagnosing laboratories and notification registers at MHS in South Holland, registered between January 2005 and January 2010. Files of hepatitis B diagnoses, defined as positive HBsAg and/or IgM anti-HBs serology, were requested of the 21 diagnosing laboratories. Notification completeness was defined as the percentage of unique laboratory cases successfully linked with MHS files.

RESULTS:

The extent of underreporting for hepatitis B varies largely amongst studies and countries. 18 out of 21 studies reveal reporting completeness rates below 75%, also in low prevalence settings. In our study, 13 out of 21 laboratories (62%) responded, providing 3786 hepatitis B diagnoses in total, representing 2975 unique cases. All 5 MHS provided 3200 unique records in total. Postal code was an inconsistent identifier in file linking. Preliminary analysis shows variable reporting rates per laboratory region between 20% and 100%, with a weighted mean of 69.7% (SD 14.6%).

CONCLUSIONS:

The extent of hepatitis B reporting completeness on a regional level in the Netherlands is variable, and its causes require further investigation for improvement. Anonymised file linkage is a laborious method of assessing reporting completeness as the number of usable personal identifiers is limited.

PRESENTED BY: MRS CORIEN SWAAN

20100256 Poster Surveillance

Keywords: Streptococcus pyogenes, Climate, population surveillance, Great Britain

Geospatial analysis of potential environmental drivers for seasonality of invasive group A streptococcal infections in the UK

Rebecca Guy (1), K. L. Henderson (1), A. Efstratiou (1), N. Verlander (1), E. Sheridan (1), T. Lamagni (1)

AFFILIATIONS:

1. Centre for Infections, Health Protection Agency, London, UK

BACKGROUND:

The seasonal influx of group A streptococcal (GAS; Streptococcus pyogenes) infections has been historically documented and reiterated by many countries. To further understand this seasonal variation, environmental factors including daylight, temperature, relative humidity and precipitation were analysed alongside invasive GAS (iGAS) surveillance data to identify any relationships between these potential drivers.

METHODS:

Severe GAS disease was defined as isolation of S. pyogenes from a normally sterile site. Episodes were identified using Health Protection Agency national laboratory reporting data for cases diagnosed between 01.01.2004 and 31.12.2009. Environmental data were downloaded through http://www.nesdis.noaa.gov/. Analytical methods were trialled using iGAS infection and environmental data from one English region (population 5.7 million). Initial descriptive and correlation (Spearman's Rank) analyses were completed on aggregated data with incremental time lags fitted (≤20d).

RESULTS:

In total, 795 iGAS isolates were reported from the sample region from 2004-09, with distinct annual peaks in case numbers between March-April. The highest number of cases occurring when the monthly average for minimum/maximum temperature and relative humidity was 3°C/10.5°C and 84% respectively, Preliminary correlation analyses suggest evidence of inverse relationships between environmental factors (monthly averages) and monthly case numbers (in order of strength): minimum/maximum temperature (rs=-0.3/ rs=-0.2), relative humidity (rs=-0.04) and precipitation (rs=-0.03). Including a 20d lag between climatic data and case numbers increased the strength of all correlations to: rs=-0.5, rs=-0.5, rs=-0.2 and rs=0.2 respectively.

CONCLUSIONS:

Preliminary analyses suggest potential associations between climate and iGAS incidence. Additional environmental drivers and social factors affecting transmission, such as pollution and school term times, need to be examined. Analyses should be extended to examine data from other countries with varying climatic conditions to provide a breadth of values for examining potential explanatory variables.

PRESENTED BY: MISS REBECCA GUY

POSTER SESSION **ABSTRACTS**

20100339 Poster Surveillance

Keywords: antibacterial, residue, risk assessment, pork, surveillance

Human health risk assessment for antibacterial residues in Danish pork

F. M. Baptista, Alban, L. Olsen, A. M., Petersen, J. V.

AFFILIATIONS:
Danish Agricultural & Food Council, Axelborg, Axeltorv 3, DK-1609, Copenhagen, Denmark

BACKGROUND:
Use of veterinary medicinal products in food-producing animals might result in presence of residues in food products from these animals. Hence, residues might be transmitted to humans in whom they might have harmful consequences. A risk assessment was conducted aiming at evaluating the human health risks of antibacterial residues in Danish pork.

METHODS:
A qualitative risk assessment was conducted according to international guidelines. The release assessment evaluated the probability of release of antibacterial residues in Danish pork based on antibacterial consumption data in 2008. The exposure assessment estimated the probability of human exposure based on Danish residue surveillance data (2005-2009). Finally, the consequence assessment evaluated the potential public health consequences and likelihood of its occurrence based on a literature search. The following qualitative terms were used: high (event occurs very often), medium (event occurs regularly), low (event is rare but the occurrence is possible), very low (event is very rare but it cannot be excluded) and negligible (event is so rare that is not worth considering).

RESULTS:
There is a medium to high probability of release of tetracyclines, pleuromutilins, penicillins, macrolides, lincosamide/spectinomycin and sulfonamides/trimethoprim. The exposure assessment showed that the prevalence of residues in Danish pork is very low to negligible. The consequences were classified as negligible, except for penicillins (very low). Hence, the human health risk associated with antibacterial residues in Danish pork was estimated to be low to negligible, depending upon class of drug.

CONCLUSIONS:
Residue surveillance aims at assuring human health protection. This study shows that other reasons might apply including animal health and welfare, compliance with regulations and export requirements. Additionally, it might be important for increasing public perception of activities regarding food safety.

PRESENTED BY: DR FILIPA BAPTISTA

20100315 Poster Surveillance

Keywords: biological treatment plant, microbes, risk

Impact on the quality of life and health of residents living close to a wastewater treatment plant

E. Fragou, P.Ziros, C. Poulopoulou, A. Spyratou, I. Detorakis, A. Vantarakis

AFFILIATIONS:
Environmental Microbiology Unit, Department of Public Health, Medical School, University of Patras

BACKGROUND:
To investigate the effects on the quality of life among residents assigned close to a wastewater treatment plant. This paper examines the concentrations of airborne microorganisms in bioaerosols originating from wastewater treatment plants and the impact on the health stats, the general health perception and the overall life satisfaction. It also presents the general problems in the life quality faced by the people living close to a wastewater treatment plant.

METHODS:
We conducted a cohort study including 235 residents living within 500m radius in length by wastewater treatment plant. A standardized questionnaire completed by the participants for a period of approximately three months. Parallel to that, we investigated the concentrations of airborne microorganisms (total number of bacteria, E.coli, Hepatitis A virus) in bioaerosols originating from the wastewater treatment plant.

RESULTS:
Significantly increased risks for central nervous system symptoms such as headache, unusual tiredness, and concentration difficulties. Furthermore, an increased risk for respiratory and skin disease. A high rate of residents feels irritable and moody. Gastrointestinal symptoms were also found among residents and their children. Presence of pathogenic airborne microorganisms originating from wastewater treatment plant was confirmed.

CONCLUSIONS:
Clinical investigations are needed to determine the cause of the symptoms and further field studies are required to assess the real causal agents.

PRESENTED BY: DR APOSTOLOS VANTARAKIS

20100105 Poster Surveillance

Keywords: HIV, knowledge and attitudes, school-students,

Knowledge about, attitudes towards HIV/AIDS and behaviour of Lithuanian secondary school-students, 2009

Kestutis Rudaitis (1), S. Caplinskas (1, 2)

AFFILIATIONS:
1. Center for Communicable Diseases and AIDS, Vilnius, Lithuania
2. Mykolas Romeris University, Vilnius, Lithuania

BACKGROUND:
To evaluate and to assess knowledge about, attitudes towards HIV/AIDS and behavior peculiarities Lithuanian school-students during prevention campaigns.

METHODS:
Secondary school-students filled a questionnaire (25 questions) according to UNGASS 13th indicator during prevention campaign and evaluated their knowledge, attitudes and behavior peculiarities. The statistical analysis was conducted by SPSS.

RESULTS:
Respondents (N=469) were at average age 16.56±1.2, 45.4% – boys and 54.6% – girls. 11.5% of them answered correctly to all 5 questions related to the UNGASS 13th indicator (Young people; knowledge about HIV prevention). 36.9% would like to study with HIV (+) person, 23.9% could nurse people with HIV/AIDS and 41.2% would like to have an HIV (+) person in their neighbourhood. 30.7% have had sexual intercourse, of them 47.9% had their sexual debut prior to 15th years of age. 6.9% got tested on HIV during 12 months. 19.8% used psychoactive substances during 12 months. Answers related to personal health: 32.3% claimed having good health and 3.2% of all respondents felt unhealthy. 26.7% were satisfied with their life, 62.5% – happy enough and 1.3% were absolutely unhappy. 32% stated never feeling alone, 58.4% – sometimes, 2.3% very often. Most students listed as information source on HIV/AIDS the school (63.1%), and internet (35%).

CONCLUSIONS:
More girls as boys answered correctly to 5 questions related to the UNGASS 13th indicator (38% and 16% respectively, $p<0.05$). More boys (66%) than girls (34%) had sexual intercourse ($p<0.05$) and more boys (25.8%) had their sexual debut before 15th years of age (5.5% – girls, $p<0.05$). Boys (28.6%) more often used psychoactive substances during 12 months (12.5% – girls, $p<0.05$). No differences were noted in their happiness and loneliness.

PRESENTED BY: MR KESTUTIS RUDAITIS

20100030 Poster Surveillance

Keywords: heat wave, excess mortality, temperature, threshold

Measuring the impact of several heat waves on mortality in France, 1973–2007

Annamaria Antics (1, 2), Karine Laaidi (2), Mathilde Pascal (2), Vérène Wagner (2), Pascal Beaudeau (2)

AFFILIATIONS:
1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
2. Environmental Health Department, French Institute for Public Health Surveillance (InVS)

BACKGROUND:
The effect of heat wave (HW) on mortality is well documented. In France, a national HW prevention plan was implemented in 2004, after the exceptionally severe 2003 HW. We proposed a method to assess "a posteriori" impact of HW based on the excess mortality, in order to adapt management measures for the next season.

METHODS:
The method was tested between 1973-2007, from 1st June to 30 September addressing 19 cities. The HWs were defined according to the heat warning system, when two temperature indicators exceeded their respective thresholds.The excess mortality was estimated as the difference between observed and expected number of deaths during the HW period plus three days (study period). The expected number of deaths was calculated based on the mortality, tested on different reference periods, during the 5 preceding years.

RESULTS:
Among the 19 cities studied, 69 HWs were identified concentrated on nine years: 1975, 1976, 1983, 1987, 1989, 1990, 1991, 2003 and 2006. The number of HW days per city varied from three in Montpellier to 74 in Lyon. The year 2003 was outstanding with 168 HW days in 14 cities. For Paris the excess mortality reached more then 600 deaths in 1976 and 1100 in 2003. The estimation of the excess mortality stayed similar with the different reference periods and was correlated with the duration of HW and the mean of minimal and maximal temperatures recorded.

CONCLUSIONS:
The impact was lower in 2006, in Paris as well as in other cities, which may partly reflect the impact of the heat prevention plan. The method has proven to be useful in providing robust estimates of the HW mortality impact that helped tailoring management measures.

PRESENTED BY: DR ANNAMARIA ANTICS

POSTER SESSION **ABSTRACTS**

20100198 Poster Surveillance

Keywords: Emerging infectious diseases, surveillance, healthcare workers, outbreaks, prevention and control.

Monitoring healthcare workers' health for early detection of emerging infections: a Europe-wide surveillance system framework. Work Package 5 of the REACT project – "Response to Emerging Infectious Disease – Assessment and Development of Core Capacities a

Adamma Aghaizu (1), F. Ncube (1), W. Meeraus (2), M. Catchpole (1)

AFFILIATIONS:
1. Centre for Infections, Health Protection Agency, London UK
2. UCL Institute of Child Health, London, UK

BACKGROUND:
Recent global outbreaks (SARS and H1N1) demonstrate the need to develop and enhance existing infectious disease surveillance systems to detect emerging infectious diseases (EID) earlier. Healthcare workers (HCWs) are at high risk of acquiring infectious diseases of unknown aetiology, SARS being a prime example. Monitoring HCWs' health may provide an opportunity to discover newly circulating infections sooner, crucial for an improved public health response. This study aims to develop a framework for infectious disease surveillance among European HCWs.

METHODS:
Systematic review of the literature and collaborative workshops with European experts in infectious disease surveillance informed the development of the model. Europe-wide qualitative research using questionnaire and focus group methodology among frontline HCWs examined CDC evaluation criteria for the proposed system, including acceptability, flexibility and simplicity.

RESULTS:
Few reports exist on acute infectious disease surveillance systems for HCWs. Evidence from the literature, qualitative research and experts support the development of a syndromic surveillance system framework, triggered by clustered absenteeism and symptom reports of hospital staff. Questionnaire and focus group data indicate positive attitudes towards reporting and collecting information on symptoms. Guidelines for (i) pre-exposure education and training, (ii) alert condition and outbreak identification, (iii) data collection and (iv) a standardised protocol for outbreak investigation and higher level reporting were developed to support the framework.

CONCLUSIONS:
There is little evidence on the timeliness of detecting EID using HCWs as a sentinel population. However historically, EIDs have had a high impact on HCWs' health and surveillance concepts were well received among experts and study participants. Pilot studies in diverse healthcare settings will be necessary to fully assess the utility and value of the proposed framework.

PRESENTED BY: MISS ADAMMA AGHAIZU

20100210 Poster Surveillance

Keywords: Population surveillance, disease outbreaks, behavior

Perceptions, behaviours and knowledge of the Italian general population during the 2009 A/H1N1 flu pandemic

Gianluigi Ferrante (1), Sandro Baldissera (1), Valentina Minardi (1), Valentina Possenti (1), Pirous Fatehmoghadam (2), Stefania Salmaso (1)

AFFILIATIONS:
1. Centro Nazionale di Epidemiologia, Sorveglianza e Promozione della Salute (CNESPS), Istituto Superiore di Sanità, Roma
2. Servizio osservatorio epidemiologico, Azienda provinciale per i servizi sanitari, Trento

BACKGROUND:
Monitoring perceptions, behaviours and knowledge of the population during pandemic flu outbreaks is important to identify need for improving communication and to assess penetration of recommendations for prevention. The ongoing Italian Behavioural Risk Factor Surveillance System (PASSI) offered the opportunity to investigate opinions and behaviours of the general population regarding the A/H1N1 pandemic flu.

METHODS:
PASSI surveillance is carried out through monthly telephone interviews administered by personnel of the Italian Local Health Units (LHU) to a random sample of the resident general population 18-69 years. In fall 2009 a subsystem was set-up within the ongoing surveillance, involving >1/3 of the participating LHUs. Questions were added to the standard questionnaire exploring different issues related to the A/N1H1 pandemic flu.

RESULTS:
First data collection was at the peak of the epidemic (November 2nd, 2009) and was maintained till February 2010. A total of 4,244 subjects were interviewed. A decrease in all the indicators was observed across the four-months period: perception of high risk of being infected (from 46% to 17%); concern about the pandemic (40% to 12%); self-limitation of social contacts (17% to 8%); willingness to be vaccinated (34% to 11%). More than 90% knew the main hygienic measures to control the spread of influenza. The most frequently reported sources of information were GPs and paediatricians (81%).

CONCLUSIONS:
Changes in opinions and behaviours regarding the A/H1N1 flu followed the declining epidemic curve. Basic hygienic recommendations were well known by the general public. The role of doctors as reliable source of information was confirmed. Health staff should be the main target for timely scientific communication in emergency situations.

PRESENTED BY: DR GIANLUIGI FERRANTE

20100266 Poster Surveillance

Keywords: Congenital Toxoplasmosis; Diagnosis

STUDY CASES OF CONGENITAL TOXOPLASMOSIS (Pre and Post-natal diagnosis)

Ferreira I., Júlio C., Vilares A., Martins S., Gargate, M.J.

AFFILIATIONS:
National Institute of Health Dr. Ricardo Jorge, Av. Padre Cruz, 1649-016, Lisbon, Portugal. Email Address: m.joao.gargate@insa.min-saude.pt

BACKGROUND:
Congenital toxoplasmosis is acquired by the transplacental route after a primary infection during pregnancy. Its estimated incidence in Portugal is 1.1/000 births, and serological screening of pregnant women is recommended. Most infected newborns are asymptomatic, although they carry a risk of a late chorioretinitis. Issues like regarding the most adequate diagnosis, therapeutic regime and the follow-up of the situation remain obstacles in the assessment of this infection. This study provides an overview of the importance of the pre and postnatal diagnosis of newborns with congenital toxoplasmosis.

METHODS:
In our study we selected 10 cases that showed the importance of pre and post-natal diagnosis since 2000 until nowadays from the all over the country. The several samples (serum, amniotic liquid, placenta and umbilical cord blood) were performed by using serological and molecular methods and mice inoculation for the detection of congenital infection.

RESULTS:
From the 10 selected cases, 7 were congenital toxoplasmosis, 2 corresponded a confirmed maternal infection without foetal transmission and 1case was not confirmed maternal infection by seroconversion without foetal transmission.

CONCLUSIONS:
With this retrospective analysis we conclude that pre and postnatal laboratorial diagnosis is crucial because can early identify the infection which enables a correct therapeutic intervention consequently prevents the morbidity or mortality of the child.

PRESENTED BY: MRS IDALINA FERREIRA

20100282 Poster Surveillance

Keywords: surveillance school absenteeism

Surveillance of School Absenteeism in the Northern Region of Portugal – 2007/2008

Joana Dias (1), A. Correia (1)

AFFILIATIONS:
1. Public Health Department, Northern Regional Health Administration, Porto, Portugal

BACKGROUND:
Influenza is an important public health hazard with implications on allocation of health care services. Nowadays influenza still remains an important cause of morbidity and mortality. School-aged children are at high risk for influenza. Schools are therefore places which gather excellent conditions for the dissemination of influenza and other respiratory infections. During the periods of major influenza activity there is a significant rise in working and school absenteeism so school absenteeism data can be useful tool for influenza surveillance. The aims of this project were to explore if the school absenteeism is a potentially indicator of influenza activity and if so to model the baseline.

METHODS:
Integrated in the Contingency Plan for Pandemic Influenza Preparedness of the Northern region of Portugal, the Public Health Department of the Northern Regional Health Administration created an information system based on school absenteeism for early detection of influenza outbreaks since September 2006. This surveillance system included Elementary Schools (6-10 year-old students) and Middle Schools (11-15 year-old students).

RESULTS:
The number of children under surveillance in school year 2009-10 was 13646, representing 4.5% of the total number of children in the Northern region Elementary and Middle Schools. The maximum weekly school absenteeism rate was (5.74%) observed in the 48th week (2009) being 1.6 times higher than the maximum observed in previous years (3.48% – 1st week 2008) and corresponding to the peak of the pandemic Autumn-Winter wave.

CONCLUSIONS:
The school absenteeism data is a potential tool for influenza surveillance. However, the system has some limitations such as lack of specificity, timeliness of data and it doesn't provide a continuous source of data.

PRESENTED BY: MRS JOANA DIAS

POSTER SESSION **ABSTRACTS**

20100220 Poster Surveillance

Keywords: Influenza A Virus, H1N1 Subtype, intensive care units, epidemiology, hospital bed capacity

Two complementary approaches to the Danish national surveillance of influenza A (H1N1) patients in intensive care units, 2009–2010

S. Gubbels (1, 2), A. Perner (3), P. Valentiner-Branth (2), K. Mølbak (2)

AFFILIATIONS:
1. European Programme for Intervention Epidemiology (EPIET), European Centre for Disease Prevention and Control, Stockholm, Sweden
2. Department of Epidemiology, Statens Serum Institut, Copenhagen, Denmark
3. Intensive care unit, Rigshospital, Copenhagen, Denmark

BACKGROUND:
The pandemic influenza surveillance in Denmark was intensified during the 2009/2010 winter season. Data were analysed to monitor the burden on intensive care units (ICUs) in order to inform policymakers and timely detect shortages in ICU capacity.

METHODS:
Between week 46-2009 and week 11-2010 all 36 major ICUs in Denmark were encouraged to participate. The ICUs reported in two ways: online aggregated data and case-based data on paper. A case was defined as a patient with laboratory confirmed H1N1 infection or influenza-like illness after close contact with a confirmed case. The numbers of new cases was reported weekly, and during the peak daily. In addition, the number of cases present in ICU and the total number of beds occupied on Monday 8am were reported and used to calculate the proportion of beds used for influenza patients. The case-based reports contained demographic and clinical information on underlying illness, treatment and severity.

RESULTS:
All 36 ICUs reported. The aggregated system registered 93 new cases. The case-based system received information on 53 laboratory confirmed cases. Nationally, the proportion of beds used for influenza patients did not exceed 4.5%. Those hospitals with cases used a median of 11% of the bed capacity (range 3-40%). Forty-two of 52 patients for whom information was available (81%) received mechanical ventilation, 10/50 (20%) renal replacement therapy and 6/53 (11%) extracorporal membrane oxygenation. Seventeen of 53 patients (32%) died.

CONCLUSIONS:
The national capacity was able to absorb the number of cases, although the impact on some ICUs was substantial. Specific interventions added extra pressure on ICU facilities and staff. The combination of both systems proved to be useful to assess the situation in ICUs during the pandemic.

PRESENTED BY: DR SOPHIE GUBBELS

20100094 Poster Surveillance

Keywords: ambulance, syndromic surveillance, evaluation, public health informatics

Use of ambulance dispatch data for public health surveillance in British Columbia, Canada

Guanghong Han (1) and Bonnie Henry (2)

AFFILIATIONS:
1. Canadian Field Epidemiology Program, Public Health Agency of Canada, Ottawa, Canada
2. Public Health Emergency Services, British Columbia Centre for Disease Control, Vancouver, Canada

BACKGROUND:
The ambulance service in British Columbia is province-wide with a wide reach into the community. Therefore, ambulance service data may be useful for public health surveillance and an early indicator of emerging health-related events. We developed a syndromic surveillance system using ambulance dispatch data (ADD) and assessed the performance during the Vancouver 2010 Winter Olympic Games.

METHODS:
Dispatch codes assigned to each ambulance call were used to create syndromes of interest, including acute respiratory illness (ARI), gastrointestinal illness (GI), rash illness, temperature-related illness (TRI) and ingestion poisonings. Data from April 2004 to January 2010 were aggregated into one-week periods. Beginning on January 23, 2010, daily ADD were analyzed on a weekly basis and daily during the Olympic Games. Seasonal patterns and aberrations for each syndrome were compared with other data sources: influenza-like illness (ILI) sentinel physician surveillance (SPS), physician's billing data (PBD), laboratory reports, emergency department visits, calls to a nurse line and poisoning centre, and climate data from Environment Canada.

RESULTS:
The ADD displayed seasonal trends for ARI from 2004-2010 that were similar to ILI activity observed in PBD and SPS, including the 2009 H1N1 pandemic. Aberrations of TRI were correlated with episodes of extreme temperature of the same week. Trends for GI were not matched well with PBD and laboratory GI reports. Rash illness and ingestion poisonings could not be assessed due to differences in definition and limited data from other sources. During the Olympics, ADD demonstrated similar patterns with other data sources at the provincial level.

CONCLUSIONS:
Ambulance dispatch data were able to detect increasing activities of ARI and TRI in near real-time. More evaluation is needed to determine ongoing usefulness for public health surveillance.

PRESENTED BY: DR GUANGHONG HAN

20100261 Poster Surveillance

Keywords: tick-borne encephalitis, vaccination, recommendations, surveillance

VENICE survey of vaccine recommendations for tick-borne encephalitis (TBE) among EU/EEA countries revealed poor quality of TBE surveillance.

Aleksandra Polkowska (1), Pawel Stefanoff (1), Cristina Giambi (2), Daniel Levy-Bruhl (3), Darina O'Flanagan (4), Luca Dematte (5), Pier Luigi Lopalco (6), Jolita Mereckiene (4), Kari Johansen (6), Fortunato D'Ancona (2), and the VENICE project gatekeeper

AFFILIATIONS:
1. National Institute of Public Health-National Institute of Hygiene, Warsaw, Poland
2. Istituto Superiore di Sanità, Rome, Italy
3. Institut de Veille Sanitaire, Saint-Maurice, France
4. Health Protection Surveillance Centre, Dublin, Ireland
5. CINECA Consortium of University, Bologna, Italy
6. European Centre for Disease Prevention and Control, Stockholm, Sweden

BACKGROUND:

Despite availability of safe and effective vaccines, TBE is an increasingly recognized public health problem in Central and Northern Europe. From 1974 to 2003 a 400% increase was reported in TBE morbidity in Europe. High quality information from surveillance may improve the development of appreciate vaccine recommendations and show their impact. The aim of the present study was to summarize vaccine recommendations in European Union (EU) and European Economic Area (EEA) countries, in context of surveillance of human cases, and monitoring TBE endemic areas.

METHODS:

In July-November 2009, we carried out an online survey in EU/EEA countries. The survey included questions on TBE surveillance, methods used to ascertain endemic areas, vaccination recommendations, vaccine coverage and methods of monitoring of vaccine coverage.

RESULTS:

Out of 29 countries, 28 responded to the survey. Sixteen countries (57%) reported presence of TBE high-risk areas on their territory. Surveillance for TBE was implemented in 17 (61%) countries. But only in three countries (Belgium, Germany, Poland) a standardized case definition was used to classify cases reported to surveillance. Four countries (Austria, Czech Rep., Finland, Greece) accepted only laboratory confirmed cases. Endemic area existed in 16 countries (57%) including 14 countries where surveillance was set up, and two countries where no TBE surveillance existed. Only one country had an official definition of endemic area.

CONCLUSIONS:

In conclusion, despite most countries with TBE risk had surveillance, the quality of date were poor. Implementation of high quality TBE surveillance in all countries recording endemic areas is needed. Standardized TBE case definitions and standardized definition of endemic area are necessary to allow greater comparability of data across countries.

PRESENTED BY: MISS ALEKSANDRA POLKOWSKA

20100221 Poster Tuberculosis

Keywords: bovine tuberculosis, disease-free status, dairy farms, risk-based surveillance

2009–2010 Extraordinary surveillance plan for Bovine Tuberculosis in Veneto region (Northern Italy): is the free-status synonymous of healthy animals?

Tommaso Patregnani (1), A. Comin (1), M. Pacciarini (2), M. Brichese (3), A. Montagna (4), L. Bortolotti (1), K. Capello (1), L. Bonfanti (1)

AFFILIATIONS:
1. Istituto Zooprofilattico Sperimentale delle Venezie, Legnaro (Padova), Italy
2. Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna, Brescia, Italy
3. Unità di Progetto Sanità Animale e Igiene Alimentare – Regione del Veneto, Venezia, Italy
4. Area Sanità Animale Az-ULSS 15, Cittadella (Padova), Italy

BACKGROUND:

Since 2008 Veneto region (northeastern Italy) is officially free from bovine tuberculosis (BTB). However, from 2007 to 2009, BTB outbreaks in dairy farms were detected in the Province of Trento, bordering Veneto. To ensure the absence of the disease in the dairy farm of the Veneto and retain the free-status, the veterinary authorities enforced a BTB risk-based surveillance.

METHODS:

All the dairy farms (N=8753) were checked for any of the following risk factors:
1. Introducing cows from Trento province or other at-risk Countries (N=536)
2. Moving cows from/to high-risk Alpine pastures (N=97)
3. Moving cows from/to low-risk Alpine pastures and animal introduction from holding centres (N=42)
4. Moving cows from/to low risk Alpine pastures (N=379)
5. Moving cows from holding centres (N=445)

All the herds presenting risk factors 1 or 2 and those authorized to sell raw milk directly to the public (N=87) were controlled, whereas a sample of the herds with risk factors 3, 4 or 5 was extracted assuming 1% prevalence and 95% confidence. In the selected farms all the animals were tested using skin test (IDT) or gamma-interferon test. In addition, the animals sent to slaughterhouse were post-mortem inspected for presence of BTB lesions.

RESULTS:

All IDT tests resulted negative. However, a cow was positive at the post-mortem inspection. The testing of all the animals in the herd of origin (N=179) allowed the detection of additional 27 positive cows. Microbiological analyses identified Mycobacterium caprae genotype SB0418/ETR43534, the same involved in the outbreaks of the Trento Province.

CONCLUSIONS:

Animal trade from territories with BTB probably caused the outbreak and showed the need of additional surveillance based on the risk in order to maintain the disease-free status.

PRESENTED BY: DR TOMMASO PATREGNANI

POSTER SESSION **ABSTRACTS**

20100346 Poster Tuberculosis

Keywords: clinical score, severity, tuberculosis, chest x-ray, body mass index

Developing Clinical Scoring System of Tuberculosis Compared with Chest X-ray and Body Mass Index as Indicator of Severity

Didi Saputra Ramang (1), E Karyadi (2), NMD Suratih (3), N Darmawidjaja (4), T. A. Pakasi (5)

AFFILIATIONS:
1. Student Association for Medical Research and Study, Student Council of the School of Medicine University of Indonesia, Jakarta
2. South East Asia Minister of Education Organization Tropical Medicine, Regional Center for Community Nutrition, University of Indonesia, Jakarta
3. Department of General Medicine WZ. Johannes General Hospital, Kupang
4. Department of General Medicine Kefamenanu General Hospital, North Central Timor,
5. Department of Community Medicine, School of Medicine University of Indonesia, Jakarta

BACKGROUND:
Severity of tuberculosis (TB) needs a specific intervention, i.e. micronutrient supplementation. Traditionally, severity is indicated using chest radiographs. However, the facility in the remote area is often lacking. The study aimed to develop clinical scoring system as indicator of severity, and furthermore would be used to determine the needs of specific interventions.

METHODS:
The study design was cross sectional as a baseline part of a nutrition interventional study implemented in East Nusa Tenggara Province, Indonesia. All eligible TB patients were questioned for symptoms, underwent physical examination, body mass index (BMI) and chest x-ray (CXR). A clinical scoring system was developed, indicating advanced TB condition compared with BMI and surface area of the CXR.

RESULTS:
Data collection were done in 2004-2006 included 300 patients. Scoring system was developed based on symptoms of fever, hemoptisis, anorexia, night sweating, dyspnoe, malaise, loss weight, loss appetite, lymphadenopathy and abnormal breath sounds. Median surface lesion area of the CXR was used to determine severity. Prior prevalence of severe TB was 43.7% for both indicators BMI (≤16 Kg/m2) and CXR (≥140cm2). Mean clinical score was 7.6±2.2 and median was 7(6-9). Using the receiver operating curve (ROC), the area under the curve of the clinical score was 0.608 (95% CI 0.53-0.68). The calculated cut off point was 7.5 (sensitivity 0.54, specificity 0.597) and could determine 38.7% the severity of TB.

CONCLUSIONS:
The prevalence of severe TB using the clinical score was almost similar compared with CXR lesion areas and BMI. However, further modification is needed to improve the sensitivity and specificity of the scoring system.

PRESENTED BY: MR DIDI SAPUTRA

20100230 Poster Tuberculosis

Keywords: Tuberculosis, European Union, EPTB, TB sites, surveillance

Extrapulmonary Tuberculosis reported in 2007 and 2008 in the European Union (EU) and European Economic Area (EEA).

V. Hollo (1), Csaba Ködmön (1), E. Huitric (2), A. Amato-Gauci (1), D. Manissero (2)

AFFILIATIONS:
1. Surveillance Unit, European Centre for Disease Prevention and Control, Stockholm, Sweden
2. Scientific Advice Unit, European Centre for Disease Prevention and Control, Stockholm, Sweden

BACKGROUND:
Tuberculosis can involve any organ system in the body. While lungs are the most common site for disease presentation, extrapulmonary tuberculosis (EPTB) is also frequent clinical problem. The recent HIV/AIDS pandemic has brought EPTB into focus as HIV infected people can get EPTB rather than Pulmonary TB. Since 2008, ECDC jointly with the WHO Regional Office for Europe have been responsible for TB Surveillance for WHO European Region.

METHODS:
The data about the site of TB was collected through routine surveillance. The proportion of EPTB cases was extracted to assess the notified data in 2008. Treatment outcome of the 2007 cases at 12 months were also analysed.

RESULTS:
TB notifications from EU and EEA countries have been submitted to TESSy (The European Surveillance System) since 1st January of 2008. Further breakdown by sites of EPTB is possible for 24 countries. were TB pleurisy (39.3%) and TB lymphadenitis (28.9%) were reported as most affected sites of TB after pulmonary TB in 2008. The 27 countries notified 17 126 exclusive EPTB cases (20.7% of all). 67.3% of tested EPTB cases in 2008 got culture confirmation. Culture-status of 48.6% was reported as unknown, indicating the large amount of EPTB cases diagnosed by clinical findings only. Among confirmed EPTB cases notified in 2007, the treatment success rate was 65.4%, which is clearly lower from confirmed pulmonary TB cases (73.4%).

CONCLUSIONS:
Substantial number of unknown lab status of EPTB notification in EU/EEA countries could be a reflection of difficulties in diagnosing and reporting of EPTB in Member States. Despite this, the results confirm that EPTB is an existing problem in the EU/EEA, thus calling for improved and adapted monitoring system.

PRESENTED BY: DR VAHUR HOLLO

20100338 Poster Tuberculosis

Keywords: Tuberculosis treatment adherence, tuberculosis treatment default, non-adherence to treatment, Plateau state, Nigeria.

Factors affecting adherence to Tuberculosis treatment in Plateau state; Nigeria, 2007–2008

Ibrahim L. M. (1), Nguku P. (1), Idris S. H. (2), Abari S. A. (3)

AFFILIATIONS:
1. Nigerian Field Epidemiology and Laboratory Training Programme, Abuja, Nigeria
2. Department of community Medicine Ahmadu Bello University Zaria, Niegria
3. Epidemiology Unit Federal Ministry of Health Abuja, Nigeria

BACKGROUND:
Interruption of tuberculosis treatment leading to inadequate and incomplete treatment had been implicated as one of the major threats against the successful control of tuberculosis and as contributor to the emergence of MDR-TB. Review of outcome of treatment in Plateau state, Nigeria, revealed that 627 (15%) of the 4,113 patient registered between 2001 and 2006 interrupted treatment. We studied the factors affecting adherence to tuberculosis treatment to develop hypotheses for an analytical study on the causes of interruption of treatment in the state.

METHODS:
We traced and interviewed patients aged ≥15 years using an interviewer administered structured questionnaire. Information on reasons for interrupting treatment was generated. Patients interrupting treatment for ≥2 days in the intensive phase or ≥2 weeks in the continuation phase were included in the study.

RESULTS:
Of the 144 patients interviewed, 62% were males. The mean age was 37.7 years (±14.4 years). Interruption of treatment occurred in 67% and 33% of the cases during the continuation phase and the intensive phase, respectively. The major reasons for interrupting treatment were feeling of wellness (24.8%), travel without notification of the health worker (21.4%), lack of knowledge on duration of treatment (8.3%) and lack of transport fare (8.3%). Other reasons given were absence of health workers (6.9%), lack of drugs (2.1%) and delay of laboratory results (2.8%)

CONCLUSIONS:
Patients' educations by service providers on duration of treatment and on the need to continue treatment when symptoms wane off are crucial to ensure adherence to treatment. Further research is needed to assess the impact of economic factors on compliance (e.g., travel fare to reach service).

PRESENTED BY: DR LUKA IBRAHIM

20100158 Poster Tuberculosis

Keywords: tuberculosis, Directly Observed Treatment Short Course, DOTS, treatment adherence, Greece

Implementation and efficacy of a modified DOTS programme in patients with tuberculosis and their household contacts in a region of Western Greece

Eleni Jelastopulu (1), G. Tsiros (1, 2), N. Charokopos (3), I. Spiliopoulou (4), K. Chrysanthopoulos (5)

AFFILIATIONS:
1. Department of Public Health, School of Medicine, University of Patras, Greece
2. Rural Medical Dispensary of Chavari, Health Center of Gastouni, Greece
3. Division of Pneumology, Department of Internal Medicine, General Hospital of Pirgos, Greece
4. Department of Microbiology, School of Medicine, University of Patras, Greece
5. Department of Internal Medicine, University Hospital of Patras, Greece

BACKGROUND:
The WHO Directly Observed Treatment Short Course (DOTS) strategy was launched in 1994 to address the burden of tuberculosis (TB) globally and to overcome problems of adherence of TB treatment. The purpose of this study was to implement a piloting DOTS programme in a region of Western Greece and to assess the efficacy of the strategy in newly detected pulmonary tuberculosis cases and their household contacts.

METHODS:
In the period 2006-2009 all newly detected and confirmed TB cases in a prefecture of W-Greece were enrolled in the study and referred to a general physician, who closely monitored the treatment using the DOTS strategy. Home visits were conducted in both, newly detected cases and past treated cases (identified from the hospital's records), who acted as controls. Comparison of various data (laboratory findings, treatment outcomes, questionnaire-based parameters, on-site recorded conditions) was performed between cases and controls and their household contacts.

RESULTS:
A total of 195 subjects were included, 13 newly diagnosed cases with 30 household contacts and 41 past treated TB cases with 111 contacts. Of all new cases, 84.6% were successfully treated, 7.7% died, 7.7% were lost to follow-up and none had interrupted the treatment. Tuberculosis occurred mainly in men (77%, mean age 45 years) while 31% belonged to vulnerable groups. Chemoprophylaxis was administered to 13.3% of household contacts, whereas among household contacts of past treated 12.6% received chemoprophylaxis and 6.3% a complete antituberculosis regimen because of developing active tuberculosis.

CONCLUSIONS:
The pilot implementation of DOTS in Ilia demonstrates feasibility in managing new pulmonary tuberculosis cases. The outcomes indicate higher efficacy in treatment and prevention of TB in comparison to conventional approach of TB management.

PRESENTED BY: DR ELENI JELASTOPULU

POSTER SESSION **ABSTRACTS**

20100353 Poster Tuberculosis

Keywords: Directly Observed Treatment Short Course (DOTS) Hospital DOTS linkage(HDL),

Inproving Tuberculosis control in Hospitals through Hospital DOTS linkage (HDL) implementation in Nigeria

Dr Odume Bethrand Brian

AFFILIATIONS:
Dept of Family Medicine, National Hospital Abuja and National Tuberculosis and Leprosy Control Programme, Federal Ministry of Health, Nigeria

BACKGROUND:
Improving TB Control in Hospitals through Hospital DOTS linkage (HDL) implementation in Nigeria. Increasing number of TB patients are being managed in hospitals across Nigeria. These patients often do not have the benefit of being managed in line with the national guidelines and are not notified to the NTBLCP. The HDL initiative was adopted by the NTBLCP in mid 2008 to address these problems.

METHODS:
Implementation is carried out using the National HDL Plan. 12 hospitals from 6 geo-political zones were selected for implementation. Training of key medical staff of these hospitals using the ISTC Training Modules has taken place and Hospital DOTS Committees (HDC) have been formed in the hospitals.

RESULTS:
12 tertiary hospitals in Nigeria are presently implementing HDL activities. Hospitals in Anambra, Enugu, Imo and Ebonyi States in the south eastern part of the country where HDL has been in practice since 2008 contributed 50%, 34.9%, 50% and 80% of total TB case finding in the states respectively in 2009.

CONCLUSIONS:
With an increasing number of TB patients in Nigeria being detected in hospitals, the future of TB control in Nigeria depends on an effective implementation of Hospital DOTS linkage activities.

PRESENTED BY: MR BETHRAND ODUME

20100061 Poster Tuberculosis

Keywords: Tuberculosis, Diagnosis, Decision Tree

Is a decision tree helpful to diagnose pulmonary tuberculosis in health care facilities, in Niger? A cross-sectional study.

Marie-Julie Thomasson (1), Jean-François Jusot (2), Ousmane Tchousso Zatao (3), Eric Adehossi (4)

AFFILIATIONS:
1. Faculté de médecine de Bordeaux 2, UFRII, 146 rue Leo Saignat, 33076 Bordeaux cedex, France
2. Centre de Recherche Médicale et Sanitaire, PO Box 10887, Niamey, Niger
3. Service de pneumo-phtysiologie, Centre National de la lutte contre la tuberculose, Niamey, Niger
4. Hôpital National de Niamey, Pavillon F, Avenue Nelson Mandela, Niamey, Niger

BACKGROUND:
Pulmonary tuberculosis remains a major public health problem in Niger. Using clinical presentation could help health care workers to detect with higher suspicion tuberculosis patients. The aim of this study was to find, among subjects with a chronic cough, clinical symptoms helping to identify patients with the diagnosis of pulmonary tuberculosis or not.

METHODS:
A cross-sectional study was carried out between February 23, 2009 and May 29, 2009, in the Centre National Anti-Tuberculeux of Niamey. All subjects included were interviewed using a standardized questionnaire. A clinical examination and a chest X-ray were performed by two trained physicians. A decision tree was built for medical decision making. The diagnostic value after classification done by clinical variables was estimated by sensitivity, specificity, positive and negative likelihood ratios. The results of three sputum examination defined the gold standard.

RESULTS:
Among 419 subjects, 54.9% were found to be smear-positive. The risk to get a positive-smear decreased with the age and increased with a mucopurulent sputum and presence of night sweats. These risk factors were retained in the decision tree with the results of the pulmonary auscultation. The decision tree allowed getting an overall sensitivity estimated at 70.4% and specificity at 63.5%. For subjects under 43 years old, the overall sensitivity of the tree decision reached 86.6% and specificity 39.6%. From 43 years old and more, the sensitivity and the specificity were respectively 30.3% and 90.9%.

CONCLUSIONS:
The health care workers practising in isolated health care centres in Niger are devoid of diagnosis means to suspect pulmonary tuberculosis. This work allowed building a decision tree which could be helpful in managing suspected cases of pulmonary tuberculosis.

PRESENTED BY: MR JEAN-FRANÇOIS JUSOT

20100012 Poster Tuberculosis

Keywords: Tuberculosis, MDR-TB, XDR-TB, surveillance

Multidrug- and extensively drug-resistant tuberculosis: a persistent challenge in the European Union European Union and European Economic Area

Csaba Ködmön (1), V. Hollo (1), E. Huitric (2), A. Amato-Gauci (1), D. Manissero (2)

AFFILIATIONS:
1. Surveillance Unit, European Centre for Disease Prevention and Control, Stockholm, Sweden
2. Scientific Advice Unit, European Centre for Disease Prevention and Control, Stockholm, Sweden

BACKGROUND:
Drug resistance to isoniazid and rifampicin (defined as Multi-Drug Resistance, MDR), the two most potent first-line antimicrobial drugs for the treatment of tuberculosis (TB), is a persisting global problem. MDR-TB and XDR-TB are a threat to TB control and elimination, also within the borders of the Member States of the EU/EEA.

METHODS:
Resistance data on the anti-tuberculosis drugs were collected through routine surveillance. The proportion of culture-positive cases and the cases with Drug-Susceptibility Testing (DST) results were extracted to assess the interpretability of DST data. The used denominator was the number of cases with DST results. Changes in the number of XDR-TB among MDR-TB cases between 2007 and 2008 and treatment outcome of MDR-TB cases at 24 months were analysed.

RESULTS:
In 2008, the proportion of new and retreatment MDR-TB cases in the 25 reporting countries was 6.0%. In 2007, 68 (6.1%) and in 2008, 90 (7.3%) XDR-TB cases were reported among all MDR-TB cases respectively. In 2006, the treatment success rate among MDR-TB cases was 30.9%, a level significantly lower than for non-MDR-TB (78%).

CONCLUSIONS:
Reporting completeness, culture-positivity rate (57.5%) and DST coverage (66.4%) remain suboptimal in the EU/EEA. The high proportion of MDR-TB among new TB cases could be a reflection of suboptimal infection control, whilst the high percentage among retreatment cases is suggestive of poor case holding and follow-up, or also be a reflection of past suboptimal use of TB regimens. The 32.4% (22 cases) increase in reported XDR TB cases is difficult to interpret as this could be a result of improved second-line DST coverage. Despite this, the results confirm that XDR-TB is established within the EU/EEA borders.

PRESENTED BY: MR CSABA KÖDMÖN

20100194 Poster Tuberculosis

Keywords: not working, low education, delayed presentation, severity tuberculosis

Severity of Tuberculosis and Factors Related to Delayed Presentation to Primary Care Services: a study in East Nusa Tenggara, Indonesia

Surya Marthias (1), N. Anasy (1), N.A. Rahmawati (1), N. Nitiveritas (1), I. Desrizal (1), E. Karyadi (2), T.A. Pakasi (2, 3).

AFFILIATIONS:
1. Student Scientific and Research Organization, Student Council of the School of Medicine University of Indonesia, Jakarta, Indonesia
2. South East Asia Minister of Education Organization Tropical Medicine – Regional Center for Community Nutrition, School of Medicine University of Indonesia, Jakarta, Indonesia
3. Department of Community Medicine, School of Medicine University of Indonesia, Jakarta, Indonesia

BACKGROUND:
Delayed diagnosis and treatment of tuberculosis (TB) leads to more severe illness and increases its transmission in the community. Factors related to the delayed presentation of TB patients to primary health care are needed to improve TB program delivery.

METHODS:
A cross sectional analysis at the baseline part of a community based intervention study, was implemented. The study was done in East Nusa Tenggara Province, Indonesia, covering two rural areas in the mainland, one surrounding islands within one district, and one municipal area. Delayed presentation was described in a scoring system of symptoms, physical examination, and duration of the symptoms indicates severity of TB. Data on socio demographic and result of positivity sputum acid fast bacilli (SS+) were also obtained.

RESULTS:
Data were collected in 2003-2006, 300 TB patients were eligible in the study, in which 232 had complete data for further analysis. The patients were male (62.9%), aged 15-25 years (37.5%) and living in the city (39.7%). They were married (53.4%), working (51.7%) but low economic (94.8%) and low education (34.1%) level. Score severity was found among 88% of the patients with SS+3 was 42.7 %. Related factors to severity of TB were not working (OR 3.2, 95% CI 1.3-7.81), living in remote surrounding islands in Kabupaten Kupang (OR 5.0, 95%CI 1,4-18.2), and low education (OR 3.7 95% CI 1.13-12.13).

CONCLUSIONS:
We concluded that in such remote areas of Indonesia, geographical constraint is the most important factors to the delayed presentation, following the low economic level (not working) and low education. Therefore, such intervention to bring the service closer is of importance and should be considered by the health authority to deliver TB program.

PRESENTED BY: MR SURYA MARTHIAS

POSTER SESSION **ABSTRACTS**

20100111 Poster Vaccine preventable diseases

Keywords: Haemophilus influenzae, invasive disease, Hib vaccine, serotypes, antibacterial susceptibility, surveillance study

Changes in the epidemiology of Haemophilus influenzae invasive disease, before and after the introduction of the Hib vaccine in Portugal

P. Bajanca-Lavado, C. Betencourt on behalf of ARSIP

AFFILIATIONS:
1. National Institute of Health Dr. Ricardo Jorge,
2. National Reference Laboratory for Respiratory Infections to Bacterial Agents,
3. Infeccious Disease Department

BACKGROUND:
Haemophilus influenzae (Hi) is responsible for a number of human diseases ranging from chronic infections to meningitis. Most of the isolates are non-encapsulated (NC), although it is known until now six serotypes (a-f). Hi serotype b (Hib) vaccine was obligated in Portugal since 2000, for children under five years. Our aim is to analyse the differences of Hi invasive disease before and after the introduction of the vaccine.

METHODS:
During a surveillance study we collected 104 invasive Hi isolates from 1989-2000 and 130 from 2001-2009, from several Hospitals in Portugal. Fifty two strains (50%) were isolated from children (<18 years) in the first period and 49 (37.7%) in the second period. Identification of Hi was confirmed by standard procedures. Susceptibility testing was performed by a microdilution assay, according to CLSI. B-lactamase production was determined with nitrocefin. Serotyping was performed by PCR.

RESULTS:
Production of β-lactamase was as follow: 28.8% in the period 1989-2000 and 11.5% between 2001-2009. Five β-lactamase negative strains (4.3%), all isolated in the pos-vaccine period (MIC to ampicillin and clavulanic acid of 2 mg/L) are BLNAR possible. Serotype characterization showed, in the pre-vaccine period, 68.3% of Hib and 31.7% of NC and after the introduction of the vaccine, 11.6% of Hib, 78.3% of NC, and 10.1% of non-b-type.

CONCLUSIONS:
Considering the two periods we observe a rise in NC strains and a decline in serotype b, in invasive disease in Portugal. Non-b-type strains were characterized only after the introduction of the vaccine. We document changes in the epidemiology of Hi invasive infections after the introduction of the Hib vaccine, which demonstrates the need for a continuous surveillance, especially for public health purposes.

PRESENTED BY: DR MARIA PAULA BAJANCA-LAVADO

20100017 Poster Vaccine preventable diseases

Keywords: pertussis, whooping cough, outbreaks, surveillance, epidemiology, vaccination

Contribution of outbreaks to the disease burden of Pertussis in Eastern Germany 2004–2008

Julia Hermes (1, 2, 3), W. Hellenbrand (2)

AFFILIATIONS:
1. Postgraduate Training for Applied Epidemiology (PAE, German FETP)
2. Department for Infectious Disease Epidemiology, Robert Koch Institute, Berlin, Germany
3. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden

BACKGROUND:
Pertussis is statutorily notifiable in 5/16 German states. Despite routine childhood vaccination, 34 cases/100,000 inhabitants affecting all ages were recorded in 2008. The contribution of outbreaks to the disease burden is unknown. Therefore, we compared sporadic (SC) and outbreak-related (OC) pertussis cases to identify risk groups and evaluate vaccination recommendations.

METHODS:
We analysed SC, OC and pertussis outbreaks (classified as small (2-4 cases) or large (≥5 cases)) notified from 2004-2008, focussing on demographics, laboratory confirmation (PCR, culture, pertussis-specific antibody detection) and vaccination status (fully vaccinated (FV)=last dose >3weeks and <1-10 years before disease onset, depending on age and total number of doses).

RESULTS:
Overall, 3012/19,740 (15.3%) notified cases belonged to 692 outbreaks with 2-81 cases. From 2004-2008, the proportion of OC decreased from 21.6% to 10.5% (ptrend<0.001). Most outbreaks were small (77%). Small outbreaks occurred most frequently (73.8%) in households, large outbreaks in schools (60.2%). The gender distribution of OC and SC was similar (60% females), but proportionately more OC were <20 years (58.6% vs.30.8% SC, p<0.001). Among cases 94.6% were lab-confirmed and 92.2% of outbreaks had ≥1 lab-confirmed case. The proportion FV among OC and SC was similar for children (49.5% vs. 47.0%) as well as adults (both 5.3%) (26.4% cases with missing vaccination data excluded). Among FV cases, median time since last vaccination was 5.5 years (22d-9.9y).

CONCLUSIONS:
The proportion of outbreak-related pertussis cases in Germany was low and decreased from 2004-2008. Fully vaccinated children were affected equally by outbreak-related and sporadic pertussis, suggesting waning of vaccine-induced immunity after 5 years. Most adult pertussis cases were not fully vaccinated. Our results support booster vaccination in children and adults to reduce B. pertussis circulation.

PRESENTED BY: DR JULIA HERMES

20100154 Poster Vaccine preventable diseases

Keywords: yellow fever, vector control, immunization

Control measures to prevent human cases of yellow fever. Misiones, Argentina

Agustina M. Marconi (1), S. Besold (2)

AFFILIATIONS:
1. Surveillance Area, Epidemioloy. Ministery of Health, Argentina
2. Primary Health care referent. Guaraní Deparment. Misiones, Argentina

BACKGROUND:
Yellow fever (YF) is a preventable viral fever transmitted by infected Aedes mosquitoes. Monkey's epizootic is an early sign of virus circulation. Mortality rate is over 50% in severe cases. Every year, South America reports more than 300 sylvatic cases. Between January and April 2008, after 42 years, 8 human cases were confirmed in Misiones, Argentina. In October 2008, local health authorities notified the finding of death monkeys in Guaraní Department, Misiones. An epidemiology field investigation took place in order to determine viral circulation and to implement control actions.

METHODS:
This analysis describes actions carried out between October and December 2008 in "El Soberbio "City, Guaraní Department, Misiones, Argentina. Suspected case was defined as "Any patient showing acute onset of fever of unknown origin, with less than 7 days of evolution, without previous vaccination". Active surveillance was implemented. Confirmed case was defined as the one with yellow fever virus isolation or presence of specific IgM. .Massive preventive vaccination campaign was organized estimating susceptible population with previous monitoring and according to Panamerican Health Organization (PAHO) criteria of target population. Search of dead primates and investigation of viral presence continued. Vector control was intensified in the urban area.

RESULTS:
During the analyzed period, 2 suspected cases were reported, resulting negative. By implementing massive immunization, 2578 yellow fever vaccine dose of the 2487 estimated were administered, increasing population coverage form 85% to more than 95%, considered as secure. Epizootic was confirmed in death monkeys. Vector infestation indices were reduced.

CONCLUSIONS:
Viral circulation was confirmed among monkeys. No human case was confirmed. The immunization coverage reached was considered secure. Continued vector control activities and maintaining high level of vaccination was recommended.

PRESENTED BY: MR AGUSTINA MARCONI

20100054 Poster Vaccine preventable diseases

Keywords: hepatitis B, immigration

DESCRIPTIVE EPIDEMIOLOGY OF ACUTE HEPATITIS B INFECTIONS IN BARCELONA, 2003–2009.

C. Tortajada, MJ Santomà, E. Masdeu and J. Caylà.

AFFILIATIONS:
Department of Epidemiology. Public Health Agency of Barcelona

BACKGROUND:
Vaccination for hepatitis B is included in the vaccine schedule for infants. For adults selective vaccination is recommended, there is not explicit recommendation for immigrants vaccination. The increasing arrival of immigration has influenced the epidemiology of acute hepatitis B infection. Objective:To calculate incidence of acute cases of hepatitis B (acute hepatitis symptoms and IgM VHBc+), to describe the sex and age distribution and to characterize the risk exposures for immigrants and natives in Barcelona from 2003 to 2009.

METHODS:
Descriptive analysis for all cases of acute hepatitis B reported to the Epidemiology Service of the Public Health Agency of Barcelona. Annual incidence rates per 100.000 inhabitants for acute cases were calculated. Categorical variables are reported as percentages and continuous variables as mean and CI 95%.

RESULTS:
A total of 439 cases were reported. Among those, 305 fulfil case definition. Fifty-five cases were excluded due to incomplete information. Finally 250 cases were included. 107(42%) were immigrants and 143(57%) were natives. Range of annual incidence was 1-2 cases/100.000 for natives and 4-10/100.000 for immigrants. Among natives 80% were men and 78% among migrants. Median (CI 95%) age was 36(33-39) and 30(28-33) respectively. In 69 immigrants time of residence in Barcelona before symptoms onset was analysed, 59 cases out of 69(86%) initiated symptoms after 6 months of residing. Main risk exposures were: sexual in 42% of natives and 40% of immigrants; medical procedures in 14 % and 10% of cases respectively; IDU in 2% and 6% of cases respectively.

CONCLUSIONS:
Incidence rates were higher among immigrants. Most of the transmission occurred after arrival in Barcelona. Preventive intervention focus on this collective could help to reduce incidence of acute hepatitis B

PRESENTED BY: DR CECILIA TORTAJADA

POSTER SESSION **ABSTRACTS**

20100019 Poster Vaccine preventable diseases

Keywords: Epidemiology.Chickenpox, Jordan, Reporting, Death, Vaccine

Epidemiology of chickenpox in Jordan from 2004 to 2008

1. Ghazi.F. Sharkas, 2. I. Iblan, 3. N. Qasim, 4. S. Abdalla, 5. R. Haddadeen

AFFILIATIONS:
1. FETP resident, MOH, Amman, Jordan
2. FETP resident, MOH, Amman, Jordan
3. FETP resident, MOH, Amman, Jordan
4. Head of surveillance department, MOH, Amman, Jordan
5. FETP director, MOH, Amman, Jordan

BACKGROUND:
Chickenpox is a very contagious disease; the illness is usually mild in children but but the risk of complications was reported to be higher in adolescents, adults and immune compromised people. Three deaths occurred in 2008 for adult victims. This study aimed to evaluate chickenpox epidemiology from 2004 to 2008, and to discuss whether chickenpox vaccine is recommended to be included in the national immunization program

METHODS:
A descriptive epidemiological study was done. The study utilized surveillance data of chickenpox from the annual reports of the communicable diseases directorate. Data analysis with tables and graphs creation were performed using excel program.

RESULTS:
Chickenpox incidence was 27, 15.2, 12.2, 15.2, and 19.4/10,000 in 2004,2005, 2006, 2007 and 2008 respectively) with a propagated three year period epicurve. There was no apparent difference between males and females. Chickenpox reporting rate is highest in the south region of Jordan from 2004-2008 (average 34.6%).Reported chickenpox showed apparent seasonality. The most commonly reported age groups (cumulative 2004-2008) were (5 – 9 years) 40.1% then (1-4 years) 27.4%. Children below 1 year and adults above 20 were rarely reported to have disease. The same age groups were dominant by regions. Three cases of death occurred in 2008, all of them were males aged 32, 36 and 40 years old, all were in the south region with diagnosis confirmed by the reference lab NAMURO 3.

CONCLUSIONS:
Chickenpox in Jordan mainly affects children below 10 years of age. Morbidity and mortality of chickenpox can be reduced by the inclusion of chickenpox vaccine in the national immunization program. Further study of chickenpox epidemiology in the south region is recommended.

PRESENTED BY: DR GHAZI SHARKAS

20100257 Poster Vaccine preventable diseases

Keywords: invasive pneumococcal disease, surveillance, meningitis, vaccination

Epidemiology of invasive pneumococcal disease and changes in the surveillance system in Poland, 1999–2009

Aleksandra Polkowska, Pawel Stefanoff

AFFILIATIONS:
National Institute of Public Health – National Institute of Hygiene

BACKGROUND:
Surveillance of pneumococcal infections was implemented in Poland in 1999. Currently, vaccine against S. pneumoniae is included in the Polish mandatory immunisation programme only for high risk groups. The aim of this study was to describe the main features of invasive pneumococcal disease (IPD) epidemiology in 1999-2009, in order to better target vaccine recommendations and monitor vaccine impact.

METHODS:
We performed a retrospective analysis of data coming from two sources. Data on pneumococcal meningitis were collected in an aggregated way during 1999-2005. Since 2005, case based data on whole-spectrum IPD were collected. The case definition compatible with EU 2002 was introduced in 2005, and was updated in 2009 to the translation of new EU 2008 case classification (only confirmed cases). Data on serotypes from the reference laboratory are currently not reconciled with routine case reports.

RESULTS:
From 1999 to 2009, 1,251 cases of pneumococcal meningitis occurred in Poland. The incidence rate of pneumococcal meningitis has increased from 0.23 per 100 000 in 1999 to 0.43 in 2009. The incidence of IPD ranged from 0.46 per 100,000 in 2005 to 0.72 in 2009. The highest incidence of IPD was observed in young children aged 0-4 years (2.23 per 100000). The highest case fatality ratio was observed in people above 65 year (36.9%). The most common clinical diagnosis were meningitis (63% cases), septicaemia (39%), and pneumonia (18%). Before the implementation of EU 2008 case definition, the average proportion of confirmed cases was 88%.

CONCLUSIONS:
In conclusion, pneumococcal disease is a growing public health problem in Poland. To base the decision on universal vaccination against IPD, improvement of surveillance quality will be necessary, including reliable information on pneumococcal serotypes.

PRESENTED BY: MISS ALEKSANDRA POLKOWSKA

20100157 Poster Vaccine preventable diseases

Keywords: hepatitis, HBV, vaccination, acceptance, Greece

Evaluation of knowledge and acceptance of hepatitis B vaccine among healthcare workers in Western Greece

Katerina Karaivazoglou (1), C. Triantos (1), M. Lagadinou (1), C. Bikas (2), M. Michailidou (1), K. Thomopoulos (1), V. Nikolopoulou (1), C. Gogos (1), E. Jelastopulu (3)

AFFILIATIONS:

1. Department of Internal Medicine, Medical School, University of Patras, Greece
2. Department of Internal Medicine, General Hospital of Pirgos, Greece
3. Department of Public Health, Medical School, University of Patras, Greece

BACKGROUND:

Despite systematic implementation of national vaccination programmes, relatively few healthcare workers are thought to be immunized against hepatitis B. The aim of this study was to estimate vaccination rates and to identify predictors of vaccine acceptance among healthcare personnel.

METHODS:

Cross sectional study was designed, administering the Greek translation of the “Hepatitis B Vaccine Knowledge and Acceptance Questionnaire” to healthcare workers and other personnel in two public hospitals in Western Greece. The questionnaire contains 45 items regarding the sociodemographic characteristics, knowledge, perceived susceptibility and severity, perceived barriers and acceptance of hepatitis B vaccine.

RESULTS:

A total of 183 randomly selected hospital employees participated in the study. Occupation was significantly related to the level of knowledge about hepatitis B, with scientific personnel being better informed compared to non scientific personnel ($p<0.001$). Higher education and vaccination were associated with higher level of knowledge ($p<0.001$, $p=0.007$, respectively). Not vaccinated were 29.1% (n=52) and the most common reason was negligence (30.2%). Participants who considered themselves at high risk for HBV infection and those who considered hepatitis B a serious condition did not report significantly increased vaccination rates. Statistical significant differences were observed in vaccination rates between occupational categories, with physicians and nurses reporting the highest rates of vaccination ($p<0.001$). Education was significantly associated with vaccination compliance ($p=0.039$).

CONCLUSIONS:

The results reveal a high proportion of unvaccinated hospital personnel, mainly due to negligence. Occupation, education and knowledge about hepatitis B seem to be associated with HBV vaccination. These findings highlight the need to inform and educate healthcare personnel about HBV infection, increasing thus the acceptance of the vaccination and reducing the risk of developing and transmitting the disease.

PRESENTED BY: DR ELENI JELASTOPULU

20100378 Poster Vaccine preventable diseases

Keywords: Influenza, Seasonal Vaccine Coverage, Attitudes, Telephone Survey, Surveillance

Evaluation of the seasonal vaccine coverage in Portugal: An overview of the last 12 years

Baltazar Nunes (1), E. Paixão (1), M.J. Branco (1)

AFFILIATIONS:

1. Departamento de Epidemiologia, Instituto Nacional de Saúde Dr. Ricardo Jorge.

BACKGROUND:

Influenza is an infectious disease responsible for seasonal epidemics affecting population worldwide. The vaccine is the main method for preventing flu and its more severe complications. For the past 12 years, the Department of Epidemiology of the National Institute of Health analyses the vaccine coverage in mainland Portugal. This study analyzes the evolution of the seasonal vaccine coverage since 1998-1999 untill 2009/2010. Also, we intend to characterize the practice of vaccination according to initiative, local, calendar and attitudes.

METHODS:

We used a cross-sectional descriptive design based on a telephone interview survey conducted to households of the ECOS panel. This panel has 1078 households (approximately 3000 individuals), randomly selected, stratified by mainland regions (NUTsII) and contactable by landline and mobile phone. Results were weighted by number of households per region and according to sex and age population distribution.

RESULTS:

In season 1998/99 the vaccine coverage (VC) was 14.2 (CI95%: 11.6-16.8) and has been increasing progressively, reaching 20.4% (CI95%:18.3-22.6) in the last season (2009/2010). In the 2009/2010 season, as in others seasons, the elderly (VC=52.2%) and individuals with at least one chronicle condition (VC=37.4%) were the main contributors of this increase. Over the years, the initiative of vaccination belongs to the general practitioners and the health centres were most referred as the local of vaccination. The immunization period take place between October and November. In the last season, the main reason for non vaccination was related to mechanisms of devaluation/denial of the disease importance (45.7%).

CONCLUSIONS:

In the last season, the increase of the vaccine coverage may be attributable to the circulation of the pandemic virus. In general, the vaccine coverage has been high among the risk groups.

PRESENTED BY: MR BALTAZAR NUNES

POSTER SESSION **ABSTRACTS**

20100136 Poster Vaccine preventable diseases

Keywords: Hepatitis B virus

Hepatitis B virus infection in the Netherlands: Changing epidemiology over the past decade?

Susan Hahné (1), H. de Melker (1), M. Kretzschmar (1), L. Mollema (1), M. van der Sande (1), R. Coutinho (1), H. Boot (1).

AFFILIATIONS:
1. National Centre for Public Health and the Environment (RIVM), Centre for Infectious Disease Control, Bilthoven, The Netherlands

BACKGROUND:
Interventions for primary and secondary prevention of hepatitis B virus (HBV) are available. In the Netherlands, HBV vaccination is targeted at high-risk groups. We assessed changes in the HBV epidemiology over the past decade.

METHODS:
Two cross-sectional, stratified, two stage cluster samples of the Dutch population were taken in 1995/6 and 2006/7, with oversampling of migrants in 2006/7. Participants filled in a questionnaire and gave serum. Serum was tested for antibodies to HBV core antigen (anti-HBc). Positives were tested for HBV surface antigen (HBsAg). Indigenous Dutch were those born in the Netherlands to parents born in the Netherlands or a low endemic country. Prevalence estimates were weighted to the Dutch population regarding gender, age-group, country of birth of participant and his/her parents. Change in anti-HBc prevalence was assessed by Poisson regression. Risk factors for infection were assessed by multivariable logistic regression.

RESULTS:
In the Dutch population, the proportion born in a HBV endemic country increased between 1997 and 2007 (p<0.0001). The 1995/6 and 2006/7 survey had 7249 and 6246 participants, respectively (response 47.7% and 31.4%). The anti-HBc and HBsAg prevalence in 1995/6 was not different in 2006/7 (anti-HBc: 2.9% [95% CI 2.2-3.7] and 3.4% [2.1-5.4] (p=0.6); HBsAg: 0.1% [0.0-0.3] and 0.2% [0.1-0.5], p=0.3). The anti-HBc prevalence among indigenous Dutch decreased (p=0.04). Birth in a HBV-endemic country remained the most important risk factor for HBsAg positivity (aOR 68.2 [5.4-868.6] and 10.0 [3.8-26.5]).

CONCLUSIONS:
The HBV prevalence in the Netherlands remained very low, with individuals born in HBV endemic countries at continued high risk. Despite absence of universal vaccination and increasing migration, the anti-HBc prevalence in indigenous Dutch decreased. Secondary HBV prevention targeted at foreign born individuals remains a priority.

PRESENTED BY: DR SUSAN HAHNÉ

20100271 Poster Vaccine preventable diseases

Keywords: Hepatitis B, screening, prevalence, Chinese, migrants

High prevalence and low knowledge of chronic hepatitis B virus infection in Chinese migrants: results of a disease awareness programme offering on-site testing in Rotterdam, the Netherlands

Irene Veldhuijzen (1), H. Voeten (1), R. Wolter (1), V. Rijckborst (2), M. Mostert (3), Y. Cheung (4), C. Boucher (5), O. de Zwart (1), H. Janssen (2)

AFFILIATIONS:
1. Division of Infectious Disease Control, Municipal Public Health Service Rotterdam-Rijnmond, Rotterdam, The Netherlands
2. Department of Gastroenterology and Hepatology, Erasmus MC, University Medical Center Rotterdam, Rotterdam, The Netherlands
3. National Hepatitis Center, Amersfoort, The Netherlands
4. Wah Fook Wui Foundation, Rotterdam, The Netherlands
5. Department of Virology, Erasmus MC, University Medical Center Rotterdam, Rotterdam, The Netherlands

BACKGROUND:
People with chronic hepatitis B virus (HBV) infection are at risk of serious liver disease such as cirrhosis or liver cancer later in life. Treatment options have improved but due to the asymptomatic nature of chronic HBV the majority of patients remain unidentified. Migrants born in countries where hepatitis B is endemic are a risk group for chronic hepatitis B virus infection.

METHODS:
A campaign targeting the Chinese community was held in the city of Rotterdam, the Netherlands, in 2009. The campaign combined disease awareness activities with free HBV testing at outreach locations. Chronic HBV patients were referred to specialist care based on a referral guideline. Before and after the campaign, knowledge (10 items) of chronic HBV was measured through questionnaires in a convenience sample of the target population (n=285 and n=277).

RESULTS:
In a period of 3 months, 13 outreach activities took place and 1,101 Chinese migrants were tested for HBV. Forty-nine percent had signs of a past or recent HBV infection and 8.5% (n=94) had a chronic HBV infection. Thirty-eight percent (n=36) of chronic HBV patients were referred for evaluation by a specialist and of these, 12 were found eligible for antiviral treatment. Before the campaign, 55% answered 6 or more out of 10 knowledge items correct. Knowledge was positively associated with educational level and an increase in knowledge after the campaign was observed in participants with low levels of education.

CONCLUSIONS:
Chinese migrants can be reached with an outreach campaign and on-site testing was well accepted. The campaign increased the level of knowledge of chronic HBV. A high prevalence of chronic HBV was found and referral to specialist care was successful.

PRESENTED BY: DR IRENE VELDHUIJZEN

20100180 Poster Vaccine preventable diseases

Keywords: hepatitis B recombinant vaccine, non-responders, hypo-responders, revaccination, elderly, Fendrix®, HBVaxPro®

High response rate in previous non-responders after revaccination with high potent hepatitis B vaccines.

Christian JPA Hoebe (1, 2), Henriette LG ter Waarbeek (1, 2), Astrid M. L. Oude Lashof (2), Frank H. van Tiel (2), Cathrien A. Bruggeman (2), Nicole HTM Dukers-Muijrers (1, 2)

AFFILIATIONS:

1. Department of Infectious Diseases, South Limburg Public Health Service, The Netherlands, P.O. Box 2022, 6160 HA Geleen, The Netherlands, telephone: #31-458506277, fax: #31-455742801, e-mail: Christian.Hoebe@ggdzl.nl.
2. Department of Medical Microbiology, Maastricht Infection Centre, Maastricht University Medical Centre (MUMC+), School for Public Health and Primary Care (CAPHRI), P.O. Box 5800, 6200 AZ Maastricht, The Netherlands.

BACKGROUND:

Hepatitis B vaccination plays a key role in preventing hepatitis B infection and its complications. However, some vaccinees do not develop a protective titer (10IU/L) after a standard 3-dose regime and administration of three additional doses with one month interval is frequently recommended but non-response still often occurs. Therefore, alternative vaccination strategies are necessary Newly available high dose hepatitis B vaccinations registered for renal insufficiency might be more effective in non-responders. The study's aim is to determine which of four different revaccination interventions will induce best protective anti-HBs titres in healthy non-responders.

METHODS:

388 healthy employees known to be non-responders were enrolled. We assessed the effect of a second hepatitis B vaccination series (after the standard 3 dose regime) using four different regimes: group 1. (n=211). three revaccinations with Engerix-B® (one month interval), group 2. (n=30). one revaccination with Engerix-B®, group 3. (n=108) one revaccination with HBVaxPro-40® (40µg HBsAg in 1ml, Sanofi-Pasteur MSD, Lyon, France), and group 4. (n=39) one revaccination with Fendrix® (20µg HBsAg in 0.5ml, GlaxoSmithKline, Rixensart, Belgium). Predictors for non-response after revaccination were assessed using univariate and multivariate regression analysis.

RESULTS:

The two independent predictors for protection after revaccination were low non-response titer after vaccination (titer 0, 94%; titer 1-9, 64%) and booster type: group 1 and 2 showed less protection after revaccination of 75% (158/211) and 76% (23/30) than group 3 and 4 with 91% (98/108) and 100% (39/39). Sex and age were not significantly associated.

CONCLUSIONS:

Fendrix® and HBVaxPro® both showed higher revaccination response than the standard three additional revaccinations scheme, suggesting these vaccines to be the first choice for non-responders.

PRESENTED BY: MR CHRISTIAN HOEBE

20100357 Poster Vaccine preventable diseases

Keywords: rubella, surveillance, vaccination, prevention

High transmission of rubella in Poland reflects the recent introduction of the routine vaccination program and the history of selective vaccination of adolescent females

Justyna Rogalska (1), Laura Zimmerman (2), Kathleen A. Wannemuehler (2), Miroslaw P. Czarkowski (1), Pawel Stefanoff (1)

AFFILIATIONS:

1. Department of Epidemiology, National Institute of Public Health – National Institute of Hygiene, Warsaw, Poland
2. Global Immunization Division, National Center for Immunization and Respiratory Diseases, Center for Disease Control and Prevention, Atlanta, GA, USA

BACKGROUND:

According to officially recorded surveillance data, Poland reported the highest incidence of rubella in the WHO European Region since 2007 and among the European Union countries since 2002. Epidemiological data on rubella was analyzed in order to describe disease trends and identify options in reaching rubella and congenital rubella syndrome (CRS) elimination.

METHODS:

National aggregate rubella surveillance data from 2003-2008, and case-based rubella data from four out of sixteen provinces of Poland from 2006-2008 were analyzed. A negative binomial model was used to assess differences in rates between males and females for 5-year age-group, fitted separately for 2 periods: 2003-2005 and 2006-2008 (after 2-dose MMR recommendation), using population sizes for each region as offsets for the various gender and age strata.

RESULTS:

During 2003-2008, more than 80,000 cases were reported in Poland. Males between 10-24 years of age had significantly higher risk of being a case than females. The risk was reversed for the older cohorts (30-74 yrs of age), were females were shown to have a higher risk in both time periods ($P < 0.05$). During 2006-2008, 4% cases were reported among females of childbearing age. During an epidemic in 2007-2008, a bimodal distribution of cases was observed with highest incidence in both genders aged 6-8 years, and among males aged 13-16 years.

CONCLUSIONS:

Rubella epidemiology in Poland is consistent with age and sex cohorts that were not historically included in vaccination recommendations, and there is still a risk for CRS. National efforts, including strengthening surveillance activities and supplemental immunization activities, should be conducted to ensure that unvaccinated age cohorts are immunized, in order to approach disease elimination.

PRESENTED BY: MS JUSTYNA ROGALSKA

POSTER SESSION **ABSTRACTS**

20100142 Poster Vaccine preventable diseases

Keywords: varicella, hospitalisation, outpatient visits

Hospitalisations and outpatient-clinic visits due to chickenpox in Norway, 2000–2009

Gražina Rimšelienė (1, 2), K. Borgen (2)

AFFILIATIONS:
1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC) Stockholm, Sweden
2. Department of Infectious Disease Epidemiology, Norwegian Institute of Public Health, Oslo, Norway

BACKGROUND:
Chickenpox (varicella) is not a notifiable disease in Norway. A vaccine against varicella is available for use in risk-groups. The objective of this study was to provide number of outpatients-clinic visits and hospitalisations due to chickenpox in Norway 2000-2009, for the estimation of some direct medical costs as part of a consideration of future introduction of varicella vaccine into the childhood immunisation programme.

METHODS:
We analysed all visits to hospitals and outpatient clinics due to varicella registered in the National Patient Registry, 2000-2009 using ICD-10 codes and described them by age, sex, type of medical facility (central and local) and length of hospital stay.

RESULTS:
Varicella caused 2,213 outpatient-clinic visits (61% in central clinics) and 2,134 hospitalisations (81% in central hospitals). Median age for outpatient-clinic visits was 5 years (interquartile range-IQR: 2-16) and for hospitalisations 6 years (IQR: 3-34). 60% of outpatient-clinic visits and 50% of hospitalisations were among ≤6 years-old with median length of hospitalisation of 2 days (IQR: 1-5), as opposed to 4 days (IQR: 1-8) among those >6 years. The peak season was December-March with a marked increase every 3-4 years for hospitalizations and outpatient-clinic visits. The number of hospitalisations among those >16 years-old increased from 1 (2007) to 3 (2009) hospitalisations per 100,000 population. There were 23 varicella related deaths among hospitalized, 96% of them >35 years-old.

CONCLUSIONS:
Children represent the largest proportion of health care visits but they have shorter length of hospital stay. Fewer adults are hospitalised, although they stay longer in hospital. Further studies are needed to assess the burden of varicella, its economic impact and the length of immunity after vaccination, for decision making on future vaccine introduction.

PRESENTED BY: MS GRAŽINA RIMŠELIENĖ

20100206 Poster Vaccine preventable diseases

Keywords: pneumococcal conjugate vaccine, invasive pneumococcal disease, serotype distribution, Ireland

Impact of introducing the 7-valent pneumococcal conjugate vaccine (PCV7) to the infant immunisation schedule on the burden of invasive pneumococcal disease (IPD) in Ireland

Margaret Fitzgerald (1), I. Vickers (2), P. O' Lorcain (1), S. Murchan (1), S. Cotter(1), D. O' Flanagan(1), M. Cafferkey (2), H. Humphreys (3, 4)

AFFILIATIONS:
1. Health Protection Surveillance Centre, Dublin, Ireland
2. Children's University Hospital, Temple Street, Dublin, Ireland
3. Education and Research Centre, Royal College of Surgeons in Ireland
4. Beaumont Hospital, Dublin, Ireland

BACKGROUND:
The 7-valent pneumococcal conjugate vaccine (PCV7) was introduced to the Irish infant immunisation schedule in September 2008 at 2, 6 and 12 months of age. A catch-up campaign for children <2 years of age was also implemented. The Invasive Pneumococcal Disease (IPD) Typing Project established in April 2007 has been pivotal in determining the impact of the PCV7 immunisation programme on disease burden and serotype distribution.

METHODS:
S. pneumoniae isolates from blood and CSF were submitted for typing by microbiology laboratories. Serotyping was performed and penicillin susceptibility assessed.

RESULTS:
Between April 2007 and May 2010, 1050 isolates were typed and 44 different serotypes identified. An 84% decline IPD incidence due to serotypes covered by PCV7 has been seen in children <2 years of age since the vaccine was introduced, with a notable reduction in serotype 14 in this age group. There has been a 32% reduction in IPD incidence due to PCV7 serotypes in individuals 2 years of age and older. In children <2 years of age there has been a 42% increase in illness due to non-PCV7 serotypes, in particular serotype 7F. However, the overall IPD incidence has declined by 57% in this age group and by 20% when all ages are included. Overall there has been a 25% reduction in penicillin non-susceptible S. pneumoniae (PNSP) isolates; PNSP numbers due to serotype 9V have decreased whereas serotype 6B have increased. Two PCV7 vaccine failures have occurred involving serotype 14 and 19F.

CONCLUSIONS:
Although less than two years since its implementation in Ireland, universal PCV7 immunisation has dramatically decreased the burden of IPD caused by serotypes covered by the vaccine, particularly in children <2 years of age.

PRESENTED BY: DR MARGARET FITZGERALD

20100203 Poster Vaccine preventable diseases

Keywords: vaccination, children, Sub Saharan countries

LOW VACCINE COVERAGE AMONG HIV INFECTED CHILDREN IN NIAMEY, NIGER

Tchidjou, K. H.; Vescio, M. F.; Busani, L.; Sobze Sanou, M.; Souleyman, A.; Mbabia, A.; Montesano, C.; Ide, M.; Gentile, G.; Colizzi, V.; Rezza, G.

AFFILIATIONS:
1. Department of Public Health, University of Rome Tor Vergata, Rome, Italy
2. Epidemiology Unit, Department of Infectious Diseases, Roma, Italy
3. University of Dschang, Dschang, Cameroon
4. Magama Foundation, Niamey, Niger
5. Department of Biology, University of Rome "Tor Vergata", Rome, Italy
6. National Coordination for Intersectoral Coordination for the Response against STI/HIV/AIDS, Niger
7. Italian Cooperation of Sub-Saharan Africa, Niamey, Niger

BACKGROUND:
Child vaccination coverage, is still far from international standards in developing countries leading to preventable mortality. Possible determinants of childhood vaccination are maternal age, maternal education, distance to health care facilities, household wealth, and availability of safe needles and syringes.

METHODS:
A community-based cross sectional survey was carried out in Niamey (peri – urban area, Commune 1) in January-March 2010 to assess vaccination coverage of children aged 0-36 months and the impact of maternal factors and children HIV status on vaccination coverage. Mothers of eligible children were interviewed to obtain socio-demographic information about mothers, knowledge of vaccination schedule, HIV status, knowledge about vaccine-preventable diseases and breastfeeding. Information about child's vaccination was obtained from the vaccination card and from mothers recall.

RESULTS:
502 children were investigated, including 257 HIV-positive children. HIV-positive subjects were more likely to be of higher social class than those HIV-negative. 97% of the children received the first dose of DTP (Diphtheria, Tetanus, Pertussis) vaccine, 19% the second and 14% the third dose. Having adjusted by age, HIV-positive and HIV-negative children were equally likely to receive the first dose of vaccine, while HIV-positive children were less likely to receive the second and third those of vaccine than those HIV-negative. Almost all children included in the study received BCG (Tuberculosis) vaccination within the first week of birth. Prevalence of vaccination for measles and yellow fever was about 14%.

CONCLUSIONS:
We suggest to modify vaccination schedule for DTP in order to administer the first dose of DTP in the first days from birth. This may increase the number of children receiving booster doses of DTP and attaining efficient and long lasting immunity to DTP.

PRESENTED BY: DR FENICIA VESCIO

20100245 Poster Vaccine preventable diseases

Keywords: pandemic influenza, vaccination

Maternal pandemic influenza vaccination: a strategy with substantial benefits for both mothers and infants.

Elena Pariani (1), L. Pogliani (2), A. Amendola (1), F. Penagini (2), D. Colzani (1), F. Meneghin (2), A. Zanetti (1), G. V. Zuccotti (2).

AFFILIATIONS:
1. Dipartimento di Sanità Pubblica-Microbiologia-Virologia, Università degli Studi di Milano, Milan, Italy.
2. Department of Pediatrics, L. Sacco Hospital, Università degli Studi di Milano, Milan, Italy.

BACKGROUND:
Pregnant women and their infants (aged 0-6 months) are at increased risk of serious illness and hospitalization when infected with influenza viruses. The aim of this study was to evaluate antibody seroprotection in women vaccinated against 2009 pandemic influenza during pregnancy and to assess the duration of passive protection in their infants.

METHODS:
Sixty-nine women in the third trimester of pregnancy were administered with a single dose of MF59-adjuvanted A/California/07/2009(H1N1) vaccine (Novartis). Serum samples were obtained from these women and from their 69 infants at delivery/birth, 2- and 5-months later, and tested by hemagglutination-inhibition assay.

RESULTS:
All mothers had a protective antibody titer (>or=1:40) to A/California/07/2009(H1N1) at the time of delivery and this proportion did not significantly change during the follow-up. The proportion of infants with a protective antibody titer was 95.6% (95%CI: 88.6-98.9) at birth and at 2-months, and 81.2% (95%CI: 56.9-95.0) at 5-months of age. Among mothers, the geometric mean titers (GMTs) were 257.9 (95%CI: 200.8-331.1) at delivery, remained similar ($p>0.05$) at 2-months (233.2; 95%CI:177.4-306.6), and decreased ($p<0.05$) 5-months later (167.6; 95%CI:115-9-242.3). In infants, GMTs were 141.8 (95%CI: 108.3-185.7) at birth, and progressively decreased 2-months (106.5; 95%CI: 81.9-138.5; $p<0.01$) and 5-months later (38.3; 95%CI: 22.5-65.1; $p<0.001$). The transplacental transfer of antibody, defined as GMTs ratio of the hemagglutination-inhibition titers in infants and mothers at time of delivery, was 0.55 (95%CI: 0.49-0.61). The estimated half-life of passively acquired maternal antibody against A/California/07/2009(H1N1) was 83.4 days.

CONCLUSIONS:
These observations suggest that maternal pandemic influenza immunization confers presence of antibody against A/California/07/2009(H1N1) in vaccinated mothers and their newborns. These 5-months follow-up data show that passively acquired protective levels of serum antibody for A/California/07/2009(H1N1) persist and can be protective against infection

PRESENTED BY: DR ELENA PARIANI

POSTER SESSION **ABSTRACTS**

20100241 Poster Vaccine preventable diseases

Keywords: Mumps, outbreak, MMR, student, vaccine effectiveness, Northern Thailand

MMR Vaccine Effectiveness for Preventing Mumps in a Rural School, Northern Thailand, November 2009 – February 2010

Auttakiat Karnjanapiboonwong (1),W.Chaifoo (2), T.Khempet (2), C.Darapong (1), M.Sunantakool (2), P.Thammawijaya (1)

AFFILIATIONS:
1. Field Epidemiology Training Program (FETP), Bureau of Epidemiology, Department of Diseases Control, Nonthaburi, Thailand.
2. Pangmapha Hospital, Ministry of Public Health, Thailand

BACKGROUND:
Incidence rate of mumps in Northern Thailand has increased from 14.1 to 49.6 per 100,000 population during 2007-2009 despite one dose of MMR (Mumps-Measles-Rubella) vaccine administered to grade 1 students nationwide since 1996. In February 2010, a mumps outbreak in a rural school was reported. A study was conducted to describe epidemiological characteristics, and assess coverage and effectiveness of MMR vaccine.

METHODS:
We reviewed surveillance data and medical records, and surveyed students in School A to find mumps cases. A suspected case was a student diagnosed by physician as mumps, parotitis, or sialadinitis at mandibular or sublingual areas during August 2009-February 2010. Serum samples of 2 patients were tested for mumps IgM by ELISA. A retrospective cohort study was conducted to estimate MMR vaccine coverage and effectiveness of preventing mumps among kindergarten and grade 1-6 students.

RESULTS:
A total of 100 suspected cases and 2 confirmed cases of mumps were identified from hospital records. Of those, 94 (92.2%) were in school-age children, 35 (31.9%) were students from School A. In the school A survey, 109 cases (13.8%) were identified among 791 students. The attack rates (ARs) in kindergarten, grade 1-6, and 7-9 students were 38.8%, 9.3%, and 3.4%, respectively. MMR vaccine coverage in School A was 87.8%. ARs in vaccinated students grade 1-6 were 0%, 7.7%, 8.1%, 11.9%, 13.2%, and 22.6%, respectively. Vaccine effectiveness was estimated 73.3% (95%CI= 60.9%-81.7%). No error in the cold-chain and administration of vaccine was found.

CONCLUSIONS:
Single-dose MMR vaccine was 73% effective in preventing mumps with evidence of waning immunity. The findings support a revision of vaccination schedule to give MMR vaccine to kindergarten children with a booster dose in primary school students.

PRESENTED BY: DR AUTTAKIAT KARNJANAPIBOONWONG

20100075 Poster Vaccine preventable diseases

Keywords: whooping cough, epidemiology, incidence, vaccination, child, adult

Pertussis in Estonia

Mari Järvelaid, Valentina Rušai

AFFILIATIONS:
Northern Servise of Health Board of Estonia

BACKGROUND:
A significant increase in the incidence of pertussis, especially among adolescents and adults, is recorded in Estonia. According to the data published by CISID in 2009, in EU countries the incidence of pertussis was higher than in Estonia (46,93 cases per 100 000 inhabitants per year) only in Norway (115,25 cases).

METHODS:
Pertussis is a recorded infectious disease in Estonia. Data from the national infectious disease record were analysed.

RESULTS:
In Estonia, the vaccination was started in 1957. Then the crude incidence of pertussis was 229,5 cases per 100 000 population and 99,5% of the cases were aged <15 years. Rapid decrease in incidence of pertussis followed, with 3,8 cases per 100 000 population during the years 1972-1981 in average. That time, children were vaccinated at age 5 months and revaccinated at ages 3 and 6 years. From 1981 to 2008, the booster dose at age 6 years was excluded from the vaccination program. Since 2008, the Estonian vaccination program involves five doses of acellular pertussis vaccine given at ages 3, 4,5, 6 months, 2 years and 6 or 7 years. In 2009, the vaccination coverage at age 2 years was 96% and at age 7 years 72%. In 2010, continually the number of recorded cases of pertussis is rising, in spite of high vaccination coverage of children in Estonia. At that, almost half of new cases of pertussis are among unvaccinated adults.

CONCLUSIONS:
So, in Estonia pertussis is not any more solely a cause of childhood morbidity, but a vaccine-preventable disease of adulthood, equally.

PRESENTED BY: DR MARI JÄRVELAID

20100077 Poster Vaccine preventable diseases

Keywords: mumps, seroepidemiology, immunity, vaccination, outbreak

Seroepidemiology of mumps in Europe (1996–2008) – reasons for epidemics in highly vaccinated populations

Jaran Eriksen (1, 2), Irja Davidkin (3), George Kafatos (2), Richard Pebody (2) on behalf of the ESEN2 mumps group

AFFILIATIONS:
1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
2. HPA Centre for Infections, London, UK
3. National Institute of Health and Welfare (THL), Helsinki, Finland

BACKGROUND:

Despite ›95% coverage of mumps containing vaccines, mumps outbreaks have recently been recorded in a number of European countries, often in highly vaccinated population groups. The European Sero-Epidemiology Network (ESEN) was established in 1996 to standardise serological surveillance of vaccine-preventable disease in Europe. We related seroprevalence, epidemiological and vaccination data collected from 18 ESEN countries to their risk of mumps epidemics in order to inform vaccination strategies.

METHODS:

In each country, samples (n = 1392-3838) from serum banks were collected between 1996 and 2004 across all ages, tested for mumps antibodies using commercial EIA and standardised into common units for international comparisons. A comparison between countries was undertaken using age-specific mumps seroprevalence data and information on reported mumps incidence, vaccine strains, vaccination programmes and vaccination coverage.

RESULTS:

Mumps containing vaccines were introduced between 1960 and 2004. Twelve of 18 countries reported an average MMR1 vaccination coverage of ›90% (1999-2008). Six of these 12 countries and five of six lower coverage countries experienced epidemics, mainly in partially vaccinated 15-19 year-olds (coverage 60-90%). Mumps antibody geometric mean titres were lower across all ages in epidemic (n = 10) compared to non-epidemic countries (n = 7). The mean interval between MMR1 and MMR2 doses was shorter in epidemic (4.6 years) compared to non-epidemic countries (6.4 years). Two epidemic countries used Rubini strain.

CONCLUSIONS:

Age-specific seroprevalence titres were lower in mumps epidemic countries but not predictive of epidemics, as no correlation was seen between the most affected cohorts and the seroprevalence data. Preventing epidemics and controlling mumps most likely requires several elements, including high-coverage two-dose vaccination programmes with a highly immunogenic vaccine given with a minimum of five years between doses.

PRESENTED BY: DR JARAN ERIKSEN

20100148 Poster Vaccine preventable diseases

Keywords: rubella,seroepidemiology,childbearing age women, susceptibility

Seroepidemiology of Rubella in Sardinian's childbearing age women

Laura Andrissi (1), G. Palmieri (2), G. Masia (2), R. C. Coppola(2)

AFFILIATIONS:
1. Specialization School of Public Health, University of Cagliari, Italy
2. Department of Public Health, University of Cagliari, Italy

BACKGROUND:

In Sardinia is available, until 1991, the MPR vaccine (including measles, mumps and rubella, facultative and free of charge for babies and females of reproductive age).The aims of this study were to estimate the sieroprevalence of rubella virus antibodies among childbearing age women and evaluate the best strategies for preventing the Congenital Rubella Syndrome (CRS).

METHODS:

Between 2008 and 2009 had been collected 1490 residual sera recruited from the University of Cagliari Hospital's serum bank. Sera were tested for the quantitative determination of specific IgG antibodies to rubella virus(cut off value 10IU/ml). Data were analyzed through frequency distributions. The statistical comparison of data was performed using the Chi-square test and the p-value ‹0.05(statistically significant).

RESULTS:

The mean age of the 1490 females joining in the study, was 39,9(DS ±8,2) years, with 67% between 15-44 years. Rubella specific IgG antibodies were positive in 78,5% of specimen with higher seroprevalence (93,5%;IC 91,2-95,7) in older woman aged ≥45 years, compared to childbearing age women 15-44 years old (83,4%;IC 78,9-83,7) (p=0.0000). The lower seroprevalence were detected in the cohort aged 20-24 years(76,3 %),with 23,7% of susceptible women

CONCLUSIONS:

The susceptibility rates for rubella are far from the value of national serosurveys for childbearing age women (8%) and WHO targhet (5%). Despite the vaccine coverage in infancy is high(›90% in 2007), it could be insufficient to interrupt rubella transmission and, considering the level of susceptibility(16,6%), pregnant women may be exposed to an increased risk of rubella infection and, CRS cases seem possible. Therefore, appropriate health educational strategies (family doctor in the firing line), pre conception screening and an active immunization's plan for susceptible women is strongly recommended, to ensure necessary levels of protective immunity.

PRESENTED BY: DR LAURA ANDRISSI

POSTER SESSION **ABSTRACTS**

20100358 Poster Vaccine preventable diseases

Keywords: VENICE project, European network, immunisation programme, vaccination coverage

The VENICE project: from web based surveys in the field of vaccination toward coverage data collection in Europe

Fortunato D'Ancona (1), C. Giambi (1), S. Cotter (2), L. Dematte (3), D. Levy-Bruhl (4), J. Mereckiene (2), P. Stefanoff (5), P. Lopalco (6), Eva Appelgren (1) D. O'Flanagan (2), and the VENICE project gatekeepers group (7)

AFFILIATIONS:
1. Istituto Superiore di Sanità, Rome, Italy
2. Health Protection Surveillance Centre, Dublin, Ireland
3. CINECA Consortium of University, Bologna, Italy
4. Institut de Veille Sanitaire, Saint-Maurice, France
5. National Institute of Public Health – National Institute of Hygiene, Warsaw, Poland
6. European Center for Disease Control, Stockholm, Sweden
7. The list of gatekeepers is available on VENICE website: http://venice.cineca.org

BACKGROUND:
The VENICE network is active since 2006, initially funded by DG-SANCO and since December 2008 by ECDC (VENICE-II). The general objective is collect, share and disseminate of European information in the field of vaccination.

METHODS:
All the 27 EU member states and two EEA/EFTA countries participate in the network. For each country a gatekeeper working in immunisation programme was identified; online surveys are used to collect data from countries.

RESULTS:
Twelve surveys (with a participation rate › 90%) were carried out on: immunisation programmes, vaccine coverage assessment, adverse events following immunisation surveillance, tick-borne encephalitis and hepatitis B vaccination strategies in Europe. Seasonal flu, HPV and rotavirus vaccination are periodically conducted. Other surveys are ongoing or planned in 2010: immunisation strategies in adults, pneumococcal vaccination (impact of immunisation programmes and data availability for Health Technology Assessment-HTA), varicella vaccination, pandemic flu, data and resources for HTA on rotavirus and HPV vaccines, reasons for low coverage for MMR. A forthcoming VENICE activity will focus on vaccination coverage data collection at European level: a working group will be constituted to develop a consensus document defining common indicators for monitoring vaccination programs and a minimum data set for collecting European data on vaccine coverage.

CONCLUSIONS:
The VENICE network has gained experience in conducting web-based surveys and has demonstrated the value of such collaborative networks to gather, update and disseminate data on issues of interest in a timely manner. VENICE plans to play a more proactive role adding the production of expert consensus document on vaccination coverage assessment for European countries with the goal of a future collection on coverage data from European countries.

PRESENTED BY: DR FORTUNATO D ANCONA

20100107 Poster Vaccine preventable diseases

Keywords: pertussis, diagnosis, culture, PCR, serology and surveillance

Variation among the laboratory methods and protocols used for diagnosis of pertussis in EU 27 countries

Qiushui He (1), S. Bacci (2), A-M. Barkoff (1), S. Glismann (2), J. Mertsola (3) on behalf of the EUpertstrain network and the EUVAC.NET participants

AFFILIATIONS:
1. Department of Infectious Disease Surveillance and Control, National Institute for Health and Welfare, Turku, Finland
2. EUVAC.NET, Department of Epidemiology, Statens Serum Institut, Copenhagen, Denmark
3. Department of Pediatrics, Turku University Hospital, Turku, Finland

BACKGROUND:
Laboratory diagnosis of pertussis is important for treatment, prevention and surveillance. The current methods include bacterial culture, PCR and ELISA serology. We present findings on variation among the laboratory methods and protocols used in European countries from a questionnaire survey.

METHODS:
A web-based pertussis EQA questionnaire survey was carried out among national laboratory contact persons of 27 EU countries. The questionnaire consisted of 40 questions which cover from general information on surveillance methods to detailed laboratory methods and protocols used.

RESULTS:
Of the 27 countries, 23 use both clinical and laboratory case definition, 2 use only laboratory criteria and 2 use only clinical diagnosis. Culture, PCR and serology are used in 17, 18 and 19 countries, respectively. One country uses throat swab as culture specimen, although the throat swab is not recommended for B. pertussis culture. Two countries use non-specific methods for bacterial identification. For PCR, 9 (53%) countries use insertion element IS481 as the target gene. This gene is not specific for B. pertussis. For ELISA serology, antibodies to pertussis toxin (PT) have been proven to be specific for B. pertussis. However, only 7 (38%) use PT as coating antigen and 10 (53%) include FDA or WHO reference sera in their tests.

CONCLUSIONS:
The survey clearly demonstrated that the methods used for laboratory confirmation differ quite much among EU countries and that there is a need for standardization and harmonization of the laboratory methods in Europe.

PRESENTED BY: DR QIUSHUI HE

20100044 Poster Vaccine preventable diseases

Keywords: Haemophilus influenzae, Un-encapsulated strains, virulence, mice

Virulence Properties of Haemophilus influenzae type b, f and an Un-encapsulated Strain Isolated from Children in Iran

NAHEED MOJGANI, MOHAMMAD RAHBAR, M. P. ASHTIANI AND MONA MOHAMMADZADEH

AFFILIATIONS:
Biotechnology department, Razi vaccine and serum research institute, Iran

BACKGROUND:
Haemophilus influenzae (Hi) is a Gram-negative, exclusively human pathogen responsible for a wide variety of respiratory infections and potentially life threatening invasive diseases such as meningitis. Hi pathogenicity varies depending on the presence or absence of capsule and the specific capsule type.

METHODS:
An important goal of this study was to determine the importance of specific capsule type in the pathogenesis of invasive Haemophilus influenzae disease. We compared the virulence of a type b, type f and uncapsulated (NTHi) strains, by determining the ability of the strains to produce bacteremia with subcutaneous and intraperitonial inoculation in an animal model. The organisms were passed through mice several times to insure their virulence.

RESULTS:
Subcutaneous inoculation of 103colony-forming units of strains with the type b capsule in mice models, produced bacteremia at a greater frequency than did the strains with the type f capsule. Infection by the intraperitoneal route was followed by progressive peritonitis and bacteremia with subsequent infection of the brain and meninges, and death. Death occurred between twelve and 72 hours after infection with type b strains. No death was seen in mice infected with 103 cfu of type f strains, while higher doses of the strain caused only bacteremia in these mice models.

CONCLUSIONS:
Capsular type b was the more virulent compared to capsule type f. While, capsule deficient strain used in in this study was unable to cause bacteremia when inoculated by any route.

PRESENTED BY: MS NAHEED MOJGANI

20100345 Poster Vector borne diseases

Keywords: Mosquitoes, Aedes aegypti, Ilha da Madeira.

Aedes (Stegomyia) aegypti (DIPTERA: CULICIDAE) IN THE MADEIRA ARCHIPELAGO: BIOECOLOGY

Bela Viveiros (1) & A. J. S. Grácio (2)

AFFILIATIONS:
1. Região Autónoma da Madeira, Secretaria Regional dos Assuntos Sociais, Funchal, Portugal.
2. Instituto de Higiene e Medicina Tropical/Universidade Nova de Lisboa, Lisboa, Portugal.

BACKGROUND:
Aedes (Stegomyia) aegypti Linnaeus, 1762 mosquitoes are important as vectors of Yellow Fever (probably the most lethal of all the arbovirouses and has had a devastating effect on human social development) and Dengue (the more severe form of the disease is dengue hemorrhagic fever/dengue shock syndrome, which may result in a hemorrhagic shock syndrome with a fatal outcome). Since its first record in Funchal (2005), Aedes aegypti population has expanded despite the implementation of control measures. The present study was carried out in order to understand the bio-ecology of Ae. aegypti in the Madeira Archipelago and to clarify about the measures that could be most appropriate to keep it under control.

METHODS:
The field work took place between January and August 2009 and 53 traps were placed for eggs (oviposition) detection, 395 observations were made and potential biotopes prospected. Adults were observed in the stereomicroscopy and in microscopy (for the structures of the genitalia). Bio-ecological data were recorded for each breeding place.

RESULTS:
Ae. aegypti has shown a marked variation in its activity, which is low in cold temperatures, high in hot season, with its peak in August and a preference for larvae biotopes of the artificial type and subtype plastic, with small quantities of water, dependent on irrigation water and the presence of vegetal matter.

CONCLUSIONS:
Considering that major larval habitats are flowers vases, drums, artificial containers, used tire and watering places. In the control operations it is essential to consider health education because it is important the participation of the community for controlling the environment and mosquitoes around their home.

PRESENTED BY: PROF ANTÓNIO GRÁCIO

POSTER SESSION **ABSTRACTS**

20100347 Poster Vector borne diseases

Keywords: R. africae; African tick bite fever, tick-borne disease; Rickettsiosis

African tick bite fever in Portuguese travellers associated with safaris and game hunting

Rita de Sousa (1), A. S, Santos (1), F. Gonzalez (2), D. Baptista (2), P. Proença (3), J. Poças (4).

AFFILIATIONS:
1. Instituto Nacional de Saúde Dr. Ricardo Jorge, Águas de Moura, Portugal
2. Serviço de Medicina, Hospital Garcia de Orta EPE, Almada, Portugal
3. Serviço de Medicina, Hospital de Faro EPE, Faro, Portugal
4. Serviço de Medicina, Hospital de São Bernardo EPE, Setúbal, Portugal

BACKGROUND:
African tick-bite fever (ATBF), caused by R. africae is the most frequently identified rickettsiosis among travelers. In last decade a noticeable increase of Portuguese travelers to old Portuguese African colonies has occurred but no cases of Portuguese patients with ATBF have been described until now and it is not known how many cases per year are imported to our country. Here, we report five imported cases of ATBF in Portuguese patients who traveled to South Africa, Mozambique and Kenya.

METHODS:
The epidemiologic, clinical, microbiological records of the patients infected with R. africae, are presented. A case definition for a patient to have ATBF was considered to have epidemiologic and clinical data compatible with a R. africae infection and a positive culture/PCR or a positive serologic test for spotted fever group rickettsiae

RESULTS:
During 2006 to 2009 the National Institute of Health Dr. Ricardo Jorge have received sera samples and one skin biopsy from five patients with a suspicious clinical diagnostic of ATBF admitted in the hospitals of Almada, Caldas da Rainha, Évora, Faro, and Setúbal. Five patients include one woman and four men aged 35–60 years. The main clinical features included fever and eschar (single and multiple) in 100% of patients, and a regional lymphadenophathy in 80%. None of the patients presented cutaneous rash. The ATBF diagnostic was confirmed in one patient by PCR on a skin biopsy and in the others patient by the presence of antibodies against spotted fever group.

CONCLUSIONS:
These reports highlight the importance of physicians in Portugal considering rickettsial infections among differential diagnosis, particularly when treating patients who have traveled to Africa

PRESENTED BY: DR RITA DE SOUSA

20100343 Poster Vector borne diseases

Keywords: Blackflies, Onchocerciasis, África.

BLACKFLIES (DIPTERA, SIMULIIDAE): A REVIEW ON BIODIVERSITY IN ANGOLA (HUÍLA PROVINCE), GUINEA BISSAU, SÃO TOMÉ E PRÍNCIPE AND CABO VERDE

António Grácio (1), A. Salumbo (2) & A. J. Shelley (3)

AFFILIATIONS:
1. Instituto de Higiene e Medicina Tropical/Universidade Nova de Lisboa, Lisboa, Portugal.
2. Instituto de Higiene e Medicina Tropical/Universidade Nova de Lisboa, Lisboa, Portugal.
3. The Natural History Museum/Department of Entomology, London, U.K.

BACKGROUND:
Blackflies (Diptera, Simuliidae) develop in flowing water. Eggs are cemented to vegetation or other substrates close to the breeding site or, in certain species, laid directly on the water. The larvae of most species are attached to submerged rocks, vegetation or plastic by means of specialized suckers and prologs. Pupae form in a silken cocoon spun where the larvae feed. Large, leathery wings enable the emerging adult to take flight immediately after contact with air. The role of blackflies as biting pests and vectors of filariasis and arboviruses for man and animals is well known. The aim of this work is to present the blackflies biodiversity in four African Countries and the medical importance of the species found in those countries.

METHODS:
Eggs, larvae, pupae and adults blackflies were collected from different breading places in Cabo Verde in 1983, Guinea Bissau between 1989 and 1993, in São Tomé e Príncipe in 1989 and in Angola (Huíla Province) during 2001. Larvae were fixed in Carnoy's solution for chromosome analysis, in isopropanol for DNA studies and in alcohol 80% for morphological studies. Pupae were preserved in isopropanol and in 80% alcohol for DNA and morphological studies. Adults were pinned for subsequent morphological studies and man-biting females were preserved in isopropanol.

RESULTS:
Several species were identified: 1 specie in Cabo Verde, 2 species in Angola (Huíla Province), 12 species and 2 cytospecies of Simulium damnosum complex in Guinea Bissau and 2 species in São Tomé e Príncipe].

CONCLUSIONS:
Simulium (Nevermannia) ruficorne Macquart, 1838 was recorded in Cabo Verde, Angola and Guinea Bissau. Simulium (Pomeroyellum) alcocki Pomeroy, 1922 was recorded in Guinea Bissau and São Tomé e Príncipe.

PRESENTED BY: PROF ANTÓNIO GRÁCIO

20100331 Poster Vector borne diseases

Keywords: Lyme borreliosis, diagnosis, patients, Portugal

Clinical and laboratory data of Portuguese patients with diagnostic of Lyme borreliosis.

Isabel Lopes de Carvalho (1), T. Luz (1), P. Parreira (1), M. Palma (1), F. Roxo (2), M. J. Rocha Brito (3), K. Mansinho (4), G. Matias (5), T. Aires (5), J. Sá (6), A. Brito (6), J. Poças (6) and M. S. Núncio (1)

AFFILIATIONS:
1. Centro de Estudos de Vectores e Doenças Infecciosas Doutor Francisco Cambournac/INSA, Águas de Moura, Portugal
2. Serviço de Infecciologia, Hospital distrital de Santarém, Santarém, Portugal
3. Serviço de Pediatria, Hospital Dona Estefânia, Lisboa, Portugal
4. Serviço de Infecciologia, Hospital Egas Moniz, Lisboa, Portugal
5. Serviço de Neurologia, Hospital Egas Moniz, Lisboa, Portugal
6. Serviço de Infecciologia, Hospital de Setúbal, Setúbal, Portugal

BACKGROUND:
Lyme borreliosis (LB) caused by the Borrelia burgdorferi s.l. complex, is the most commonly reported tick-borne disease in Europe and North America. In Portugal, B. lusitaniae is the most prevalent species found in ticks. However, other species have also already been detected such as B. afzelii, B. valaisiana, B. garinii and B. burgdorferi sensu stricto (s.s.). Two human strains of B. lusitaniae were isolated from Portuguese patients, confirming its pathogenicity. The aim of this present study was to describe 12 human cases of LB, studied between 2008 and 2010, using an integrated approach, of analysis of laboratory results, clinical manifestations and epidemiological data.

METHODS:
An epidemiological and clinical inquiry was developed and data about patients concerning gender, age, clinical manifestations were obtained and analyzed with the laboratorial findings. Samples were tested by IFA in-house assay and/or using commercial ELISA. All borderline and positive samples were confirmed by immunoblot assay. Whole blood samples from three patients were inoculated in BSK-II medium and rrf (5S)-rrl and (23S) intergenic spacer region of B. burgdorferi s.l. were used for Borrelia DNA detection.

RESULTS:
Of the total of patients analyzed 75% were women and 25% were men. Of these, 67% and 8% had positive and borderline IgM antibodies, 50% and 33% had positive and borderline IgG antibodies. Borrelia DNA was detected in three patients. Sequencing identified B. afzelii and B. lusitaniae. Fever prevailed among clinical symptoms (82%), followed by dermatological lesions (including EM) (55%), and arthritis (9%).

CONCLUSIONS:
In countries where more than one Borrelia species circulate and cause disease, as in the case of Portugal, gathering information about laboratory data and clinical presentations of human cases, is essential for reliable epidemiological studies.

PRESENTED BY: DR ISABEL LOPES DE CARVALHO

20100307 Poster Vector borne diseases

Keywords: lyme borreliosis, epidemiology, incidence, Europe

Epidemiology of Lyme Borreliosis in Europe

Christiane Klier (1), V. Fingerle (1), A. Sing (1) and M. Wildner (2)

AFFILIATIONS:
1. National Reference Centre for Borrelia, Section Infectiology, Bavarian Health and Food Safety Authority, Oberschleißheim, Germany
2. Section Epidemiology, Bavarian Health and Food Safety Authority, Oberschleißheim, Germany

BACKGROUND:
Lyme Borrelioses (LB) caused by spirochaetes of the Borrelia burgdorferi (Bb) sensu lato complex is the most common tick-borne infectious disease in Europe. LB is a multisystemic disease affecting the skin, joints, heart and nervous system. In Europe, Borrelia are transmitted by the hard ticks Ixodes ricinus and I. persulcatus. Aim of the study was to gather information on the incidence of LB in Europe with respect to increase as well as latitudinal expansion.

METHODS:
Data on the incidence of LB in Europe is collected by searching in medical databases or by using access to national health registries and national health services, respectively.

RESULTS:
Data on the incidence of LB for 18 European countries were retrieved. Data on the incidence of LB among European countries is very heterogenous due to data acquisition, such as choice of clinical manifestations reported and the way of data acquisition. EM comprises up to 99.2 % (range 69% to 99.2%) of LB cases, whereas the disseminated manifestations, such as neuroborreliosis (NB), ranges up to 19.6 %. There is an increase from the South (Portugal < 0.4/100000) to the North (Sweden 160/100000) as well as from West (below 0.4/100000 in Great Britain) to 130/100000 in Central (Austria) and Eastern Europe (Slovenia).There are data that support northward expansion.

CONCLUSIONS:
Due to the various approaches of data acquisition (clinical manifestations of LB, type of study, year of the study), data is hard to compare between countries. To obtain comparable and reliable data on the incidence of LB, data acquisition should be standardized throughout Europe including via training of primary care physicians.

PRESENTED BY: DR CHRISTIANE KLIER

POSTER SESSION **ABSTRACTS**

20100323 Poster Vector borne diseases

Keywords: Portugal, Borrelia burgdorferi sensu lato, genotyping, PCR-RFLP

Lyme Borreliosis versus Borrelia genospecies in Portugal

Filipa Fernandes-Marta (1), M. Nunes (1, 2), T. Carreira (1, 2), M.L. Vieira (1, 2)

AFFILIATIONS:
1. Unidade de Leptospirose e Borreliose de Lyme, Instituto de Higiene e Medicina Tropical (IHMT), Universidade Nova de Lisboa (UNL), Lisboa, Portugal;
2. Centro de Recursos Microbiológicos (CREM), Faculdade de Ciências e Tecnologia, UNL, Lisboa, Portugal

BACKGROUND:
Lyme borreliosis (LB) is an emerging vector-borne disease with worldwide distribution, particularly in the temperate zone. In Portugal, this disease remains under-diagnosed, due to the marked polymorphism and complex laboratory evaluation of causative agents, spirochetes of Borrelia burgdorferi sensu lato complex transmitted by hard ticks, in particular Ixodes ricinus. The diagnosis of LB is essentially clinic, based on signs, symptoms and history of tick The purpose of this work was to update the specie's distribution of Borrelia genospecies circulating in the country.bite, supported by laboratorial confirmation.

METHODS:
This study involved 146 Portuguese patients from different regions with a clinical suspicion of Lyme borreliosis,corresponding to 125 sera and 41 cerebrospinal fluid (CSF) samples. Borrelia DNA detection was performed by a nested-PCR targeting the 5S(rrf)-23S(rrl) intergenic spacer and Borrelia genospecies identification was carried out by Restriction Fragment Length Polymorfism (RFLP) using DNA previously amplified.

RESULTS:
Borrelia DNA was detected in 20/125 sera and in 5/41 CSF. The genospecies differentiation was achieved in 22 (88%) of PCR-amplified fragments with the following distribution: B. garinii (55%), B. afzelii (23%), B. lusitaniae (13%) and B. burgdorferi sensu stricto (9%). This evidence seems to corroborate the association between the first two species and the major clinical manifestations (neurological and cutaneous) respectively, observed in Lyme borreliosis patients.

CONCLUSIONS:
In conclusion, these data may reveal a tendency of distribution, pointing B. garinii and B. afzelii as the most prevalent genospecies in the country. On the other hand, the presence of B. lusitaniae was also an important result, confirming its pathogenic status and the need to include it in epidemiology of Lyme borreliosis in Portugal, as referred in previous works.

PRESENTED BY: MISS FILIPA FERNANDES-MARTA

20100127 Poster Vector borne diseases

Keywords: Phlebotomine sand flies; environmental change; Alqueva dam; Portugal

Phlebotomine sand fly vectors of Leishmania in the Alqueva Dam Region, Portugal

Carla Maia (1), M. O. Afonso (2), F. B. Freitas (2), J. Mendonça (1), J. Cristóvão (1), A. P. Almeida (2), L. Campino (1)

AFFILIATIONS:
1. Unidade de Leishmanioses, Instituto de Higiene e Medicina Tropical (IHMT), Universidade Nova de Lisboa (UNL), Lisboa, Portugal
2. Unidade de Entomologia Médica/UPMM, IHMT, UNL

BACKGROUND:
Human and canine Leishmaniasis, caused by Leishmania infantum, is an endemic zoonosis in Portugal, and a serious public health and veterinary problem. Human made changes to the environment may affect the range and densities of vectors and reservoirs, hence potentially increasing human exposure. The aim of this work was to determine the impact on the distribution, abundance, and infection rates of phlebotomine sand flies in 8 localities around the perimeter of the recent Alqueva dam (AR), which created the largest artificial lake in Europe.

METHODS:
From February to October 2007, sand flies were captured by CDC traps. Kinetoplastid DNA-PCR and ITS1-PCR were used to screen the presence of Leishmania in females.

RESULTS:
A total of 196 sand flies were collected in 8 of 10 biotopes surveyed. Phlebotomus perniciosus, P. ariasi, P. papatasi, P. sergenti and Sergentomyia minuta were identified. The highest phlebotomine density was observed in June. P. perniciosus was the predominant species. No Leishmania DNA was amplified.

CONCLUSIONS:
Although no sand flies were found infected with Leishmania, the presence of the vector P. perniciosus, is of public health relevance. P. sergenti and P. papatasi, vectors of L. tropica and L. major, respectively, were also found; the latter was captured for the first time outside the Algarve. Furthermore, L. major/L. infantum hybrids have already been identified in autochthonous human leishmaniasis cases. The increasing human flux, in this region, may lead to a consequent higher exposure to infection. Therefore a potential risk of spreading of L. infantum or introduction of new Leishmania species from travellers or migrants due to the vectors' presence emphasizes the need for on-going surveillance in this recently environmentally changed area.

PRESENTED BY: PROF LENEA CAMPINO

20100026 Poster Vector borne diseases

Keywords: Lyme disease, prevalence, Germany, risk factors, survey, children, adolescents

Risk factors associated with seropositivity against Lyme borreliosis: Results from a representative serosurvey of children and adolescents in Germany

Manuel Dehnert (1), V. Fingerle (2), C. Klier (2), T. Talaska (3), M. Schlaud (4), G. Poggensee (1),

AFFILIATIONS:
1. Robert Koch-Institut, Abteilung für Infektionsepidemiologie, Berlin, Germany
2. Nationales Referenzzentrum für Borrelien, Bayerisches Landesamt für Gesundheit und Lebensmittelsicherheit, Oberschleißheim, Germany
3. Institut für durch Zecken übertragbare Krankheiten, Brieskow-Finkenheerd, Germany
4. Robert Koch-Institut, Abteilung Epidemiologie und Gesundheitsberichterstattung, Berlin, Germany

BACKGROUND:
Lyme borreliosis (LB), the most frequent tick-borne disease in the northern hemisphere, is a multi-systemic disease caused by Borrelia burgdorferi sensu lato (Bb). Central Europe including Germany is regarded a highly endemic area; however, data on the extent of endemicity and on risk factors are scanty. Sera from the nationwide German Health Interview and Examination Survey for Children and Adolescents (KiGGS) of the Robert Koch Institute (2003 to 2006), were analysed to assess the prevalence of anti-Bb antibodies in children and adolescents. Data collected by interview were used to evaluate possible risk factors.

METHODS:
Sera were analysed for the presence of anti-Bb IgG by ELISA. All univariate and multivariate statistical analyses used sampling weights and accounted for the cluster structure of the survey design.

RESULTS:
Analysis of data from 12,614 individuals (51.2% males; age range: 1-17 years) revealed 631 (4.8%; 95%CI: 4.3-5.4%) seropositive individuals. The chance of seropositivity increased by 11% for every year of age for boys and 5% for girls, respectively. Residence in rural areas or small towns (OR=1.29; 95%CI: 1.03-1.62), living in southern Germany (OR=1.30; 95%CI: 1.01-1.68) and cats in the household (OR=1.31; 95%CI: 1.04-1.64) were risk factors for seropositivity. The chance of being seropositive was 65% lower in children with non-German citizenship (OR=0.35; 95%CI: 0.25-0.47).

CONCLUSIONS:
We present results from the first nationwide serological study on the prevalence of anti-Bb IgG antibodies indicating that LB is prevalent in all parts of Germany. This study identifies several unexpected risk factors and more data are needed to determine appropriate health messages for children and adolescents to prevent infections with Borrelia burgdorferi.

PRESENTED BY: DR MANUEL DEHNERT

20100296 Poster Vector borne diseases

Keywords: Sindbis virus (SINV), risk factor, Finland, case-control study

Risk factors for Sindbis virus infection in Finland: A matched case-control study

Jussi Sane (1), S.Guedes (2, 3), J. Ollgren (2), S. Kurkela (1, 4), O. Vapalahti (1, 4, 5), O. Lyytikäinen (2), P. Nuorti (2)

AFFILIATIONS:
1. Department of Virology, Haartman Institute, Faculty of Medicine, University of Helsinki, Finland
2. National Institute for Health and Welfare (THL), Department of Infectious Disease Surveillance and Control, Helsinki, Finland
3. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control, Stockholm, Sweden
4. Department of Virology, Helsinki University Central Hospital Laboratory, Finland
5. Division of Microbiology and Epidemiology, Department of Basic Veterinary Sciences, Faculty of Veterinary Medicine, University of Helsinki, Finland

BACKGROUND:
Sindbis virus (SINV) is an arthropod-borne alphavirus widely found in Eurasia, Africa and Oceania. Clinical SINV infection, characterized by rash-arthritis, is primarily reported in Northern Europe, mostly in Finland, where large outbreaks occur intermittently. Risk factors for SINV and other alphavirus infections are poorly defined. We aimed to characterize risk factors of SINV infection in order to inform public health measures. Furthermore, we collected information on the clinical picture of the disease.

METHODS:
We conducted a matched case-control study in Finland in 2002 during a SINV outbreak. Interviews were conducted using postal questionnaires focusing on risk factors (outdoor activities, exposure to insects and vertebrates, protective measures against insects), and sociodemographic and disease-related information. Serologically confirmed cases notified to the National Institute for Health and Welfare were included. Five controls were sought for each case, matched on age, sex and residence. Statistical methods included conditional logistic regression and Cochran and Mantel-Haenszel tests. Missing data were taken into account using Bayesian full-likelihood modelling.

RESULTS:
The analyses included 337 cases (60% females, age range 1-94 years) and 934 controls. Univariate analyses indicated that exposure to mosquito bites and most outdoor activities were associated with an increased risk for SINV infection. In the final multivariable analysis, mosquito bites (OR=29.3, 95% CI 10.7-80.0) and visiting woods or swamp (OR=1.8, 95% CI 1.32-2.45) remained as independent risk factors with a significant dose-response effect. The most common symptoms in cases were rash (96%), joint symptoms (96%), muscle pain (62%), fatigue (77%) and headache (49%).

CONCLUSIONS:
Our data confirmed the role of mosquitoes as vectors for SINV in Northern Europe. Protection against mosquitoes during outdoor activities in endemic areas is central in avoiding SINV infection.

PRESENTED BY: MR JUSSI SANE

POSTER SESSION **ABSTRACTS**

20100064 Poster Vector borne diseases

Keywords: Malaria, Climate, Risk, Health Impact Assessment, Time-series models

Short term effect of rainfall and humidity on suspected malaria episodes at Magaria, Niger

Jean-François Jusot, Oumarou Alto

AFFILIATIONS:
Centre de Recherche Médicale et Sanitaire, PO Box 10887, Niamey, Niger

BACKGROUND:
Malaria remains a major public health problem in Africa and takes on different epidemiological aspects according to climatic area. The link between climatic factors is insufficiently quantified, especially at a daily scale. The aim of this study was to conduct a time-series study of rainfall and relative humidity to estimate the increased-risk of malaria morbidity in a Sahelian area of Niger.

METHODS:
An exhaustive data collection of daily suspected malaria episodes was done between 2000 and 2003 in three health care facilities of Magaria, in the Sahel region of Niger. Climatic factors using time series analysis and a distributed lag model were studied to assess the impact of rainfall 40 days before occurrence of malaria episodes.

RESULTS:
The overall excess risk of suspected malaria episodes for an increase of 1 mm of rainfall after 40 days and an increase of 1% of humidity after 60 days of exposure was estimated respectively at 9.1% (95% CI: 2.5, 16.1) and 3.4% (95% CI: 2.8, 3.9).

CONCLUSIONS:
This study specified the excess risk of rainfall on the occurrence of suspected malaria episodes and was a first step to a health impact assessment.

PRESENTED BY: MR JEAN-FRANÇOIS JUSOT

20100182 Poster Vector borne diseases

Keywords: tick-borne encephalitis, survey, Europe, ENIVD

Survey on cases of Tick-borne encephalitis in Europe, 2010

Camille Escadafal (1, 3), M. Pfeffer (2), O. Donoso-Mantke (1)

AFFILIATIONS:
1. National Consultant Laboratory for Tick-borne encephalitis and further flaviviruses, Robert Koch Institute, Berlin, Germany
2. Institute of Animal Hygiene and Veterinary Public Health, University of Leipzig, Germany
3. European Public Health Microbiology Training programme (EUPHEM), European Centre for Disease Prevention and Control, Stockholm, Sweden

BACKGROUND:
Tick-borne encephalitis (TBE) is the most important flavivirus infection of the central nervous system in the European Union (EU) and Russia. A first survey was conducted by the European Network for Diagnostics of "Imported" Viral Diseases in 2008 on surveillance, prevention and laboratory activities concerning TBE for 2004-2007 with 22 participating countries. A second survey was launched in 2010 to collect broader information about TBE prevalence and observe possible trends comparing to the previous data.

METHODS:
A two-part questionnaire was mailed to contact points in all EU Member States and four non-EU countries (Bosnia-Herzegovina, Norway, Russia, and Switzerland). The first part of the questionnaire was identical to the previous survey requesting information on case definitions, type of diagnostic methods, investigations regarding tick-transmitted diseases, mapping of endemic foci, vaccination programmes and recommendations for travellers. In the second part, we asked for information on geographic and seasonal distribution of TBE cases, TBE subtypes, cases in animals, and prevalence in ticks.

RESULTS:
Among 28 participating countries, 16 reported to have TBE as a notifiable disease, as in the first survey. The number of notified cases in 2007–2009 (17,448) decreased in comparison to the previous study (21,330 cases in 2004-2006). Overall incidences have fluctuated year to year from 3.3/105 in 2007 to 5.0/105 in 2006 and have reached a peak in 2009 with 5.14/105. Case definitions, diagnostic assays, vaccination programmes, recommendations to travellers and methods/indicators for mapping risk areas still differ widely among countries.

CONCLUSIONS:
This survey shows the need for standardization across Europe in TBE diagnostics, surveillance and prevention activities. Collected data will help developing recommendations concerning diagnostic and mapping methods, case reporting systems, vaccination programmes and information campaigns.

PRESENTED BY: MS CAMILLE ESCADAFAL

20100199 Poster Vector borne diseases

Keywords: tick-borne encephalitis, Lyme borreliosis, descriptive epidemiology

Tick-borne encephalitis and Lyme borreliosis in Hungary – The epidemiological situation between 1998 and 2008

Viktor Zöldi (1), A. Juhász (2), Cs. Nagy (2), A. Szilágyi (1), A. Páldy (3)

AFFILIATIONS:
1. National Center for Epidemiology, Budapest, Hungary
2. Central-Hungarian Regional Institute of National Public Health and Medical Officer Service, Budapest, Hungary
3. National Institute of Environmental Health, Budapest, Hungary

BACKGROUND:
The tick-borne encephalitis (TBE) and Lyme borreliosis (LB) have been notifiable diseases in Hungary since 1977 and 1998 respectively. The cases are reported to the National Database of Epidemiological Surveillance System (NDESS). The notified TBE cases are confirmed by laboratory tests, whereas the notification of LB cases is mainly based on erythema migrans and possible exposure of tick bite. This is the first comparative epidemiological and geographical information analysis of this two diseases.

METHODS:
The following data of each individual cases registered in NDESS were used: sex, age, the starting date and place of the onset of disease and remark of the reporting person. The descriptive epidemiological analysis of the incidence was carried out by using directly standardized rates and smoothed indirectly standardized incidence ratio calculated by empirical Bayesian methods at municipality level, using RIF.

RESULTS:
706 TBE cases and 13.604 LB cases reported between 1998 and 2008 were analysed. The average yearly incidence rate of TBE was 0.64 per 100.000 inhabitants (range 0.46 to 0.84) and of LB was 12.37 per 100.000 inhabitants (range 9.9 to 18.1), with the highest incidence in 1998 and 2008 respectively. The most affected age groups were the 15-59 years of age men for TBE and the 45-64 years of age women for LB. The seasonality based on the starting date of the illness was also charactarized. Extended areas of high risk were identified in western and northern Hungary, illustrated on high (municipality level) resolution maps.

CONCLUSIONS:
Based on this analysis there is a possibility to connect areas and periods of high risk and characteristics (sex, age, residence) of groups most affected by tick-borne diseases in Hungary.

PRESENTED BY: MR VIKTOR ZÖLDI

20100123 Poster Vector borne diseases

Keywords: tick-borne encephalitis, TBE, Lyme disease / borreliosis, epidemiological situation, laboratory diagnostics

Tick-borne encephalitis and Lyme borreliosis in Latvia: epidemiological situation in 2007–2009

F. Arša (2), A. Bormane (2), A. Krūmiņa (1), J. Perevoščikovs (2), G. Rjazanceva (2), L. Rohlina (2), B. Rozentāle (1, 2), J. Storoženko (1, 2), J. Trofimova (2), L. Vīksna (1, 2), N. Zamjatina (2), Ģ. Briģis (1)

AFFILIATIONS:
1. Rīga Stradiņš University, Rīga, Latvia
2. State Agency "Infectology Centre of Latvia", Rīga, Latvia

BACKGROUND:
Tick-borne encephalitis (TBE) and Lyme borreliosis (LB) are the most frequently registered tick – borne diseases in Latvia, both transmitted by Ixodes ticks.

METHODS:
Data for 2007-2009 were analyzed on notified TBE and LB cases. Main data source – epidemiological investigation report forms for TBE and LB individual cases. Retrospective epidemiological analysis was performed by evaluation of dynamics of cases, calculation of incidence rates by territories and age groups. Results were compared with data from literature and previous years. Additionally, data on tick activity and pathogen prevalence, and data on confirmed diagnosis from laboratory of State Agency "Infectology Centre of Latvia" were analyzed in comparison with epidemiological data. ELISA (for both diseases) and Western Blot (for LB) were used for laboratory diagnostics of cases.

RESULTS:
The number of TBE cases was 2.7 lower than the number of LB cases, incidence rates varied by territories. No significant difference was found in TBE incidence rates by gender; however, LB incidence rate was higher in females. The maximum incidence rates in patients were observed in the age group 60-69. 96.3% of TBE patients and 24.5% of LB patients were hospitalized. The correlation was found between the annual numbers of TBE and LD cases (r=0.78), as well with Ixodes ricinus tick activity (r= 0.56 for TBE and r=0.86 for LB) for period 2005-2009.

CONCLUSIONS:
Significance of the tick – transmitted diseases is going to continue to be relatively high in Latvia; therefore it is necessary to sustain physicians and public awareness at high level, paying special attention on prevention and early diagnostics measures. Regular monitoring of ticks activity and detection of pathogen prevalence in ticks could be helpful in forecasting of epidemiological situation.

PRESENTED BY: DR IRINA LUCENKO

POSTER SESSION **ABSTRACTS**

20100252 Poster Vector borne diseases

Keywords: Chikungunya virus, travellers, risk

Trends in imported Chikungunya virus infections, Germany, 2006–2009

Christina Frank (1), Jonas Schmidt-Chanasit (2), Irene Schöneberg (1), Klaus Stark (1)

AFFILIATIONS:
1. Robert Koch Institute, Department for Infectious Disease Epidemiology, Berlin, Germany
2. Bernhard Nocht Institute for Tropical Medicine, Hamburg, Germany

BACKGROUND:
The mosquito-borne Chikungunya virus (CHIKV) occurs in many tropical countries and may cause severe illness in humans with fever and prolonged arthralgia. In 2007, the autochthonous CHIKV outbreak in Italy highlighted the need for monitoring imported CHIKV infection in Europe.

METHODS:
CHIKV infection is a notifiable disease in Germany. We analysed the surveillance data 2006-2009 with respect to sex, age, hospitalisation, seasonality and country of infection. Destination-specific incidences per 100,000 travellers were calculated.

RESULTS:
Overall, 152 cases of symptomatic CHIKV infection were notified (maximum 2006: n=56, minimum 2008: n=20). While 20% of the patients required hospitalisation, none died. The most common countries of infection were India (n=37), Mauritius (n=34), and the Maldives (n=20). Notifications from many of the countries came in distinct waves. In 2006, cases from Mauritius, and the other Indian Ocean islands near Africa predominated, whereas in 2007-2008 most infections were acquired in India and Sri Lanka, and since 2009 in the Maldives. The overall median travel duration was 20 days (range 4-1034), but was shorter for the Maldives (13 days) and Mauritius (16 days). Based on the number of air-travellers from Germany, the risk of infection was significantly higher for Mauritius and the Seychelles than for other countries.

CONCLUSIONS:
Trends in imported cases reflect shifts in the geographical distribution of CHIKV outbreaks. The data can be used to monitor imported infections and to adequately counsel travellers on destination-specific risks. Substantial underdiagnosis is still likely, and raised awareness among physicians warranted. A substantial proportion of cases may be viremic after returning to Germany. The presence of a competent vector (eg, Aedes albopictus, already established in Switzerland) under certain conditions would render local outbreaks possible in Germany.

PRESENTED BY: PROF KLAUS STARK

20100104 Poster Vector borne diseases

Keywords: chikungunya and dengue, vector-borne diseases, disease notification, surveillance, France

Vector-seasonal enhanced surveillance system of chikungunya and dengue in southern mainland France: 2010 a hot summer!

Anoek Backx (1, 2), K. Mantey (2), A. Armengaud (2), P. Malfait (2), G. La Ruche (3), D. Déjour-Salamanca (3), Y. Souarès (4),

AFFILIATIONS:
1. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
2. South Interregional Unit for Epidemiology (CIRE Sud) of French Institute for Public Health Surveillance (InVS), Marseilles, France
3. Department of International tropical Diseases (DIT), InVS, St. Maurice, France
4. Department of Infectious Diseases (DMI), InVS, St. Maurice, France

BACKGROUND:
Chikungunya and dengue viruses circulate in French Overseas Territories (FOT), not mainland France. Both viruses can be transmitted by Aedes albopictus, established in southern France since 2004. Following the 2005-2006 chikungunya epidemic in La Réunion, both diseases became notifiable in mainland France. Since then, districts with vector-establishment have been implementing an enhanced surveillance system during vector-activity-seasons. We present this enhanced surveillance and compare the 2010 results with the period 2006-2009.

METHODS:
The enhanced system integrates three elements during vector-activity-season: year-round mandatory notification of clinically and laboratory confirmed cases by physicians and laboratories to state health authorities; year-round weekly reporting of laboratory positive cases by selected medical laboratories to state health authorities; May-November, in vector-established districts, immediate reporting of clinically suspected cases by physicians and laboratories to local health authorities and prompt confirmation. This allows rapid implementation of vector-control measures.

RESULTS:
In May-June 2010, 72 suspected cases were reported in the vector-established districts; entomological services were informed in 42 cases, applying vector-control measures in the direct environment of 21. Of these 72, 30 were later confirmed as viraemic dengue and one as viraemic chikungunya.

CONCLUSIONS:
By July 2010 the number of reported suspected cases and of associated vector-control activities was already very high compared to previous years. Furthermore confirmed cases equalled the cumulative number of confirmed cases in 2006-2009. The expansion of the surveillance-area due to vector-establishment and improved responsiveness of physicians and laboratories partly explain these results. However there could be a true increase, linked to extensive virus circulation in many FOT since early 2010. Although not exhaustive, this system allows early detection in order to prevent and control virus-transmission to the susceptible population in mainland France.

PRESENTED BY: MS ANOEK BACKX

20100243 Poster Vector borne diseases

Keywords: west nile; surveillance; animals; vectors

West Nile in Veneto Region: results of the 2008–2010 surveillance activity

L. Busani (1), F. Montarsi (2), M. Cecchinato (2, 3), M. Lorenzetto (4), C. Terregino (2), L. Bonfanti (2), F. Russo (5), M. Dalla Pozza (4), F. Monge (6), S. Marangon (2)

AFFILIATIONS:
1. Istituto Superiore di Sanità, Department of Food Safety and Veterinary Public Health, Viale Regina Elena 299, 00161 Rome, Italy
2. Istituto Zooprofilattico Sperimentale delle Venezie, Viale dell'Università 10, 35020 Legnaro (Padua), Italy
3. Department of Public Health, Comparative Pathology and Veterinary Hygiene, University of Padova, Viale dell'Università, 16, 35020 Legnaro (PD), Italy
4. Veterinary Epidemiology Regional Centre (CREV) – Istituto Zooprofilattico Sperimentale delle Venezie, Viale dell'Università 10, 35020 Legnaro (Padua), Italy
5. Public Health and Screening Service,Veneto Region, Dorsoduro, 3493 – Rio Nuovo – 30123 Venice, Italy
6. Local Public Health Office – ULSS 8, Rovigo, Italy

BACKGROUND:

In 2008 an epidemic of West Nile Virus (WNV) started in the Po valley, Italy, involving horses and birds. The health authorities of Emilia Romagna, Veneto and Lombardy intensified the WNV surveillance to define the involved area and the public health risk. This paper presents the results of the 2008-2010 surveillance on animals, birds and mosquito vectors in Veneto.

METHODS:

In 2008 the surveillance involved 227 horse stables in South Veneto (Rovigo, Venice and Padua provinces). In each stable up to 10 horses were tested. In this area, also 30 cattle farms were tested. From 2009 the area was extended including additional 174 stables in the provinces of Padua, Venice, Verona and Vicenza. In 2008, stray dogs captured in Rovigo and Padua were also tested to identify possible WNV urban circulation. The entomological surveillance began in October 2008 in a limited area, and was intensified in 2009 and 2010 to cover the whole region. From January 2009 monitoring of wild birds also started in the whole area.

RESULTS:

WNV was detected in equines (23% and 18% positive stables in 2008 and 2009) and dogs (20 positive out of 72), and, to a lesser extent in cattle (4/30) and wild birds (11/621). All mosquitoes (47018, mostly Culex pipiens) in Veneto tested negative for WNV. Usutu virus was detected in wild birds and mosquitoes in 2009.

CONCLUSIONS:

The monitoring of horse stables allowed to define the extent of WNV circulation over time and space. The results could be suggestive of a decline in the risk of human exposure, (the 10 human cases recorded in Veneto occurred in 2008-2009) but the possible evolution of the epidemic remains hard to predict.

PRESENTED BY: DR LUCA BUSANI

20100213 Poster Vector borne diseases

Keywords: Risk maps, malaria, Portugal, Anopheles atroparvus, R0 models

Will malaria re-emerge in Portugal?

*E Gomes 2); C Capinha (3); J. A. Tenedório (4); J. Rocha (3); J. L. Vicente (2); R Alves (2); J Pinto (2); APG Almeida (1); V. E. do Rosário (2); C. A. Sousa (1)**

AFFILIATIONS:
1UEM e CMDT-LA2 – Instituto de Higiene e Medicina Tropical – Universidade Nova de Lisboa, Lisbon, Portugal
3CEG – Instituto de Geografia e Ordenamento do Território – Universidade de Lisboa, Lisbon, Portugal
4e-Geo – Faculdade de Ciências Sociais e Humanas – Universidade Nova de Lisboa, Lisbon, Portugal

BACKGROUND:

Malaria is considered by the WHO an eradicated disease in Portugal, since 1973 (Antunes et al., 1987). Three decades after the last reported autoctotonous case, the receptivity of the country for the re-emegence of the disease was estimated by entomological surveys and the use of spatial information analysis based on Geographic Information Systems (GIS).

METHODS:

A three-years study on a selected region (Comporta) caracterised the vectorial capacity of Anopheles atroparvus Van Thiel, 1927, the former malaria vector in Portugal; experimental infections of local mosquito populations assessed the atroparvus vector competence for tropical strains of Plasmodium falciparum Welch, 1897 (Sousa, 2008) and a predictive model of atroparvus habitat suitability was desiged to estimate mosquito abundance throughout Portugal (Capinha et al., 2009). These three elements were applied into the development of a risk model for malaria transmission in mainland Portugal. Risk maps were generated using a Ro index based on the variables of receptivity and infectivity of A. atroparvus and vulnerability of mainland Portugal for malaria transmission.

RESULTS:

Results showed that the most receptive areas are located in north-east and Portugal (Alentejo), a pattern very similary to the former malaria distribution in the country. Only two areas, both located in the central-south interior of Portugal were identified has having a Ro above 1.

CONCLUSIONS:

Based on the results obtained the current risk for the occurrence of a malaria outbreak in Portugal mediated by An. atroparvus is low.

PRESENTED BY: PROF CARLA A. SOUSA

POSTER SESSION **ABSTRACTS**

20100159 Poster Zoonoses

Keywords: Q fever, pregnancy, screening

A screening strategy for Q fever during pregnancy

*Munster J. M. (1, 2, 3), Leenders A. C. A. P. (4), Aarnoudse J. G. (3), Hak E (1, 2) for the Q fever during pregnancy study group**
** Q fever during pregnancy study group*
Munster J. M. (1, 2, 3), Leenders A. C. A. P. (4), Stolk RP (2), Aarnoudse J. G. (3), Van der Hoek W. (5), Hamilton C. J. C. M. (6), Schneeberger P. M. (4)

AFFILIATIONS:
1. University of Groningen, University Center for Pharmacy, PharmacoEpidemiology & PharmacoEconomics;
2. University Medical Center Groningen, University of Groningen, Department of Epidemiology;
3. University Medical Center Groningen, University of Groningen, Department of Obstetrics and Gynaecology;
4. Jeroen Bosch Hospital, Department of Medical Microbiology.
5. National Institute for Public Health and Environment;
6. Jeroen Bosch Hospital, Department of Obstetrics and Gynaecology;
7. Public Health Department ''Hart voor Brabant''
8. Jeroen Bosch Hospital, Department of Paediatrics;
9. University Medical Center Groningen, University of Groningen, Department of Medical Microbiology;
10. University Medical Center Groningen, University of Groningen, Department of Pathology.

BACKGROUND:
In The Netherlands, the largest outbreak of Q-fever worldwide, with a peak in 2009 of more than 2200 cases, is ongoing. A particular risk group concerns pregnant women in which the infection is mostly asymptomatic. Q fever during pregnancy may cause both obstetric complications as well as chronic infection in the mother. A clustered randomized controlled trial to assess the effects of screening for Q fever among this high-risk group is ongoing (trial register number NL30340.042.09). The primary endpoint is any maternal or obstetric complication in Q fever positive women.

METHODS:
Midwife centers in high-risk areas were randomized to recruit pregnant women for the screening or control strategy. In both groups a blood sample was taken around 20 weeks of pregnancy. In the screening group this sample was immediately analyzed with indirect immunofluorescence assay (IFA) (Focus Diagnostics, Cypress, CA) for detection of IgG and IgM antibodies at a titer of 1:32. Every positive sample was fully titrated. In case of acute or chronic infection treatment advice was given. In the control group serum was frozen for analysis after delivery.

RESULTS:
In all, 54 of 99 midwife centers were randomized. Of the first 350 participants in the screening group 4% showed an acute infection and treatment was started. However in half these cases an acute infection could not be confirmed with the second sample. Nine percent of the first 350 participants had a previous infection without signs of reactivation.

CONCLUSIONS:
Thirteen percent of the pregnant women in high-risk Q fever areas have evidence of Q fever infection. To confirm an acute Q fever infection during pregnancy, a second sample seems necessary to exclude cases with atypical IgM formation.

PRESENTED BY: MISS JANNA MUNSTER

20100342 Poster Zoonoses

Keywords: MRSA, spa-typing, pigs, baseline survey, prevalence, risk factors, EU.

Baseline survey on methicillin-resistant Staphylococcus aureus (MRSA) in holdings with breeding pigs in the EU in 2008 – prevalence and factors associated with MRSA holding contamination

Pierre-Alexandre Beloeil, Giusi Amore, Francesca Riolo, Frank Boelaert, Pia Mäkelä

AFFILIATIONS:
Unit on Zoonoses Data Collection, European Food Safety Authority (EFSA), Parma, Italy

BACKGROUND:
MRSA is a major concern for public health. MRSA ST398 has been detected in pigs and recognised as an occupational hazard for people in contact with pigs and it can occasionally be introduced into hospitals. An EU-wide baseline survey was conducted in holdings with breeding pigs to assess the prevalence and diversity of MRSA in pig productionand to inform on factors associated with holding contamination.

METHODS:
A total of 1,600 breeding holdings and 3,473 production holdings from 24 Member States (MSs) and two non-MSs were included in the survey. Pooled dust samples were tested for MRSA and all isolates were spa-typed.

RESULTS:
The EU-level prevalence of MRSA-contaminated breeding and production holdings was 14.0% and 26.9%, respectively, while prevalence ranged among MSs from 0% to 46.0% and 0% to 51.2%, respectively. The risk of MRSA holding contamination increased with the number of breeding pigs in the holding. A strong positive association was demonstrated at country-level between the prevalence of MRSA-contaminated breeding holdings and MRSA-contaminated production holdings, suggesting a vertical dissemination between holdings. A country-level analysis using intra-Community trade data showed strong positive associations between the MRSA-contaminated holding prevalence and a proxy for numbers of imported breeding pigs at risk of being MRSA colonised. MRSA ST398 was predominant (92.5% of isolates). Spa-types not belonging to ST398 were detected in six MSs, some of which already described in human medicine. Spa-types belonging to ST_1, ST_5 and ST8 tested negative for Panton-Valentine leukocidin (PVL) toxin genes, suggesting that these strains were not related to the PVL-positive strains known in human medicine.

CONCLUSIONS:
This survey provided comparable estimates of MRSA-contaminated holding prevalence across EU and improved knowledge of MRSA epidemiology in pig production.

PRESENTED BY: DR PIERRE-ALEXANDRE BELOEIL

20100114 Poster Zoonoses

Keywords: immunoflourescence assay, zoonotic disease, RVL, vaccination

Challenges for rabies control in Azerbaijan

Hajiyeva Ayten

AFFILIATIONS:
FETP 2009 – GEORCIA, TBILISI

BACKGROUND:

Rabies is a zoonotic disease, causing over 55000 deaths globally each year. The majority of cases of human death result from a bite of an infected dog. Rabies is widespread in Azerbaijan; in 2008, it was estimated that there were 680,000 dogs. The Republican Veterinary Laboratory (RVL) is the only facility that tests for rabies. We reviewed the number of cases and reported animal vaccinations in 2006 to 2008 to develop recommendations for better disease control.

METHODS:

We analyzed national data on dog bites and animal rabies from the Ministry of Health and the RVL for 2006-2008. We also interviewed heads of regional veterinary laboratories and experts.

RESULTS:

From 2006-2008, 81 specimens were tested at the RVL; 60 (74%) were positive by immunoflourescence assay. Fifty-three (88%) were from domestic animals, including 29 dogs. The number of rabies cases among animals increased from 14 in 2006 to 24 in 2008. Dogs vaccinated increased from 119,075 in 2006 to 120,225 in 2007, and 180,297 in 2008. Based on doses administered, the rabies vaccination coverage in dogs is less than 26% on average. The number of people vaccinated against rabies increased from 9062, to 10419, to 11554 (2006—2008); there were 3, 2, and 4 deaths in those years respectively. Between 2006 and 2008, 4% of laboratory specimens were unsuitable for testing and rejected

CONCLUSIONS:

Literature suggests that more than 26% rabies vaccination coverage is needed for effective control. The number of deaths from rabies also emphasizes poor control and treatment of exposed persons. We recommend improving dog vaccination coverage, capturing stray animals and developing the laboratory network capacity for proper collection, submission and analysis of specimens.

PRESENTED BY: MRS AYTEN HAJIYEVA

20100291 Poster Zoonoses

Keywords: Salmonellosis, trend analysis, control programme, breeding flocks, laying hens, Gallus gallus.

Decrease in human salmonellosis in the European Union and reduction of the Salmonella prevalence in poultry populations.

Valentina Rizzi (1), F. Boelaert (1), P. Makela (1), J. Takkinen (2), A. Ammon (2).

AFFILIATIONS:
1. Zoonoses Data Collection Unit, European Food Safety Authority, Largo Natale Palli, 5/A, I-43121, Parma, Italy
2. European Centre for Disease Prevention and Control, Stockholm, Sweden

BACKGROUND:

Directive 2003/99/EC obligates the European Union (EU) Member States (MSs) to collect data on zoonoses and zoonotic agents, and requests the European Food Safety Authority (EFSA) to analyse these data and publish a Community Summary Report. Human data is analysed and provided by the European Centre for Disease Prevention and Control (ECDC). 2008 was the first year of implementation of the intensified Salmonella control programmes in laying hen flocks and the second year for breeding flocks of Gallus gallus. A preliminary assessment of the impact on public heath was performed.

METHODS:

A five-year EU-trend in human salmonellosis cases was analysed using Poisson regression while adjusting for potential clustering. Proportional changes in reported human S. Enteritidis (SE) cases were calculated by countries. Achievement of the EU Salmonella reduction targets in breeding flocks (at most 1% of the flocks positive to one of the top-five human Salmonella serovars) and laying hen flocks (MS-specific proportion of flocks remaining positive to SE or Salmonella Typhimurium (ST)) was investigated.

RESULTS:

The statistically significant decreasing trend in the notification rate of salmonellosis continued in the EU for the fifth consecutive year. SE human cases decreased by 10% and 14% in 2007 and 2008 respectively. Concomitantly, 19 MSs reported a flock-level Salmonella prevalence in breeding flocks lower than the reduction target. A noteworthy decline in the prevalence of SE and ST in laying hen flocks was observed and altogether 20 MSs met their reduction target in 2008.

CONCLUSIONS:

The data for 2008 suggest that the intensified Salmonella control programmes in poultry have had a positive impact on public health by reducing the number of human salmonellosis cases, particularly cases caused by the SE serovar.

PRESENTED BY: DR VALENTINA RIZZI

POSTER SESSION **ABSTRACTS**

20100376 Poster Zoonoses

Keywords: Coxiella burnetii; Q fever; Laboratory diagnosis; Portugal

Four years of Q fever diagnosis in a State Laboratory, Portugal

Ana Sofia Santos (1), R. Sousa (1), T. Luz (1), P. Parreira (1), B. Nunes (2), J. Catarino (3), M. S. Núncio (1)

AFFILIATIONS:
1. Centre for Vectors and Infectious Diseases Research Doutor Francisco Cambournac, National Institute of Health Dr. Ricardo Jorge (CEVDI/INSA), Águas de Moura, Portugal
2. Department of Epidemiology, National Institute of Health Dr. Ricardo Jorge, Lisbon, Portugal
3. General Directorate of Health, Lisbon, Portugal.

BACKGROUND:

Q fever is a worldwide zoonosis with growing interest in Europe, caused by the gamma-proteobacteria Coxiella burnetii. In Portugal it is a notifiable disease, and in average 0.08 cases per 100.000 inhabitants is reported annually, but this incidence is believed to result from Q fever underreport, rather that low disease occurrence. This work summarizes the last four years Q fever diagnosis in CEVDI/INSA.

METHODS:

This study include patients from which at least one biological sample was received at laboratory during 2006 to 2009 for diagnosis of C. burnetii. Available tests included IFA phase I/II IgA, IgG and IgM commercial kits and PCR. Samples were analyzed prospectively or retrospectively, when submitted for other purpose than Q fever serodiagnosis but belonging to patients included in the study.

RESULTS:

From a total of 2499 patients, 125 were considered Q fever cases (8 identified retrospectively). The disease was most common in men (77.6%) and 35-44 years was the age group most affected. Seventy-nine patients were hospitalized and in 14% cases admission to intensive care units were required. Clinical information was available for 86 patients, and in more than 40% cases disease presented as a febrile illness. Four patients presented clinical and laboratory context compatible with chronic Q fever, and information on at least one fatality was available.

CONCLUSIONS:

This study shows that Q fever occurrence is high than official reports and in addition to underreporting, misdiagnosis also occurs. Despite the moderate clinical presentation in the majority of the cases the disease seems to require more admissions than initially expected, a situation that should be better evaluated.

PRESENTED BY: DR ANA SOFIA SANTOS

20100325 Poster Zoonoses

Keywords: Avian Influenza, Surveillance, Nigeria

Highly Pathogenic Avian Influenza Surveillance in Live Bird Markets in Nigeria, 2008.

Mabel Aworh (1), T. Joannis (2), P. Okewole (2), C. Meseko (2), P. Ekong (2), L. Davis (1), G. Poggensee (1), P. Nguku (1).

AFFILIATIONS:
1. Nigerian Field Epidemiology and Laboratory Training Program, Abuja, Nigeria.
2. National Veterinary Research Institute, Vom, Plateau State, Nigeria.

BACKGROUND:

In February 2006, Nigeria reported Highly Pathogenic Avian Influenza (HPAI) in poultry. Over 325,000 chickens from more than 300 farms were culled. The first human case linked to poultry from a Live Bird Market (LBM) was reported in January 2007. HPAI surveillance was established in states that had reported outbreaks. In 2008, surveillance was extended to LBMs in states without previously reported outbreaks with the objective of detecting the HPAI virus in asymptomatic birds.

METHODS:

Surveillance was conducted in 22 LBMs, two per state in 11 states with no previous record of HPAI outbreak. A structured questionnaire was used to obtain information on types of birds sold, health status of the birds, market location etc. Specimens of whole carcass, serum, tracheal and cloacal swabs collected from apparently healthy birds were analyzed for H5N1 by Agar Gel Immuno-diffusion test, Virus Isolation and Reverse Transcriptase Polymerase Chain Reaction (RT-PCR).

RESULTS:

Of 1,874 birds sampled, 44 (2.3%) were waterfowl, 135 (7.2%) were captive wild birds, and 1,695 (90.0%) were domestic poultry. Two (0.1%) tested positive for H5N1 by virus isolation, Immuno-diffusion test and RT-PCR; one from free range chicken in Kebbi State and the other from duck in Gombe State. Of the 1,695 domestic poultry, 944 (56.0%) were intensively managed and 751(44.0%) were free range birds. The two H5-positive birds were from free range poultry population.

CONCLUSIONS:

Surveillance of HPAI was useful in detecting the virus in apparently healthy birds sold at the LBMs, highlighting the risk of human exposure to the virus in these settings. Hence LBMs play a vital role in the control of HPAI in Nigeria. This survey has led to improvement in market bio-security and training marketers.

PRESENTED BY: DR MABEL AWORH

20100227 Poster Zoonoses

Keywords: Fox rabies, oral fox vaccination, immune coverage, vaccination efficacy

Impact of emergency oral rabies vaccination of foxes in northeastern Italy

Arianna Comin, K. Capello, P. Mulatti, L. Gagliazzo, C. Citterio, P. De Benedictis, F. Mutinelli, L. Bonfanti, S. Marangon.

AFFILIATIONS:
Istituto Zooprofilattico Sperimentale delle Venezie – IZSVe, National Reference Centre for Rabies, Legnaro (Padova), Italy

BACKGROUND:

Fox rabies re-emerged in northeastern Italy in 2008, in an area bordering Slovenia. In 2009, the infection spread westward to the Veneto Region and in 2010 to the provinces of Trento and Bolzano. Aerial emergency oral fox vaccination (OFV) was implemented in Winter 2009/10 to control the epidemic. The results and the efficacy estimate of the OFV campaign are presented.

METHODS:

The study period ranged from the first case notified in the Veneto region to the end of the monitoring of the effectiveness of the OFV campaign (17/11/2009 – 09/05/2010). A pre-vaccination period, taking into account the time needed to develop antibodies, and a post-vaccination period were considered. Vaccine baits were distributed below the freezing level (i.e 1,000 m asl) and the zones covered by vaccination were defined considering a conservative cut-off value of 900 m asl. A case of rabies was defined by a confirmed positive result to Fluorescent Antibody Test. A fox was considered vaccinated if Fluorescent Antibody Virus Neutralization test provided antibody titre ≥0.5 IU/ml.

RESULTS:

Of the 1,917 foxes tested, 170 had laboratory-confirmed rabies; of these, 100 (58.8%) were diagnosed in the pre-vaccination period. Post-vaccination 59 out of 70 cases (84.3%) were found above 900 m, presumably because of the vaccination. Vaccination coverage in foxes was estimated to be 77% by testing 251 foxes collected post-vaccination.

CONCLUSIONS:

The OFV campaign led to satisfactory immune coverage and reduced rabies incidence below 1000 m. Based on the results of the present study, a second aerial OFV campaign was implemented in a larger geographical area in the Spring of 2010, expanding the area to cover altitudes up to 2300 m asl.

PRESENTED BY: DR ARIANNA COMIN

20100002 Poster Zoonoses

Keywords: Hantavirus, Hemorrhagic Fever with Renal Syndrome, Puumala virus

No evidence of hantavirus infection in a series of 89 symptomatic patients in the United Kingdom and Ireland

Satu Kurkela (1,2), D. Brown (1), O. Vapalahti (3), V. Sivaprakasam (4), W. Zochowski (4), R. Smith (5)

AFFILIATIONS:
1. Health Protection Agency, Centre for Infections, London, United Kingdom;
2. European Public Health Microbiology Fellowship Programme (EUPHEM), Stockholm, Sweden;
3. Haartman Institute, University of Helsinki, Helsinki, Finland;
4. Leptospira Reference Unit, County Hospital, Hereford, United Kingdom;
5. Public Health Wales, Cardiff, United Kingdom

BACKGROUND:

Hantaviruses, each carried by their specific rodent species, are causative agents of haemorrhagic fever with renal syndrome. Antigenic relatedness of hantaviruses results in serological crossreaction between Avricolinae/Sigmodontinae-borne hantaviruses, and similarly between Murinae-borne hantaviruses. Puumala, Dobrava, and Seoul hantaviruses are found throughout mainland Europe. Their host rodents are present in the UK, but the presence of hantaviru ses is unclear. We aimed to identify hantavirus infections in symptomatic patients to contribute to assessing the public health significance of hantaviruses in the UK and Ireland.

METHODS:

Acute and convalescent sera were available from 89 patients (aged 5-77 years), originally suspected with but tested negative for leptospirosis in 2007-2009 in the UK, without recent travel history, and with at least one of the following signs typical for hantavirus infection: abnormal renal or liver function, myalgia, chills, back or loin pain, thrombocytopenia, or fever. The convalescent sera were screened for Avricolinae/Sigmodontinae-borne hantavirus antibodies with Puumala IgG immunofluorescence assay (IFA), and for Murinae-borne hantavirus antibodies with Dobrava-Saaremaa IgG IFA. In case of reactivity in IgG testing, the convalescent samples underwent Puumala IgM (bac-PUU-N) ELISA, and both samples Puumala and Dobrava-Saaremaa IgM IFA.

RESULTS:

All patients were seronegative; there was no evidence of infections with the following hantaviruses pathogenic to humans: Puumala, Dobrava, Saaremaa, Hantaan, Seoul, Amur, or American hantaviruses.

CONCLUSIONS:

These patients were at potential risk of hantavirus infection due to similarity in exposure and clinical picture between hantavirus and leptospira infections. These results do not suggest that hantaviruses are a significant cause of clinical disease in the UK. However, the study sample size was small; fully assessing the presence of hantaviruses in the UK requires further studies on different populations and wildlife.

PRESENTED BY: DR SATU KURKELA

POSTER SESSION **ABSTRACTS**

20100036 Poster Zoonoses

Keywords: Q-fever, outbreak, seroprevalence, farmers, occupational

Risk factors for Q fever infections in dairy goat farmers' households in the Netherlands

Jeannine Hautvast (1), B. Schimmer (2), H. Aangenend (1), A. Lenferink (1, 2), P. Schneeberger (3), P. Vellema (4), Y. van Duijnhoven (2)

AFFILIATIONS:
1. Academic Collaborative Centre for Public Health AMPHI, Department of Primary and Community Care (hp117), Radboud University Nijmegen Medical Centre, Nijmegen, the Netherlands
2. Centre for Infectious Disease Control, RIVM, Bilthoven, the Netherlands
3. Laboratory for Medical Microbiology, Jeroen Bosch Hospital, 's-Hertogenbosch, the Netherlands
4. Animal Health Services (GD), Deventer, the Netherlands

BACKGROUND:
Since 2007, large annual Q fever outbreaks are ongoing in the Netherlands, in which dairy goats have been incriminated as the main source. Dairy goat farmers are therefore considered an occupational group at risk, of which however, information on their Q-fever status and risk factors are lacking. This study aims to determine the current seroprevalence in dairy goat farmers and identify individual and farm-associated risk factors for Q fever seropositivity.

METHODS:
Through a cross-sectional design, farmers and family members from farms with more than 100 dairy goats were included. Serum samples were tested for IgG/M phase I/II using IFA with a cut-off of >= 1:32. Individual and farm-based characteristics were collected through self-administered questionnaires. Odds ratios and corresponding 95% confidence intervals were calculated through logistic regression analysis to identify potential risk factors for C. burnetii infection.

RESULTS:
Preliminary data consist of 100 farms with 238 participants. Seroprevalence ranged from 64% in children up to 78% in farmers. Around 10% of the total group showed to have recent infections. Univariate analyses showed that being involved in goat-related activities, such as cleaning, milking, contact with birth material, handling manure, were risk factors for Q-fever seropositivity. Farm-associated risk factors were among others, 'using silage food' and 'living within 5 km of bulk milk Q fever positive farm'. The factors 'use of separate lambing stable' and 'use of disinfection basin' appeared to protect against Q-fever seropositivity. Multivariate analyses to identify independent risk factors are in process.

CONCLUSIONS:
Seroprevalence of Q fever is high in dairy goats farmers and their family members, including recent, but mainly past infections. Preliminary risk analyses point at goat farming as a whole, rather than specific activities.

PRESENTED BY: MRS JEANNINE HAUTVAST

20100093 Poster Zoonoses

Keywords: Salmonella, pigs, prevalence, antimicrobial susceptibility, Public Health, food safety

Salmonella in pig herds in Portugal: prevalence, serotypes and antimicrobial susceptibility

Inês Silva-Domingos (1), F. Loução (1, 2), F. M. Baptista (2, 3), J. Machado (4), Gouveia, S. (2), V. Almeida (2), C. Pomba (1, 2).

AFFILIATIONS:
1. Laboratory of Antimicrobial and Biocide Resistance, Interdisciplinary Centre of Research in Animal Health, Faculty of Veterinary Medicine, Technical University of Lisbon, Portugal.
2. Interdisciplinary Centre of Research in Animal Health, Faculty of Veterinary Medicine, Technical University of Lisbon, Portugal
3. Department of Large Animal Sciences, Faculty of Life Sciences, University of Copenhagen, Frederiksberg C, Denmark
4. Enterobacteriacea Laboratory, National Institute of Health Dr. Ricardo Jorge, Lisbon, Portugal

BACKGROUND:
Salmonellosis is the second most commonly reported food-borne zoonoses in the European Union. Reduction of Salmonella in the pig industry will be set as a target in the European Union and it is believed to significantly contribute to the protection of human health. This study aimed at evaluating prevalence, serotypes and antimicrobial susceptibility of Salmonella in Portuguese pig herds.

METHODS:
A cross-sectional study was conducted from April-July 2009 in 24 herds selected by convenience. Pooled faecal samples (N=211) were collected from randomly selected pens housing 6-10 week old pigs. One pooled sample consisted of 25g of faecal material collected from five different places of the pen. Samples were submitted to bacteriological testing and Salmonella isolates were serotyped by the Kauffman-white scheme. Susceptibility to 34 antibiotics was investigated by the disk diffusion method and minimal inhibitory concentrations determined by the microbroth dilution method. Results were interpreted according to CLSI guidelines M31-A3 and M-00-S16. Extended-spectrum beta-lactamases (ESBLs) detection was done by PCR and nucleotide sequencing.

RESULTS:
Salmonella was isolated in 25% of the herds (CI95%: 12-45%). Fourteen Salmonella isolates were detected and the most common serotypes were S. Rissen (N=4) and S. Typhimurium (n=4). Eight of the 14 isolates were resistant to at least one antibiotic and six showed multidrug resistance. Two multidrug-resistant S. Rissen ESBL CTX-M-1 producer strains were isolated for the first time in Portuguese pig herds.

CONCLUSIONS:
Results obtained strongly support the need to further control Salmonella in Portuguese pig herds to mitigate bacteria spread and antimicrobial resistance. Reduction of Salmonella prevalence in pig herds is expected to improve food safety and animal health and welfare.

PRESENTED BY: PROF CONSTANCA POMBA

20100171 Poster Zoonoses

Keywords: Q-fever, C. burnetii, cohort, Health Status, Quality of Life.

The health status of Q-fever patients after long-term follow-up.

Gabriella Morroy (1, 2), J. B. Peters (3, 4), M. van Nieuwenhof (1), J. H. J. Bor (2), J. L. A. Hautvast (2), W. van der Hoek (5), C. J. Wijkmans (1), J. H. Vercoulen (3, 4)

AFFILIATIONS:

1. Department of Infectious Disease Control, Municipal Health Service Hart voor Brabant, 's-Hertogenbosch, the Netherlands
2. Academic Collaborative Centre AMPHI, Department of Primary and Community Care, Radboud University Nijmegen Medical Centre, the Netherlands
3. Department of Medical Psychology, Radboud University Nijmegen Medical Centre,the Netherlands
4. Department of Pulmonary Diseases, Radboud University Nijmegen Medical Centre,the Netherlands
5. Centre for Infectious Disease Control, National Institute for Public Health and the Environment, Bilthoven,the Netherlands

BACKGROUND:

In the Netherlands, 3,368 acute Q-fever cases were notified between 2007 and 2010. Previous studies suggest long-term persistence of symptoms. The aim of this study is to qualify and quantify the health status of Q-fever patients after long-term follow-up.

METHODS:

870 Q-fever patients of the 2007-2008 Dutch outbreaks, from the Province Noord-Brabant,were mailed a questionnaire 12 to 26 months after the onset of illness. We measured the health status with the Nijmegen Clinical Screening Instrument (NCSI) consisting of eight sub-domains of symptoms, functional impairment and Quality of Life (QoL). Q-fever patients older than 50 years of age were compared to a healthy- and a COPD (Chronic Obstructive Pulmonary Disease) -control group and to Q fever patients younger than 50 years.

RESULTS:

The response rate was 66% (572/870). Outcomes for Q-fever patients younger and older than 50 years were similar. The health status of Q-fever patients was significantly worse for all NCSI-domains compared to healthy controls, but better compared to COPD-controls. Compared to healthy controls, Q-fever patients (older than 50 years) scored worse for fatigue (59%; OR 9·2, CI 4·0-20·8), other subjective symptoms (52%; OR 9·9, CI 4·0-24·5) and behavioural impairment (30%; OR 5·0, CI 1·9-13·5). Hospitalization of Q fever patients during the acute illness episode was significantly related to behavioural impairment (OR 2·8, CI 1·5-5·1 p=0·001), poor health related QoL (OR 2·3, CI 1·3-4·0, p=0·005) and persisting symptoms (OR 1·9, CI 1·1-3·6 p=0·026) at follow-up.

CONCLUSIONS:

12 to 26 months after an episode of acute Q-fever, patients –especially those that were hospitalized- present more symptoms, functional impairment and impaired QoL than healthy persons. More attention is needed for interventions to prevent the development of these long-term consequences.

PRESENTED BY: MRS GABRIELLA MORROY

LATE BREAKERS SESSION **ABSTRACTS**

ESCAIDE

LATE BREAKERS SESSION **ABSTRACTS**

20100401 Late breakers

Impact of the pandemic influenza A (H1N1)v vaccination campaign in Jersey, 2009–2010

Mariana Haeberer (1), M. Rolland (2), T. Seyler (3)

AFFILIATIONS:
1. Spanish FETP (PEAC), National Epidemiological Centre, Madrid, Spain.
2. French FETP (Profet), Environmental Health Department, National Institute of Public Health, Paris, France.
3. EpiConcept, Paris, France.

BACKGROUND:
Jersey had access to pandemic vaccination when A(H1N1)v was already circulating in the community. Beside high-risk groups (including pregnant/post-partum women and health-workers) Jersey offered vaccination to all children from week 46-2009. The campaign led to vaccine coverage >50% among this group by week 48-2009. We assessed the impact of the pandemic vaccination campaign in Jersey on influenza A(H1N1)v incidence.

METHODS:
We described weekly incidence of influenza-like-illness (ILI) confirmed as A(H1N1)v and weekly vaccine coverage for one dose of pandemic vaccine by age group and target group (children, pregnant/post-partum, health-workers). We estimated pandemic vaccine effectiveness (PIVE) among target groups using a test negative case-control design, in which we compared the vaccine coverage of ILI patients testing positive for A(H1N1)v to those testing negative. We estimated the number of cases prevented by the vaccination campaign using the Pinner method.

RESULTS:
Overall attack rate was 0.77% with 696 A(H1N1)v cases. Weekly incidence among children peaked on week 47-2009 at 89.7/10000 when vaccine coverage for this group was 49.4%. It decreased to 18.5/10000 on week 48-2009. Among children, 21/400 controls and none of the 250 confirmed cases were vaccinated more than 14 days before onset of symptoms (PIVE=100%, 95%CI: 70.7-100). The estimated proportion of cases prevented among the general population ranged from 17.4% to 28.5%.

CONCLUSIONS:
The results suggest that mass vaccination of children during the ascending phase of a pandemic can mitigate the burden of influenza when PIVE is high. The Pinner method does not take into account herd immunity: it underestimates the number of cases prevented by the vaccination campaign. Other factors such as severity of the disease and side effects of vaccination should be considered in a risk-benefit analysis.

20100399 Late breakers

Missed opportunities in tuberculosis control in the Netherlands due to prioritization of contact investigations

Christiaan Mulder (1, 2), P. M. Kouw (3), E. M. Huisman (4), W. E. Meijer-Veldman (1, 5), C. G. M. Erkens (1), M. W. Borgdorff (6), F. van Leth (1, 2)

AFFILIATIONS:
1. KNCV Tuberculosis Foundation, the Hague, the Netherlands
2. Center for Infection and Immunity Amsterdam (CINIMA), Academic Medical Center, University of Amsterdam, the Netherlands
3. Department of tuberculosis control, Municipal Health Service, Amsterdam, the Netherlands
4. Department of tuberculosis control, Municipal Health Service, the Hague, the Netherlands
5. Department of tuberculosis control, Municipal Health Service, Brabant Zuidoost, the Netherlands
6. Department of Clinical Epidemiology, Biostatistics and Bioinformatics, Academic Medical Centre, University of Amsterdam, the Netherlands

BACKGROUND:
The Dutch contact investigation guidelines stipulate that around all pulmonary tuberculosis patients contacts should be examined in order to prevent disease and further transmission. Our objective was to assess to what extent these guidelines were applied and whether characteristics of pulmonary tuberculosis patients were associated with having contact investigations performed.

METHODS:
We extracted the records of all reported pulmonary tuberculosis patients from the nationwide surveillance register from 2006 to 2007. The characteristics of patients associated with having contacts investigated were assessed by multivariable logistic regression analysis.

RESULTS:
Out of the 1236 pulmonary tuberculosis patients reported, 909 (74%) patients were eligible for analysis, since 133 (11%) patients had incomplete records, and 194 (16%) patients were registered by MHSs who did not report contact investigation results. For 710 (78%) out of the 909 patients a contact investigation was performed. Compared to Dutch patients, a contact investigation was significantly less often performed around immigrant patients (84% versus 75%, OR: 0.60, 95%CI: 0.40-0.92). Contact investigations were significantly more often performed for smear positive patients (OR: 3.52; 95%CI: 2.23-5.55) and culture positive patients (OR: 2.71; 95%CI: 1.76-4.16), compared to smear negative and culture negative patients, respectively.

CONCLUSIONS:
Instead around all, initiating contact investigations appeared to be prioritized based on the infectiousness, but also on the ethnicity of pulmonary tuberculosis patients. By not investigating contacts of 25% of the immigrant patients, there is a risk of missing a significant number of infected and diseased contacts, since the incidence in this group is markedly higher than in the Dutch population. Further research should elucidate which barriers are faced during the start of contact investigations in order to develop interventions to optimize this tuberculosis control strategy.

Mosquito Surveys for West Nile and other Flaviviruses in the Algarve, Portugal in 2009–2010.

Almeida, A. P. G.; Freitas, F. B.*; Novo, M. T.*; Sousa, C. A.*; Parreira, R.**; Piedade, J.**; Esteves, A.***

AFFILIATIONS:
* U Entomologia Médica/UPMM
** U Virologia/UPMM. Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa. R. Junqueira, 100, 1349-008 Lisboa, Portugal. palmeida@ihmt.unl.pt

BACKGROUND:
West Nile Virus (WNV) has been isolated in southern Portugal, from An.atroparvus mosquitoes in 1970, and from Culex pipiens and Cx. univittatus in 2004, with accompanying animal and human cases.

METHODS:
Mosquito surveys have been carried out in 20 locations in the wetlands of the Algarve during 2009-2010, between April-October, to update falviviruses ocurrence. Mosquitoes are captured by CDC light-traps with CO2 and by indoors resting (IR) collections, grouped in pools (≤50) and screened by RT-PCR. The amplification of viral NS5B sequences is carried out using a hemi-nested PCR strategy with either WNV-specific or Flavivirus generic primers, followed by DNA sequencing.

RESULTS:
A total 17108 specimens were collected up to June 2010, belonging to the species Anopheles algeriensis, An.atroparvus, Aedes berlandi, Ae.caspius, Ae.detritus, Coquillettidia richiardii, Culex laticinctus, Cx.pipiens, Cx.theileri, Cx.univittatus, Culiseta annulata, Cs.longiareolata, Cs.subochrea, and Uranotaenia unguiculata, Peak densities in the summer months ranged between 100-400 mosquitoes/trap-night and 100-500 mosquitoes/collector-hour(IR). Most abundant species in IR collections are An.atroparvus and Cx.pipiens, while in CDC traps the most abundant species are Cx.pipiens, Cx.theileri and Ae.caspius. In the comparable period of these 2 years, April-June, densities show a 2-4 fold increase from 2009 to 2010. Mosquitoes are currently being processed for flaviviruses.

CONCLUSIONS:
In view of previous WNV isolations, abundant mosquito fauna, recent density increases and current cases throughout Europe, continuous surveillance should be carried out along with physicians' awareness, implementing an early warning system and preparedness plans in the case of an arbovirus outbreak. ACKNOWLEDGEMENTS 'Part of this work has been facilitated through the International Network for Capacity Building for the Control of Emerging Viral Vector Borne Zoonotic Diseases (Arbo-Zoonet), EU grant nº211757', and funded by project MALVEO PTDC/CLI/67910/2006.

Ongoing outbreak of West Nile virus infection in Greece

Kostas Danis (1), A. Papa (2), G. Theocharopoulos (1), A. Bakas (3), M. Detsis (1), T. Lytras (1), A. Baka (1), G. Dougas (1), M. Athanasiou (1), C. Politis (4), S. Mourelatos (5), C.I. Dovas (6), N. Diakakis (7), M. Papanastassopoulou (6), D. Dilaveris

AFFILIATIONS:
1. Hellenic Centre for Disease Control and Prevention (KEELPNO), Athens, Greece
2. Reference Laboratory for Arboviruses, First Department of Microbiology, Medical School, Aristotle University of Thessaloniki, Thessaloniki, Greece
3. Department of Internal Medicine, Infectious Disease Hospital, Thessaloniki, Greece
4. Haemovigilance Coordinating Centre (SKAE),Greece
5. Ecodevelopment, Thessaloniki, Greece
6. Laboratory of Microbiology, Faculty of Veterinary Medicine, Aristotle University of Thessaloniki, Greece
7. Department of Clinical Studies, Faculty of Veterinary Medicine, Aristotle University of Thessaloniki,Thessaloniki,Greece
8. Ministry of Rural Development and Food, Greece
9. National School of Public Health, Athens, Greece

BACKGROUND:
On 5 August 2010, 11 human cases of West Nile virus (WNV) neuro-invasive disease were reported to the Hellenic Centre of Disease Control. WNV infection in humans had not been previously documented in Greece. We conducted an investigation to assess the extent of the outbreak and implement control measures.

METHODS:
Following an alert, physicians in Greece were asked to notify confirmed or probable cases of WNV infection according to the EU case definition. Active surveillance included daily telephone inquiries to the hospitals of the affected region. An action plan for protecting the blood system against WNV was implemented. Surveillance in equidae and mosquitoes was enhanced.

RESULTS:
Until 15/09/2010, 231 laboratory diagnosed cases of WNV infection (101 confirmed and 130 probable) and 23 deaths were reported; of these, 179 (77%) presented with neuro-invasive disease. The first cases had symptom onset in early July. Most cases resided in the lowland areas between and around two rivers in the Region of Central Macedonia. The incidence (16.3 per 100,000 population) in rural areas was 2.4 (95%CI 1.7-3.2) times higher than that in urban areas. Of the 8,261 blood donors tested with single unit NAT, four (1:2,065) were positive. Six horses from 5 farms with neurologic signs were positive for WNV IgM. Culex pipiens was predominant among captured mosquitoes. One mosquito pool was positive for WNV by RT-PCR and a sequence of 140 nucleotides showed a close relationship with lineage 2 WN viruses.

CONCLUSIONS:
This ongoing WNV outbreak was the largest reported in the EU in the last 15 years, suggesting that the epidemiology of WNV in Europe might be changing. Changing ecological parameters and climate might have influenced the WNV transmission cycle.

LATE BREAKERS SESSION **ABSTRACTS**

20100413 Late breakers

Overview of pandemic (H1N1) 2009 influenza vaccination in Europe. Preliminary results of VENICE survey conducted in 2010.

Jolita Mereckiene (1, 7), S. Cotter (1, 7), T. Weber (2), F. D'Ancona (3, 7), A. Nicoll (2), P. Lopalco (2), C. Giambi (3,7), D. Levy-Bruhl (4, 7), K. Johansen (2), L. Dematte (5, 7), S. Salmaso (3, 7), P. Stefanoff (6, 7), D. Greco (3, 7), A. Polkowska (6, 7)

AFFILIATIONS:

1. Health Protection Surveillance Centre, Dublin, Ireland
2. European Centre for Disease Prevention and Control, Stockholm, Sweden
3. Istituto Superiore di Sanità, Rome, Italy
4. Institut de Veille Sanitare, Saint-Maurice, France
5. CINECA Consortium of University, Bologna, Italy
6. National Institute of Public Health – National Institute of Hygiene, Warsaw, Poland
7. Vaccine European New Integrated Collaboration Effort (VENICE) Project
8. The list of gatekeepers is available in the final report on VENICE website: http://venice.cineca.org

BACKGROUND:

In April 2009, WHO was informed of a new influenza A(H1N1) virus and a pandemic was announced in June. At European Union (EU) level there was a need to improve knowledge on vaccination policies and programmes across Member States (MS).

METHODS:

In August 2010 we conducted a cross-sectional survey designated by ECDC with the aim to describe pandemic influenza vaccination policies, identify country-specific recommendations for age, risk and priority groups and obtain vaccine uptake in EU member states (MSs), Norway and Iceland for the 2009/2010 influenza season. Project gatekeepers or national experts completed a web-based questionnaire. Data were validated by the national Influenza Section Health Security Members for each country.

RESULTS:

Of 29 eligible countries 28 responded to the survey. Twenty-five countries organised national pandemic influenza vaccination programmes; two did not. One country had recommendations for vaccination but did not have a specific programme. Of the 25 countries which introduced pandemic vaccination, 13 countries recommended vaccination for the entire population, five issued recommendations for specific age groups. Twenty-two countries recommended vaccination for risk groups including pregnant women; all countries recommended vaccination of healthcare workers (HCWs). The reported vaccination coverage varied across countries from 3% to 59% for the entire population (n=13); 7% to 68% for HCWs (n=10); 0% to 58% for pregnant women (n=8); 0% to 74% for children (n=8). Twenty-one countries prioritised vaccination for those in risk or target groups.

CONCLUSIONS:

This survey identified similarity of common target groups but also variability between countries with regard to recommendations for pandemic vaccine usage and vaccination coverage rates. This data can assist future EU policy development and recommendations and is a useful tool for monitoring future influenza immunisation programmes.

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