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Foreword

I would like to extend a warm welcome to all delegates of the 6th ESCAIDE conference in Edinburgh, Scotland this year. Each time we host ESCAIDE, I have proudly announced its continued success in terms of increased numbers of abstract submissions. I am happy to declare that 2012 is no different! I would like to offer sincere thanks to all authors who submitted an abstract to the conference and to all the colleagues who kindly assisted in carrying out over 1000 peer reviews to assess the submitted work. Additionally, I congratulate all those authors that have been chosen to present at ESCAIDE 2012; I, as well as my colleagues in the Scientific Committee are greatly looking forward to learning more about the methodology and application of epidemiology, microbiology and other related disciplines that you will present during the conference in support of communicable disease prevention and control.

ESCAIDE serves as a great forum for information exchange and knowledge sharing, and I hope that you will use the opportunity to discuss the current challenges you face in your daily work. ESCAIDE is also an opportunity to meet with old friends and colleagues. This is enjoyable, but also hugely valuable – in a global environment, the possibility to rely on European and Global networks of trusted colleagues in the event of a disease outbreak or emerging infection can make a significant difference to its containment and control. Hence, please renew acquaintances and also take the opportunity to meet new colleagues – it is both personally rewarding and potentially of huge professional value to do so.

Another clear aim of ESCAIDE is to provide a platform for future public health experts from within the FETP (Field epidemiology training programme) and EPIET (European Programme for Intervention Epidemiology Training) programmes and EUHPEM (European Public Health Microbiology Training Programme) to present their work. We welcome all the fellows to the conference, and anticipate interesting presentations and discussions of your work.

I wish you all an enjoyable, successful and stimulating conference.

Johan Giesecke
Chair, ESCAIDE Scientific Committee
Scientific Committee

Johan Giesecke ECDC Chair of ESCAIDE Scientific Committee

Professor Johan Giesecke is Chief Scientist at the ECDC since 2004, and chairs the disease programmes of the Centre in the Office of the Chief Scientist. From a background as infectious disease clinician, his research interests include: epidemic modeling, HIV/AIDS and late sequelae of acute infections. He has published some 150 scientific papers, has written a textbook on infectious disease epidemiology and co-edited another.

Aftab Jafor ECDC/EUROHEM

Aftab is an associate professor, expert in public health, an ECDC cadre and chief scientific coordinator of European Public Health Microbiology training programme (EUROHEM) at ECDC. In addition to many years professional work as a university teacher and coordinating European projects, Aftab has worked in many public health bodies/organisations (Lund University Hospital, Sweden; Health Protection Agency, UK; German Streptococcal Reference Laboratory, Aachen; and CDC, USA). Specialisations include health care associated infections and antibiotic resistance, epidemiology of infectious diseases, monitoring and evaluating QA/QC systems, molecular typing, and vaccine and antimicrobial drug development. Aftab is a member of many scientific societies and international advisory boards.

Brigitte Helync Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET) representative

Brigitte is a Medical Doctor, and worked for 12 years in Africa (with NGOs and for the French Ministry of Cooperation). She joined the French Public Health Service in 1996, and since 2000 has been working at the French Institute for Public Health Surveillance (IVS). Brigitte started the French Field Epidemiology Training Programme in 2002, and worked as an EPITF scientific coordinator in 2007-2010. Brigitte is currently in charge of training in the Scientific Department.

Ines Steffens ECDC

Ines is the Editor-in-Chief of Eurosurveillance. Ines joined ECDC in 2006 as Managing Editor for Eurosurveillance, and between 2007-2014 set up ECDC’s Scientific Communication Section. Before joining ECDC, Ines was Editor-in-Chief for Germany’s national epidemiological and public health bulletin, the Epidemiologisches Bulletin at Robert Koch Institute, Berlin, Germany. Ines is a trained internist, with broad clinical experience and expertise in infectious diseases. She holds a masters degree in public health, and has a special interest in communication-related issues.

Howard Needham ECDC

Howard is the Scientific Liaison Officer at the ECDC. Since 2008, Howard has been coordinator of the ESCAIDE conference and scientific programme under the ESCAIDE Scientific Committee. Howard has a background in biological sciences and has held policy roles in the UK Government and the European Commission in animal health issues and zoosanities, including notably transmissible spongiform encephalopathies and avian influenza. Howard joined the ECDC as the influenza programme coordinator in 2006, and took up his current position in 2008.

Aftab Jafor ECDC/EUROHEM

Aftab is an associate professor, expert in public health, an ECDC cadre and chief scientific coordinator of European Public Health Microbiology training programme (EUROHEM) at ECDC. In addition to many years professional work as a university teacher and coordinating European projects, Aftab has worked in many public health bodies/organisations (Lund University Hospital, Sweden; Health Protection Agency, UK; German Streptococcal Reference Laboratory, Aachen; and CDC, USA). Specialisations include health care associated infections and antibiotic resistance, epidemiology of infectious diseases, monitoring and evaluating QA/QC systems, molecular typing, and vaccine and antimicrobial drug development. Aftab is a member of many scientific societies and international advisory boards.

Panayotis T. Tassios European Society of Clinical Infectious Diseases

P.T. Tassios is Assistant Professor in Molecular Microbiology at the National & Kapodistrian University of Athens, Greece. His research focuses on the molecular typing of bacterial strains and their antimicrobial drug resistance mechanisms, to assist epidemiological investigations and infection control. He is also active in lifelong teaching, on his scientific interests as well as on scientific writing, aided by his experience as Associate Editor of several journals.

Mike Catchpole ECDC Advisory Forum

Mike Catchpole is the head of national specialist epidemiology and intelligence for the Health Protection Agency in England and is the UK ‘State Epidemiologist’ on the ECDC Advisory Forum. He has worked in infectious disease epidemiology at the national and international level since 1995, and chaired the EPITF Steering Committee from 2001 to 2006. He has been an Expert Advisor to the National Institute for Clinical Health and Excellence in England, and his primary research interests have included HIV and other sexually transmitted infections, the wider health effects of major incidents, and public health information systems development.

Arnold Bosman ECDC

Arnold is a Public Health Specialist, trained in the Netherlands, focused on providing specialised training in intervention Epidemiology to public health professionals. He is a member of the EPITF Scientific Conference committee. Currently he is a manager of Public Health Training at ECDC, aiming to establish an effective network of training in applied public health (e.g. epidemiology, public health microbiology) in order to strengthen the work force in the EU.

Dr Martin Donaghy Health Protection Scotland

Martin Donaghy is Medical Director at Health Protection Scotland, which acts as a surveillance and research centre and coordinates programs aimed at reducing the risk from communicable diseases and environmental hazards. His interests include Immunization and Public Health policy. He has over 30 years experience in various aspects of public health, including work in Scottish Government and NHS, Peru and Spain. He is an EPITF Training Supervisor.

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201. Virginia Estevez Azan, Sweden
Plenary Speakers

Plenary Session A: Zoonoses: the detection and management of infections at the human/animal interface

Prof Sue Welburn, Director of the Global Health Academy and Professor of Medical and Veterinary Molecular Epidemiology, in the Division of Pathway Medicine, University of Edinburgh

Sue Welburn is Professor of Medical and Veterinary Molecular Epidemiology, Centre for Infectious Disease, The University of Edinburgh and Assistant Principal for Global Health at The University of Edinburgh.

Sue has more than 20 years experience working on human sleeping sickness and zoonotic trypanosomiasis in domestic wild and animal populations and the Neglected Zoonoses. Research concentrates on the design and use of molecular diagnostic tools for the study and management of neglected zoonotic diseases; anthrax, rabies, cysticercosis, bovine TB, hydatid disease, sleeping sickness and for animal trypanosomiasis and rickbone diseases. Research has encompassed research ranging from "grass roots' fieldwork in Africa to laboratory-based dissection of the problem of trypanosomiasis at the gene level. Experience ranging from the management of high-tech laboratory research to the running of applied field projects in developing countries.

Sue started her career at what was the Truett Research Laboratories in Bristol, a facility supported by ODA. Sue has projects ongoing in Morocco, Mozambique, Mali, Uganda, Kenya, Nigeria, Zambia and Tanzania collaborating focusing on medical and veterinary sector interventions for disease control (in partnership with the National Institute of Medical Research, Ministries of Health, Ministries of Agriculture) supported by funding from the European Union, World Health Organization, DFID, Wellcome Trust, Leverhulme Trust, Cunningham Trust, MCI, Global Health and Security Initiative (BBSRC) and NERC. Sue has published over 120 peer reviewed scientific articles, reviews and book chapters.

Sue has a strong commitment to Capacity Building in HE and Research Institutions in the Global South and is Director of the Edinburgh Global Health Academy and has been instrumental in the establishment of several on-line MSC programmes designed to encourage One Health thinking.

Prof Dr Klaus Stark, Robert Koch Institute, Germany

Klaus Stark studies in human medicine and his training and work experience is mainly in clinical infectious diseases and tropical medicine at the Institute of Tropical Medicine and the Charité Medical School in Berlin, Germany. He also works in epidemiology and medical statistics at the Institute of Medical Statistics, Free University, Berlin.

Klaus is a Master of Science in Epidemiology (London School of Hygiene and Tropical Medicine) and has worked on various epidemiological projects and studies in Germany and abroad with a focus on zoonoses and food-borne infections, and previously also on viral hepatitis, HIV and tropical diseases.

Klaus joined the Robert Koch Institute in 2001 and since 2003 has been the head of the Unit Gastrointestinal, zoonotic, and tropical infections, Department of Infectious Disease Epidemiology. Klaus is also an associate professor (epidemiology) at the Charité Medical School, Berlin where he has held this position since 2004.

Dr Diilys Morgan, Health Protection Agency, UK

Diilys Morgan is an academic working between medical research in rural Africa and UK public health. Diilys is Head of Gastrointestinal, Emerging and Zoonotic Infections at the Health Protection Agency, London. The Department undertakes surveillance of gastrointestinal and zoonotic infections to monitor trends and to detect and respond to outbreaks and incidents, and provides expert advice and support. She has been responsible for developing the Emerging Infections and Zoonoses portfolio of the Agency, including establishing horizon scanning activities for emerging infectious threats and since the majority of new and emerging infections are zoonoses, setting-up the Human Animal Infections and Risk Surveillance group (HARS) in 2003. This multiagency, multidisciplinary group meets every month and acts as a forum to identify and discuss infections with potential for interspecies transfer. An interesting area of development has been the production of rapid risk assessment tools for potential emerging infectious threats, which have proved invaluable in documenting and communicating risk.

She is also an honorary Professor at the London School of Hygiene and Tropical Medicine

Dr David Heymann, Health Protection Agency, UK

David Heymann is currently Chairman of the Health Protection Agency, UK, Head of the Centre on Global Health Security at Chatham House, London and Professor of Infectious Disease Epidemiology, London School of Hygiene and Tropical Medicine. Previously he was the World Health Organization’s Assistant Director-General for Health Security and Environment. He also represented the Director-General for polio eradication. He was Executive Director of the WHO Communicable Diseases Cluster until 2003. From 1995 to 1998 he held the post of Director for the WHO Programme on Emerging and Other Communicable Diseases. He served as the Chief of research activities in the WHO Global Programme on AIDS until 1995. Before joining WHO, Dr Heymann worked for 13 years as a medical epidemiologist in sub-Saharan Africa on assignment from the US Centers for Disease Control and Prevention (CDC). He also worked in India for two years as a medical epidemiologist with the WHO Smallpox Eradication Programme. He is a member of the Institute of Medicine of the United States National Academies and the Academy of Medical Sciences (United Kingdom). He was appointed an honorary Commander of the Most Excellent Order of the British Empire (CBE) for services to global public health.

Plenary Session B: Vulnerability in 21st century public health

Dr Tek-Ang Lim, European Centre for Disease Prevention and Control, Sweden

Tek-Ang Lim is a health economist with a specialisation in mathematical and econometrics modelling. He has worked both in academics (Université Paris 1 Panthéon-Sorbonne, Universitat Autonoma de Barcelona) and in public health institutes, where he has assessed the effectiveness of policies and quantified with a harmonised methodology the burden of diseases. Currently, his work at EDC focus mainly on understanding the socio-economic determinants of health and determining how scarce resources can be utilised more efficiently.

Dr George B Ploubidis, London School of Hygiene, Medicine, UK

George Ploubidis has completed his PhD in psychometrics at the National and Kapodistrian University of Athens in 2004 and soon after was appointed as a postdoctoral research associate at the department of psychiatry of the University of Cambridge. While at Cambridge he studied the social determinants of mental health outcomes over the life course, particularly focusing on typologies of mental health and the effect of early life circumstances on shaping mental health trajectories in adulthood.

In 2007 he accepted the position of a lecturer at the Centre for Population Studies, London School of Hygiene and Tropical Medicine and in 2009 he was awarded a Medical Research Council fellowship in Population Health Science to study the underlying mechanisms of health inequalities of the older population in England. His current work is focused on understanding the underlying mechanism through which social and structural determinants influence population health in Europe and the development of robust methods to establish causal associations from observational data, with a particular emphasis on the mediating factors that lie on these causal pathways.

Plenary Session C: Public Health microbiology and infectious disease epidemiology: hand-in-hand in the field

Dr Laurence Calatayud, EPIET Graduate, Health Protection Agency, London

Laurence Calatayud was a trainer of the European Program for Intervention Epidemiology Training at the Health Protection Agency, Centre for Infections, London, UK. Her main research interests involve respiratory infections. She is currently working as a physician in a rehabilitation centre, involved in the infection control committee.

Dr Sata Kurkela, EUPHIM Graduate, Helsinki University Hospital, Finland

Sata Kurkela received MD/PhD at the Helsinki University Medical Faculty, and MPH at the London School of Hygiene and Tropical Medicine. Dr. Kurkela has specialised in clinical microbiology. Her main research interests focus on diagnosis, pathogenesis and epidemiology of zoonotic and vector-borne viruses important in Northern Europe, particularly the mosquito-borne Sindbis alphavirus infection. Dr. Kurkela undertook her EUPHIM fellowship in 2008-2009 (Cohort 0) at the Health Protection Agency, Colindale, London. She presently works as a Consultant Clinical Microbiologist at the Department of Virology and Immunology at the Helsinki University Hospital Laboratory, Finland.
**Plenary Speakers**

**Dr Hannah Lewis, EPIET Graduate Cohort 12, WHO**

Hannah Lewis has been working as an epidemiologist with WHO in Lao PDR since 2002, assisting the Ministry of Health to implement the core capacities of the International Health Regulations, with a focus on emerging infectious disease surveillance and response. Prior to this she was an EPIET fellow based in Statens Serum Institut (SSI) in Copenhagen (Cohort 12), an Epidemiologist with the Environmental and Enteric Diseases Department of the Health Protection Agency (HPA) from 2004 to 2006, and a Policy Scientist with the Communicable Diseases Branch (Zoonoses) at the Department of Health, England from 1999 to 2003. Hannah Lewis holds a BSc in Biology (1995) from the University of Nottingham, England and a Master of Public Health (2002) from Kings College, University of London.

**Dr Giovanna Jaramillo-Gutierrez, EUPHEM fellow - Netherlands**

Giovanna Jaramillo-Gutierrez carried out her PhD research on parasite-vector molecular interactions at the Laboratory of Malaria and Vector research, US National Institutes of Health, Washington DC, in collaboration with Universite Libre de Bruxelles, Belgium. After her PhD, Giovanna worked on laboratory capacity building at the Malaria Research & Training Centre in Bamako, Mali. She then joined the influenza epidemiology unit as a surveillance officer at the WHO headquarters in Geneva to support the response to the 2009 flu pandemic. From 2002, hosted at the Dutch National Institute for Public Health and the Environment (RIVM), as a European Public Health Microbiology fellow with ECDC, she was trained to apply public health microbiology field-epidemiology approaches for surveillance, outbreak detection, investigation and response. In the course of her fellowship she did a mission with the WHO country office and the Ministry of Health in Lao PDR, where she supported activities to strengthen national public health laboratory capacity in order to enhance surveillance and response to outbreaks of emerging infectious diseases.

**Prof Dr Marion Koopmans, RVIM and Erasmus U Netherlands**

Marion Koopmans (RMV, PhD) has completed her training in Veterinary Medicine at the Utrecht University, Veterinary Faculty. She worked as associate professor at the same Faculty to become a specialist in Large Animal Internal Medicine and Nutrition. In parallel, she did a PhD in Veterinary Sciences (Virology, 1990), studying novel enteric viruses and their importance as pathogens for cattle. She continued to study enteric viruses during a fellowship and as visiting scientist at the Centers for Disease Control from 1993 until 1994, and returned to the Netherlands to become section chief of the enteric virus group at the National Institute of Public Health and the Environment (RIVM). She is coordinator of a European research and surveillance network on enteric viruses, and since 2000 holds the chair of the Virology division of the Diagnostic Laboratory for Infectious Diseases at RIVM. Her responsibilities include reference diagnostics, syndromic surveillance and emergency preparedness for viral diseases, including research aimed at improving the response capacity of a public health lab. In 2006 she was appointed as professor of Public Health Virology at the Erasmus University in Rotterdam. Her research interests include enteric viruses, foodborne infections, emerging disease preparedness, and infections at the human-animal interface, with a particular focus on unraveling mechanisms underlying posible emergence of new health threats and optimizing the early detection and response. She has authored over 200 papers in peer reviewed journals.

**Prof Androulla Efstratiou, Health Protection Agency - UK**

Androulla Efstratiou was awarded a doctorate, PhD, in medical microbiology by the University of London in 1987 and appointed to the post of Senior Microbiologist in 1990 to the then Public Health Laboratory Service. In 1992, was appointed Head of the National Strepococcus Reference Laboratory and in June 1998 officially appointed as Head of the newly designated WHO Global Collaborating Centre for Reference and Research on Diphtheria and Streptococcal Infections. Androulla is a Consultant Healthcare Scientist within the Health Protection Agency Microbiology Services Division and also a Visiting Professor at Imperial College, Faculty of Medicine. Appointments also include WHO Adviser/Consultant on diphtheria and streptococcal infections, project leader for various national and international projects on group A and group B streptococcal infections, project leader for the European Diphtheria programme, President of the XIIIth Lancefield International Symposium on Streptococci and Streptococcal Diseases and the HPA/UK European Public Health Microbiology Programme Supervisor.

**Prof Daniel Floret, Claude Bernard University by Santé Publique, France**

Daniel Floret – Université Claude Bernard Lyon, Comité Technique des Vaccinations/ Haut Conseil de la Santé Publique. Professor of Pediatrics, Former Chair of the Pediatric Emergency department of the University Mother and Child Hospital of Lyon. Specialist in pediatric infectious disease, namely in care for severe infectious disease in PICU. Involved in the evaluation of vaccines from 2001 to 2009 at the French regular agencies. Member of the Conseil Supérieur d’Hygiène Publique de France 2002 – 2007 and Chairman of the French national Advisory Committee for immunization since 2007.

**Dr Scott Halperin, Canadian Center for Vaccinology, Dalhousie University, Canada**

Scott Halperin is a Professor of Pediatrics and Microbiology and Immunology at Dalhousie University and the Head of Pediatric Infectious Diseases at the IKW Health Centre in Halifax, Nova Scotia, Canada. He was educated in the United States, completing his undergraduate degree in Biology at Stanford University and his medical degree at Cornell University. His postgraduate residency training was in pediatrics at the University of Virginia and his fellowship in pediatric infectious diseases at the University of Virginia and the University of Minnesota. He has lived in Halifax since 1998, where he is the Director of the Canadian Center for Vaccinology. Dr. Halperin is a former Canadian Institutes of Health Research (CIHR) and Wyeth Pharmaceuticals Clinical Research Chair in Vaccines. His research focuses on the diagnosis, treatment, and prevention of pertussis and other vaccine-preventable diseases.

**Dr Helen Maguire, Health Protection Agency, UK**

Helen Maguire is Consultant Epidemiologist with the Health Protection Agency (HPA) in London as well as being a Scientific Co-ordinator for the European Programme for Intervention Epidemiology Training (EPIET). Prior to taking up her part-time post as UK based EPIET Co-ordinator she was an Honorary Senior Lecturer in at St George’s Hospital Medical School London University of London. She has in depth experience of teaching and training on the British public health training scheme having supervised many Specialist registrars and trainees in the London deanery. Helen was born in Ireland and qualified in medicine at University College Dublin (UCD). Her clinical work was mainly in paediatrics and general medicine before obtaining a Masters degree in Public Health at UCD in 1989. She subsequently moved to the UK to train in communicable disease epidemiology at the then Public Health Laboratory Service (PHLS) Communicable Disease Surveillance Centre (CDS) and obtain membership of the Faculty of Public Health Medicine in the UK. She was based at CDSG during 1989 to 1992 and was subsequently appointed as Consultant Epidemiologist with the then PHLS, now the HPA. Her specialist expertise and interests are in field epidemiology, hepatitis and other blood-borne disease, tuberculosis (TB) and vaccine preventable disease as well as other Infectious diseases of childhood. Helen has been directly involved in management and investigation of many outbreaks in her career to date. She is very experienced in epidemiological methods and has provided practical and active advice and support to many colleagues over the years. She has a keen interest in surveillance and led the development of and implementation of the first web based surveillance system for monitoring TB in the UK (the London TB register) implemented across 35 National Health Service (NHS) clinics in London in 2002 and a disproportionate surveillance systems for sexually transmitted infections in London Genito- Urinary Medicine clinics. She has also led the evaluation of a variety of surveillance systems.

She is research and development lead for the HPA in London region and as well as successfully securing various grants for research work she has published over 100 articles in the scientific literature.

**Plenary Session D:**

**Assessment of adverse events associated with pandemic influenza vaccination**
Plenary Speakers

Dr Piotr Kramarz, European Centre for Disease Prevention and Control, Sweden

Piotr is a physician by training with a PhD in immunology of viral infections and eight years of clinical practice experience in a teaching hospital in Poland in the field of infectious diseases. He is an Epidemic Intelligence Service (EIS) alumnus (class of 1997) and worked in the National Immunization Programme of the U.S. CDC during his EIS programme and later on. Since 2007 he has been working as a Deputy Head of the Scientific Advice Unit and, since April 2011, as the Deputy Chief Scientist at the European Centre for Disease Prevention and Control. Among other tasks he leads the Disease Programme Section of the Centre. His main research interests include epidemiology of vaccine preventable diseases including influenza.

Dr Daniel Weibel, Erasmus University Medical Centre, The Netherlands

Daniel Weibel is an Epidemiologist with a background in Geography. After a Master in Geography at the University of Basel he has been trained in Epidemiology and Public Health at the Swiss TPH (Tropical and Public Health Institute), Basel, Switzerland, where he acquired a PhD in Epidemiology conducting extensive fieldwork in Chad to evaluate ongoing immunization programs among highly mobile nomadic populations. He has been working in Switzerland, Benin, Burkina Faso, Chad and the Netherlands. For the last three years he has been working for the Brighton Collaboration Foundation and Erasmus MC, Coordinating Vaccine Adverse Event Surveillance and Communication (VAESCO) consortium and conducting international data linkage studies related to the safety of the pandemic A (H1N1) vaccines. Next to this he was actively contributing to the global WHO vaccine safety blueprint. The vaccine safety blueprint is a guidance and advocacy document addressing the surveillance of vaccine safety globally in future and in the light of new emerging vaccines (e.g., Malaria, Tuberculosis, HIV). Working at the Brighton Collaboration Foundation from 2009 to 2011 he also helped elaborating and setting standards in post marketing vaccine safety research and monitoring. In late 2011 he joined the team of M. Sturkenboom at the department of Medical Informatics, Erasmus MC, Rotterdam, The Netherlands as an assistant professor.

Plenary Session Abstracts

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Assessing the risks: National cross-sectoral collaboration in assessment of risk at the human-animal interface

Presented by:
Sue Welburn
Affiliation:
Global Health Academy

Abstract
One Health in a changing world offers the opportunity to link people, animals and environment (physical, human and social). The 21st century faces a “health uncertainties” requires a “new culture of collaboration” that recognises the essential link between human, domestic animal and wildlife health and the threat disease poses to people, their food supplies and economies, and accepts that biodiversity is essential to maintaining health. This will demand effective integration of ecology including disease ecology with the social and health sciences for both detecting emerging threats and for their management.

This presents a challenge particularly for low resource countries that require improved human, livestock and ecosystem health that will link improvements in livestock production to better human and community health. What are the effects of landscape configurations on the spread of disease? Particularly those associated with animal vectors? What landscape and human settlement patterns mitigate disease spread? What strategies can keep systems from becoming pathological? There are positive indications that national platforms established as a result of HPAI investments may lead to long-term intersectoral collaboration for other zoonotic diseases e.g. rabies and brucellosis. After 5 years of cooperation on emerging diseases, One Health is evolving towards the federation of vet and health services. Recommendations that the ad hoc inter-ministerial task forces formed in zoonotic disease outbreaks e.g. anthrax and Rift Valley fever, be formalised into long-standing platforms for risk analysis and prevention for a range of endemic disease support this evolution and demand joined up platforms and technologies for diagnosis. PREDICT, aims to build a global early warning system for emerging diseases that move between wildlife and people in Africa and across other disease hot spots.

Intervening to control the forgotten zoonoses can be the catalyst to link the drivers for change that have evolved from a ‘crisis response’ to a long-term strengthening of public health systems. Several large programmes are attempting to pull together Animal Health + Development + Human health to achieve the necessary impact for change including Integrated Control of Neglected Zoonoses (ICONZ), Dynamics of Diseases Drivers in Africa (DDGM) and the SACIDS platform all targeted neglected, endemic and emerging zoonoses across Africa.
Socio-economic inequalities in tuberculosis rates in Europe

Presented by:
George B Ploubidis

Affiliations:
European Centre of Disease Prevention and Control, Sweden

Abstract
The 21st century witnessed significant improvements in health in most countries including substantial increases in survival to older ages and large reductions in mortality. However, substantial inequalities or disparities in the health of different socio-economic groups remain. In this paper, we examine how socio-economic inequalities in tuberculosis rates in Europe, where the incidence of tuberculosis has been falling for the last 20 years, have changed during this period of time. We use data from the European Society for� Tuberculosis (ESeT) 2006-2010 survey to examine the extent to which the current distribution of tuberculosis rates in Europe is related to socio-economic characteristics of the population within each country. We find that there is still a large degree of variation in tuberculosis rates across Europe and that these inequalities are significantly related to key socio-economic characteristics of the populations within each country.

Keywords: Socioeconomic Factors, Tuberculosis, Inequalities, Tuberculosis Rates, Europe

Plenary Session C

Presented by:
Hannah Lewis (1) and Giovanna Jaramillo Gutierrez (2,3)

Affiliations:
2. Centre for Infectious Disease Control, National Institute for Public Health and the Environment, Bilthoven, The Netherlands
3. European Programme for Public Health Microbiology Training (EUPHEM), European Centre for Disease Prevention and Control (ECDC), Sweden

Abstract
Lao PDR has been strengthening its capacity to manage and respond to emerging infectious diseases (EID) in line with the International Health Regulations. Access to reliable diagnostic testing has been one of the main challenges contributing to a lack of timely response to outbreaks and appropriate patient care. This project, a collaboration of epidemiologists and microbiologists, aimed to improve the quality and quantity of specimens collected and to determine how a national laboratory network can support this. It initiated a larger collaboration which is ongoing.

Epidemiologists and microbiologists worked together via meetings and informal discussions to identify priority diseases for the national laboratory network and how it should be structured, as well as to develop new Information Education Communication (IEC) materials and informal discussions to identify priority diseases for the national laboratory network and how it should be structured, as well as to develop new Information Education Communication (IEC) materials. The project is on-going, and involves regular discussions to identify priority diseases for the national laboratory network and how it should be structured, as well as to develop new Information Education Communication (IEC) materials.

Keywords: Swine-Origin Influenza A H1N1 Virus, Outbreaks

Contact details
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Dr Sata Kurkela, Division of Clinical Microbiology, Helsinki University Hospital Laboratory, PDB 400, FI-00290 HUS, Finland; sata.kurkela@helsinki.fi
A large epidemic of measles started in France in late 2008. It seems to have ended, though measles cases are still notified. More than 22,000 cases have been notified including 10 deaths and 26 encephalitis cases. In 2005, France decided to implement a plan aimed at measles elimination. At that time, the incidence of measles was low, that was considered a “honeymoon period”. Indeed the vaccine coverage was insufficient and a seroprevalence survey had revealed the existence of an important cohort of susceptible children, adolescents and young adults. Communication relative to the plan was limited and vaccine coverage did not increase significantly.

Paradoxically, inquiries have shown that doctors were mostly in favour of measles immunization and that the proportion of people opposed to this vaccination very low. However, this proportion is higher in the southern France. During the epidemics the French authorities did not decide to set up vaccination campaigns but to communicate urging people to update their immunization status. The vaccine coverage did increase but the characteristics of the population who benefited to this improvement are presently unknown. Adolescents and young adults accounted for the important cohort of susceptible children, adolescents and young adults. Neontal immunization, and immunization during pregnancy have all been proposed. Further optimization of the routine pertussis vaccination schedule will likely be necessary and improved vaccines may be required to fully control pertussis in the population.

Control of pertussis is a goal of most national vaccination programmes. Although there has been remarkable success in the past 6 decades, with decreases in reported cases, morbidity, and mortality, recent outbreaks have underscored that we have not fully achieved our goal of pertussis control. While the World Health Organization’s goal for pertussis control is the reduction/elimination of deaths due to pertussis in young infants, some countries have made their programme objective the control of pertussis across the entire age span. The implementation of adolescent immunization programmes has decreased the burden of disease in this age group; however, the success with adult programmes has been limited. Recent outbreaks amongst school-aged children suggest that the duration of vaccine-induced immunity is less than previously estimated. Novel strategies are required to address the continued high rates of disease in infants under one year of age and deaths in very young infants. Neonatal immunization, and immunization during pregnancy have all been proposed. Further optimization of the routine pertussis vaccination schedule will likely be necessary and improved vaccines may be required to fully control pertussis in the population.

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Parallel Session Abstracts

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**Outbreak of Salmonella Oranienburg linked to raw milk sheep cheese, France, May 2012**

**Nathalie Jourdan-Da Silva (INVS, France), Béatrice Piquet-Lemur (Direction générale de l'alimentation, Paris, France), Simon Le Hello (CRM des E. coli et Shigella, Institut Pasteur, Paris, France), Renauld Lacher (French Agency for Food, Environmental and Occupational Health and Safety (ANSES), France), Anne-Sophie Barrot (Institut de Veille Sanitaire, Saint Maurice, France), François-Xavier Weill (Institut Pasteur, France)**

**BACKGROUND:**
Oranienburg is a rare serotype of Salmonella in France. On 23 May, a family outbreak of S. Oranienburg was reported and first investigations pointed out raw milk cheese as possible source of infection. This signal came along with a recent increase in S. Oranienburg cases identified by the National Reference Centre (NRC). Investigations were conducted in order to confirm the source of the outbreak and implement control measures.

**METHODS:**
Confirmed cases were individuals with an isolation of S. Oranienburg between April 2 and June 23. Probable cases were individuals with a gastrointestinal episode and an epidemiological link with a confirmed case. Food consumption was collected using a standardised questionnaire. Strains isolated in humans and foods were compared by PFGE.

**RESULTS:**
Eighty-one confirmed cases were included by the NRC (sex ratio M/F: 1.3, median age: 44 years). Sixty cases were interviewed. Their reported date of symptom onset ranged between 25 March and 24 May (with a peak on week 20; 70%) reported the consumption of raw milk sheep cheese purchased on local markets or supermarkets in South-East of France. Forty probable cases were identified as part of family outbreaks. Trace-back investigations identified a single producer of raw milk sheep cheese. S. Oranienburg was isolated in raw sheep milk and cheese from this producer and in cheese from cases’ fridges. The PFGE profile was identical in strains from human cases and from cheese.

**CONCLUSIONS:**
Supermarket presentation of daffodils may have contributed to mistaken consumption. Multi-cultural societies are at risk of confusion between non-edible and edible plants. Clinicians must consider gastrointestinal poisoning in differential diagnoses of acute gastroenteritis. We alerted the local Authority to investigate points of sale and understand the source of confusion.

**PRESENTED BY:**
Nathalie Jourdan-Da Silva

**Keywords:** Poisoning, Vomiting, Daffodil, Mistaken consumption

**ESCAIDE Reference Number:** 20120280

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**Virulence of human STEC-infection differs across serogroups – according to mandatory surveillance data, Germany, 2004-2011**

**Karina Prüssel (Department of Infectious Disease Epidemiology, Robert Koch Institute, Germany), Michael Hohle (Department of Infectious Disease Epidemiology, Robert Koch Institute, Germany), Klaus Stöhr (Robert Koch Institute, Germany), Dirk Werber (Robert Koch Institute, Germany)**

**BACKGROUND:**
Clinical illness following Shiga toxin-producing E. coli (STEC) infection ranges from mild diarrhea to life-threatening haemolytic uraemic syndrome (HUS). STEC infection, irrespective of serogroup, and clinically diagnosed diarhoea-associated HUS is notifiable in Germany. Our objective was to investigate whether disease severity, i.e. hospitalization and death, depends on STEC serogroup.

**METHODS:**
We conducted a retrospective cohort study using data from Germany’s notification database including all cases of community-acquired STEC infection and STEC-associated HUS, 2004-2011. A Poisson regression model with robust error variance was used to estimate serogroup-specific risk ratios using serogroup O157 as reference, adjusted for covariates that significantly improved the respective model (employing the Bayesian information criterion).

**RESULTS:**
We included 25,016 cases (4,302 hospitalisations, 66 deaths) in the preliminary analysis, among them 724 STEC O157 cases (336 hospitalisations, 9 deaths). In a multivariable model, hospitalization risk (adjusted for age, cases’ residence, and season of infection) of O104 cases was comparable to that of O157 cases (RR=0.93; 95% CI: 0.84-1.02). All other groups had substantial lower risks, relative to O157, ranging from RR=0.62 (95% CI: 0.57-0.68) for cases with unknown serogroup to RR=0.26 (95% CI: 0.20-0.33) for O113 cases. In a multivariable model, mortality risk was lowest for O157. Mortality risk was approximately 1.3-fold higher for STEC O104 cases (RR=1.3; 95% CI: 1.05-1.65) and up to 5-fold for O113 cases compared to O157 cases (95% CI: 0.22-0.27). Results for STEC O104 may indicate a bias through specific clinical recommendations and heightened public awareness during a large outbreak in 2011.

**CONCLUSIONS:**
Virulence of human STEC-infection varies markedly across serogroups and is exceptionally high for O157. This study provides an evidence base for directing clinical attention and prevention efforts towards this serogroup.

**PRESENTED BY:**
Karina Prüssel

**Keywords:** Shiga Toxin-Producing Escherichia coli, serogroup, virulence, hospitalization, mortality

**ESCAIDE Reference Number:** 20120288
Contact to livestock as an important risk factor for methicillin-resistant Staphylococcus aureus (MRSA) colonisation on a London Hospital Intensive Care Unit (ICU), 2010–2011

Elena Hemmethövel (European Programme for Intervention Epidemiology Training (EPET), United Kingdom), Margot Melker (North West London Health Protection Unit, Health Protection Agency, London, United Kingdom), Jane Tustin (Epidemiology and Healthcare Infections, Epidemiology and Microbiology Division, Health Protection Agency, United Kingdom), Helen Murray (London Regional Epidemiology Unit, Health Protection Agency, London, United Kingdom)

BACKGROUND: Following a report of Vancomycin Resistant Enterococci (VRE) bacteraemia at a London hospital ICU, all ICU patients were screened weekly for VRE between 01/07/10 and 31/12/11. We investigated the extent of colonisation and temporal and spatial clustering in terms of strain variation.

METHODS: Cases were confirmed if VRE was isolated from any swab taken on ICU or another ward up to two weeks after being admitted to ICU 01/07/10–31/12/11. We estimated the monthly proportion of VRE-positive screenings and VRE positivity per 1,000 ICU bed-days. VRE isolates from 2011 were typed using pulsed field gel electrophoresis (PFGE). We conducted a ‘Timeline for Infection Cluster’ analysis to assess patient movements on ICU and detect temporal and spatial clustering. We defined cases with the same PFGE type as ≥2 cases with 0-6 PFGE band differences. We defined possible cross-contamination on ICU as occurring when ≥2 cases with 0-2 PFGE band differences were on ICU simultaneously or consecutively during a seven-day period.

RESULTS: Of 1,101 ICU patients admitted, 687 (62%) were screened an average of 18.5 ± 19.2 times. VRE isolates were successfully typed for 33/43 (77%) cases. Strain typing showed 7 different PFGE types for 33/43 (77%) cases. Of the remaining 10/43 cases (23%) there was unique strain(s). Possible cross-contamination on ICU occurred in 16/43 cases (37.2%), resulting in clusters of 2-3 cases.

CONCLUSIONS: Our results suggest that screening for VRE should be included as part of routine screening procedures on ICUs. More research is required to establish the most appropriate time intervals for VRE screening.

CONTACT INFORMATION
Presented by: Elena Hemmethövel
Keywords: VRE, PFGE, ICUs, cross-contamination
ESCAIDE Reference Number: 2012664

ESCAIDE Parallel Session Abstracts
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02 Healthcare-associated Infections (i)

02.01 Contact to livestock as an important risk factor for methicillin-resistant Staphylococcus aureus (MRSA) colonisation on a London Hospital Intensive Care Unit (ICU), 2010–2011

Elena Hemmethövel (European Programme for Intervention Epidemiology Training (EPET), United Kingdom), Margot Melker (North West London Health Protection Unit, Health Protection Agency, London, United Kingdom), Jane Tustin (Epidemiology and Healthcare Infections, Epidemiology and Microbiology Division, Health Protection Agency, United Kingdom), Helen Murray (London Regional Epidemiology Unit, Health Protection Agency, London, United Kingdom)

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CONTACT INFORMATION
Presented by: Elena Hemmethövel
Keywords: VRE, PFGE, ICUs, cross-contamination
ESCAIDE Reference Number: 2012664

Increase in Notified Acute Respiratory Infection Clusters in Nursing Homes: Surveillance 2011–2012, Paca, France

Noelia Kornherr (Regional Office of the French Institute for Public Health Surveillance (EPIEU), Marseille, France), Corinne Six (Regional Office of the French Institute for Public Health Surveillance (EPIEU), Marseille, France), Francis Cherlet (Regional Health Office of Provence-Alpes-Côte d’Azur, Marseille, France), Philippe Melot (Regional Office of the French Institute for Public Health Surveillance (EPIEU), Marseille, France)

BACKGROUND: Acute respiratory infection (ARI) outbreaks in nursing homes are common, causing increased morbidity and mortality. To ensure early detection and control of ARI outbreaks, a surveillance system was implemented in the region of Provence-Alpes-Côte d’Azur (Paca) in 2005. We analysed the 2011-2012 surveillance data and compared them with the previous four winter seasons to explore potential trends.

METHODS: Nursing home professionals are requested to notify the Regional Health Office when three or more cases meeting the clinical case definition occur among residents or personnel within eight days. We fitted Poisson regression models to identify trends and compared observed values (2011-2012) with expected (previous four seasons) assuming Poisson distributions.

RESULTS: Between October 2011 and April 2012, we identified 84 clusters, this compares to a mean of 34 clusters during the previous four seasons (p = 0.014). During 2011-2012, the attack rate among residents and personnel was 28% and 3%, respectively. Among ill residents in 2011-2012, 137 (10 %) were hospitalised and 66 (5%) died, compared with a mean case-fatality of 2.8% in the previous years (p = 0.018). At least one case of influenza was confirmed in 60% of the clusters in 2011-2012, while the mean proportion in previous seasons was 12% (p = 0.002). Influenza A(H1N1)p08 was the only virus strain identified in seven outbreaks during 2011 – 2012.

CONCLUSIONS: We report the largest number of notified ARI clusters with influenza confirmation since the implementation of the surveillance system. This increase may be due to the circulation of H1N1p08 following two years of predominance of the pandemic H1N1 virus. It may also reflect the increasing cluster-ascertainment due to better acquaintance of reporting personnel with the system.

CONTACT INFORMATION
Presented by: Noelia Kornherr
Keywords: Respiratory Track Infections Human Influenza Surveillance Outbreaks Nursing Homes
ESCAIDE Reference Number: 2012895

Keywords: Methicillin-resistant Staphylococcus aureus, point-prevalence, risk factors, livestock
ESCAIDE Reference Number: 2012770

Keywords: Methicillin-resistant Staphylococcus aureus, point-prevalence, risk factors, livestock
ESCAIDE Reference Number: 2012770

European Scientific Conference on Applied Infectious Disease Epidemiology
24-26 October 2012, Edinburgh, UK

ESCAIDE Reference Number: 2012742

Keywords: Methicillin-resistant Staphylococcus aureus, point-prevalence, risk factors, livestock
ESCAIDE Reference Number: 2012770

Keywords: Methicillin-resistant Staphylococcus aureus, point-prevalence, risk factors, livestock
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ESCAIDE Reference Number: 2012770
A tuberculosis cluster among immigrants in Norway
1997-2011: Identifying areas for improving the TB control programme

Bernardo Guzman Herrador (ECDC/FHI, Norway), Karin Rønning (Norwegian Institute of Public Health, Norway), Turid Mærumaker (PM, Norway), Katrine Bergen (PM, Norway), UL Delia (PM, Norway)

BACKGROUND:
Currently, approximately 90% of new tuberculous (TB) cases in Norway are individuals from high-incidence countries: asylum seekers (ASs) and other immigrants (OIs). Routinely, ASs are screened for TB upon arrival at the National Immigration Centre (NIC). OIs are invited for screening by letter from the Municipal Health Services (MHS). We investigated the largest reported cluster of TB cases with identical strain, to assess whether cases were infected before or after arrival to Norway, and identify areas of improvement for the TB control programme.

METHODS:
We included all TB cases notified to the Norwegian Surveillance System for Communicable Diseases (MSIS) during 1997-2011 with a restriction fragment length polymorphism genotyped strain assigned to this cluster. We combined data from MSIS, NIC and MHS, to describe cases in terms of TB-screening results upon arrival to Norway.

RESULTS:
Out of 144 notified cases, 96 originated from Somalia and eight from other high-incidence countries. Fifteen were ASs and 29 OIs. Upon arrival, 18 cases had latent TB, three had active TB and nine tested negative. Results of TB-screening upon arrival were not available for the remaining 14 cases (one AS and 13 OIs). Five of the 13 OIs had not been screened after having been residing in Norway for one year or longer.

CONCLUSIONS:
Most cases with available results of TB-screening upon arrival to Norway were already infected. However, TB-status upon arrival was unknown for many of the OIs due to lack of initial screening. Closer individual follow-up of already infected cases could have prevented development into new cases, regardless of laboratory confirmation or being a new case. This leads to significantly different TSs. To understand how the epidemiological situation influences TS, we analysed treatment success (TS) by case characteristics for cases included in the three TS calculations.

PRESENTED BY:
Bernardo Guzman Herrador
Keywords: Tuberculosis, Immigrants, screening, Norway
ESCAIDE REFERENCE NUMBER: 2012776

Monitoring tuberculosis success rates in Germany - how clinical and demographic factors influence treatment success

Syfe Gilleisen-Lassen (Robert Koch Institute (RKI), Europeana Programme for Intervention Epidemiology Training (EPIET) (Co), Germany), Berthete Hauer (Robert Koch Institute, Germany), Bonita Brodtkorb (Robert Koch Institute, Germany), Lena Petropoulou (Robert Koch Institute, Germany), Doris Altmann (Robert Koch Institute, Germany), Walter Haus (Robert Koch Institute, Germany)

BACKGROUND:
Treatment success rate (TSR) is a key indicator for tuberculosis (TB) control quality and comparison internationally. However, TSR calculations differ in denominators and cases included: WHO includes smear-positive or culture-positive new pulmonary TB cases; ECDC culture-positive new pulmonary TB cases; in Germany, the Robert Koch Institute (RKI) includes all TB cases with treatment outcome reported, regardless of laboratory confirmation or being a new case. This leads to significantly different TSRs. To understand how the epidemiological situation influences TSR, we analysed treatment success (TS) by case characteristics for cases included in the three TSR calculations.

METHODS:
We performed univariable, stratified, and multivariable analyses of TS by demographic and clinical factors on 2002-2008 German TB notification data (N=44,286) using the aforementioned TSR definitions. We calculated incidence-rate ratios (IRR) and 95% confidence intervals (CI) using negative binomial regression in STATA.

RESULTS:
A total of 38,344, 12,592 and 16,062 cases were included in RKI, WHO and ECDC definitions, respectively. Being culture-positive was associated with TS only univariably. In the final multivariable model, significant associations between TS and factors analysed were similar for RKI, WHO and ECDC definitions: being male, increasing age, multi-drug resistance and living in a new German Federal State were negatively associated with TS. For the RKI definition, being born in the former Soviet Union (IRR: 1.06, 95% CI: 1.01-1.11) and extra-pulmonary TB (IRR: 1.04, 95% CI: 1.00-1.08) were positively associated with TS; being a new case (IRR: 0.77, 95% CI: 0.68-0.87) was not explored.

CONCLUSIONS:
In a low-incidence country with quality diagnostics, TSR can be calculated including cases regardless of culture confirmation or being a new case. To improve TS comparisons, TS-calculations for sub-populations and new tools, e.g. age-standardisation, are important.

PRESENTED BY:
Syfe Gilleisen-Lassen
Keywords: Tuberculosis Surveillance Treatment success Treatment outcome monitoring Germany
ESCAIDE REFERENCE NUMBER: 2012875

Migrant Tuberculosis Screening: very low yield of active Tuberculosis at port of entry and prediction for diagnosis after entrance – United Kingdom, 2009/2010

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BACKGROUND:
In 2010, 8483 individuals were diagnosed with tuberculosis (TB) in the United Kingdom (UK). Country of birth was recorded for 7497 and 7% were born outside the UK. To detect active TB cases and offer treatments, Heathrow and Gatwick airports screen (chest radiography) new entrants 15 years of age, from countries with annual TB incidence >10 cases/100,000 population, intending to stay over six months. We estimated the screening yield to provide evidence on screening usefulness and identified those at risk of active TB after entry.

METHODS:
We obtained data for new entrants screened between 10.06.2009 and 30.09.2010. We used probabilistic matching to link these with UK Enhanced TB Surveillance (ETS) data (10.06.2009 to 31.12.2010). A success was a case reported to ETS within three months of airport screening; yield was the proportion of successes in screened population. Based on all entrants reported in ETS, we used Poisson regression to identify characteristics of those at increased risk for TB diagnosis after entry, adjusting for nationality, immigration status, age and sex (AR). We calculated incidence-rate ratios (IRR) and 95% confidence intervals for the 46 cases with ETS data.

RESULTS:
Of 200,199 screened entrants, 679 (0.34%) had suspected TB; of these, 90 were later reported in ETS, 59 of them within 3 months (yield=0.03%). Overall, 350 entrants were reported in ETS; persons from countries with annual TB incidence <10 cases/100,000 population (AR=0.8, 95% CI 0.6-1.0) and 362 from countries with >10 cases/100,000 population (AR=0.4, 95% CI 0.3-0.5) were at increased risk of TB diagnosis after entry.

CONCLUSIONS:
We question impact and usefulness of screening at port of entry, as it yields only few TB cases. Efforts for community post-entry screening to enable early TB diagnosis and treatment should focus on persons from countries with TB incidence >10 cases/100,000 population and refugees.

PRESENTED BY:
Elaine Sayer
Keywords: Tuberculosis, Immigration, screening, airports, cohort study
ESCAIDE REFERENCE NUMBER: 2012846

Extensive transmission of tuberculosis in a School in United Kingdom, 2011

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BACKGROUND:
In November 2011, the Health Protection Unit was notified of a 16 year old school student with active pulmonary Mycobacterium tuberculosis (TB) symptomatic since May 2011. In light of the delay in notification we screened school contacts to estimate risk of infection according to level of exposure and prevent transmission.

METHODS:
We initially screened for infection school contacts reporting at least 8 hours cumulative weekly exposure to the case using interferon gamma release assay (IGRA) blood test. We then extended screening to school contacts at lower risk (UK guidelines recommend this when transmission risk >10%). We estimated risk of infection in terms of cumulative weekly hours of exposure to the case and corresponding risk ratios.

RESULTS:
Initially, 113 contacts were screened. Of these, 17 (15%) were infected. Subsequently, among 79 screened contacts we found 3 (4%) positive. Contacts with >10.9, 14.29 and 48 hours exposure had 8.54 (95% CI 0.38-8.54), 4.31 (95% CI 1.26-14.76) and 6.17 (95% CI 1.40-27.08) times higher risk of infection than contacts with no exposure. Positive contacts were referred to a respiratory physician and offered appropriate treatment.

CONCLUSIONS:
The risk of TB infection increased with increasing duration of contact, with the risk being markedly higher for those with cumulative weekly contact in excess of a hours. The delay in diagnosis may explain the high risk of infection for contacts in this school setting and underlines the importance of early diagnosis and taking account of total duration of exposure to the index case especially when children may be at risk.

PRESENTED BY:
Maria Berg
Keywords: Tuberculosis School setting Mass screening IGRA Duration of exposure
ESCAIDE REFERENCE NUMBER: 2012846
Evidence for Lower Susceptibility to Q Fever in Children

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BACKGROUND: Q fever is rare in children. While underreporting has been offered as a possible explanation, there is little confirmatory evidence. Our study is first to assess wider community incidence of disease and infection in children following a point source outbreak of Q fever, related to abortions on a dairy-goat farm in South Limburg, Netherlands, where seroprevalence of the general population had raised from 0.6% pre- to 3.4%-postbreakout.

METHODS: Using 2011/12 seroprevalence and questionnaire data of 484 schoolchildren from three schools in the study area, located at 3.5km(response:266/579), 4.3km(151/1429), and 4.4km(47/199) from the goat farm, and 2009/10 mandatory notification and serology data, we compared children’s risk years and adults regarding incidence of disease and infection, testing and notification rates, and underreporting.

RESULTS: Children represented 17%(251/1374) of the study area population, but only 9.4%(119/1257) of all subjects tested in 2009/10, and 3.7%(8/235) of laboratory-confirmed notified cases. Amongst these 6 positives, 4 (1.8%) contained a Hr-HPV (types 53 and 58). Similarly, HPV was detected in 6 pre-examination samples containing wipes.

Evidence for Q Fever in Times of 2009 (H1N1) Influenza – a Diagnostic Challenge

Volker Heinz Hackert (Public Health Service South Limburg, The Netherlands), Rosalee HTM Dukers-Muijres PhD. (Public Health Service South Limburg, The Netherlands), Genevieve van Lune (Public Health Service South Limburg, The Netherlands), Winnie van der Veen (National Institute for Public Health and the Environment, Bilthoven, The Netherlands), Christian Hoeve PhD MD. (Public Health Service South Limburg, The Netherlands)

BACKGROUND: Clinically, Q fever may overlap with conditions such as influenza, confronting physicians with diagnostic challenges. Since Feb/2009, South Limburg, Netherlands, faced a regional outbreak of Q fever related to abortions on a dairy-goat farm. Q fever testing in 2009/10 may have been influenced by H1n1 influenza, epidemic in the Netherlands since mid-October 2009.

METHODS: All regional subjects tested for Q fever from Feb/2009-April 2010 (n=1228) were assessed relating age, gender, and time of testing to acute Q fever serology. Association with symptoms was evaluated in questionnaire respondents (165 seropositive, 305 seronegative). Data, including time trends for symptoms, were analyzed using linear and logistic regression.

RESULTS: Of 1228 subjects tested, 253 were seropositive, 97 seronegative. Distribution of the number of subjects tested/week was bimodal; the first testing wave (n=644) peaked mid-May 2009, the second wave(weekly Or:1.04(1.02-1.07)). A first wave of Q fever testing until December 2009 was followed by a second wave(n=304) mid-March 2010, with an interwave-low early December 2009. Of all seropositives, 97% were detected in the first wave (positive rate=2.3/1000). In the second wave (positive rate=2.7/1000). Male sex (OR:3.05(1.23-7.4), fever (2.75(4.1), H1n1(1.5(0.9-2.4), Pulmonary (3.7(2.8-5.0), and absence of cough(2.7(1.8-4.5) were significant predictors of Q fever in multivariate logistic regression; a weighted sumscore based on these predictors gave a LR of 3.9 for infection and a LR of ~0.5 for non-infection. A possible marker of influenza, was reported with increasing frequency in the second wave(week 2 Or:5.1(2.7-9.4)).

CONCLUSIONS: A closer Q fever testing until December 2009 was followed by a second wave yielding a much lower positive rate. 2009/0H1n1 influenza may have caused continuous testing for Q fever since December 2009. A symptom-based sumscore may assist differentiation and diagnostic decision-making in epidemic settings.

PRESENTED BY: Volker Heinz Hackert

Keywords: Q fever, Caxilla burnetii, child, disease susceptibility, serology

ESCAIDE Reference Number: 2012636

Risk of nosocomial transmission of high-risk Human Papillomavirus by endovagal ultrasound probes following low level disinfection

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BACKGROUND: Without current disinfection, endovagal ultrasound, a common gynaecological procedure, may result in nosocomial transmission of genito-urinary pathogens, including high-risk Human Papillomavirus (HR-HPV). We aimed to evaluate the currently recommended disinfection procedure for covered endovagal ultrasound probes, which consists of “Level Low Disinfection” (LLD) with “quaternary ammonium compound” containing wipes.

METHODS: From May to October 2011 swabs were collected from endovagal ultrasound probes at the Gynecology Department of the Lyon University Hospital. During a first phase (May/June 2011) samples were taken after the ultrasound examination and after the LLD procedure. In a second phase (July/October 2011) swabs samples were collected just before the probe was used. All samples were tested for the presence of human DNA (as a marker for a possible transmission of infectious pathogens from the genital tract) and HPV DNA with the Genomica DNA microarray (35 different HPV genotypes).

RESULTS: We collected 217 samples before and 200 samples after the ultrasound examination. Human DNA was detected in 36 (18%) post-examination samples and in 61 (30%) pre-examination samples. After the ultrasound LLD procedure, 5 (2.5%) samples contained detectable HR-HPV types (16, 31, 35, 40, 52). Similarly, HPV was detected in 6 pre-examination samples (2.7%). Amongst these 6 positives, 4 (1.8%) contained a HR-HPV types 53 and 56.

CONCLUSIONS: Our study reveals that a considerable number of ultrasound probes are contaminated with human and HR-HPV DNA, despite LLD disinfection and probe cover. In all hospitals, where LLD is performed, the endovagal ultrasound procedure must therefore be considered a source for nosocomial infections, including the transmission of HR-HPV. We recommend the stringent use of high-level disinfectants, such as glutaraldehyde or hydrogen peroxide solutions.

PRESENTED BY: Daniel Elbach

Keywords: Papillomavirus, Disinfection, Infection control, Ultrasoundography, Equipment Contamination

ESCAIDE Reference Number: 2012842
Second federal state wide survey on MRSA management in hospitals in North Rhine-Westphalia (NRW)

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BACKGROUND:
Methicillin-resistant Staphylococcus aureus (MRSA) is a major cause of healthcare-associated infections. In 2011, the Ministry of Health, Empowerment, Care and Age of NRW initiated the second federal state wide survey in hospitals to inspect the MRSA management and implementation of the recommendations of the Commission for Hospital Hygiene and Infection Control (KRINKO) at the Robert Koch-Institute (RKI).

METHODS:
All hospitals were asked via a standardized questionnaire to submit the number of MRSA cases per 1,000 patient-days, the proportion of MRSA isolates in all S. aureus isolates and the number nasal swabs per admitted patient off the year 2010. In addition, the hospitals have been assessed by local health authorities on the implementation of the RKI recommendations.

RESULTS:
The median MRSA incidence density of 292 hospitals was 1.15 per 1,000 patient-days with interquartile range (IQR) of 0.71 – 1.88. In 235 hospitals the median percentage of MRSA on all S. aureus was 33.8% with IQR 21.0 – 48.1. The median screening rate was 70.0% with IQR 20.2 – 18.0. The local health authorities estimated that 66% of the hospitals have been adequately addressed the RKI recommendations. Compared to the first survey in 2006, the median screening rate has more than quadrupled, the median MRSA incidence density has nearly doubled and the implementation of the RKI recommendations increased by 14%.

CONCLUSIONS:
The results of the survey give insight in MRSA prevalence and management of an entire state. It revealed the progress achieved since 2006. The implementation of the RKI recommendations has to be further improved. The survey appears to be a pragmatic instrument for enhancing the state-wide awareness for MRSA in hospitals.

PRESENTED BY:
Annette Jurke

Keywords: MRSA, prevention, surveillance, guideline adherence, survey
ESCAIDE REFERENCE NUMBER: 20121905

Swabbing characterization for virological confirmation in Spanish Influenza Surveillance System (SISS): Pre-pandemic and pandemic/post-pandemic seasons

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BACKGROUND:
Following ECDC recommendations, the SISS was strengthened in order to properly monitor the 2009 influenza pandemic in Spain. Improvements implied increasing swabbing for virological confirmation and adoption of systematic sampling. We aimed to characterize the SISS swabbing pattern in the period 2004-2012, checking to what extent the improvements implemented since the 2009 pandemic still remain.

METHODS:
Data were obtained from SISS. We analyzed patient variables and variables related to the influenza activity periods and to pre-pandemic, pandemic and post-pandemic seasons. We estimated relative frequency of swabbing associated with variables and its adjusted OR using a logistic regression model. We also described the frequency of swabbing per physician and activity period during the 2010-12 seasons.

RESULTS:
Of 108,312 influenza cases reported to SISS in the study period, 27,686 (25.4%) were swabbed. Swabbing increased in pandemic (p<0.001) and it was maintained in post-pandemic seasons. Multivariate analysis showed lower percentage of swabbing in 14 years than in other age-groups and higher one in vaccinated patients (OR=1.57 CI95%:1.49-1.66) and in pandemic/post-pandemic seasons (OR=2.2 CI95%:1.76-2.8). Home residents had the same proportion of swabbed in pandemic/post-pandemic seasons (p=0.36). The average number of samples taken by sentinel practitioners in the 2010-11 epidemic period was significantly higher compared with the non-epidemic period (5.15±0.82 vs. 2.64±0.78 respectively).

CONCLUSIONS:
Swabbing in SISS increased during 2009 pandemic and since then has been remained. Although the swabbing in 14 years was lower than in other age-groups, it reached the European surveillance guidelines. Swabbing was higher in influenza-vaccinated patients but that probability decreased in vaccinated cases since pandemic. We continue emphasizing in the SISS the importance of systematic collection of specimens for virological confirmation to avoid selection bias of patients.

PRESENTED BY:
Noemí López

Keywords: Pandemic Influenza, Human/epidemiology Sentinel Surveillance Specimen Handling/statistics & numerical data
ESCAIDE REFERENCE NUMBER: 20121979

Antimicrobial use in Scottish care homes for older people

 Fiona Murdoch (Health Protection Scotland (HPS), United Kingdom); William MacSween (Health Protection Scotland (HPS), United Kingdom); Christopher Sullivan (Health Protection Scotland (HPS), United Kingdom); Akepal Wisdom (Health Protection Scotland (HPS), United Kingdom); Joaquin Roles (Health Protection Scotland, United Kingdom).

BACKGROUND:
Care homes for older people play an important role in the epidemiology of antimicrobial resistant bacteria. Older people are more susceptible to infection due to increased age and underlying health problems. The surveillance of healthcare associated infections (HAI) and antimicrobial use within care homes is required to increase knowledge and awareness in order to improve practice. In July 2010 as part of Healthcare Associated Infection Long Term Care Facilities (HCAT) project a European HAI prevalence study was undertaken across 28 countries in volunteer care homes. Health Protection Scotland coordinated the contribution across Scotland.

METHODS:
Care homes across Scotland were recruited to the survey. Data collection was undertaken between 01/07/10 and 01/06/11. Data were collected on the day of survey. Data on resident demographics, presence of extrinsic and intrinsic risk factors, antimicrobial prescription and presence of infection were collected for each resident who was identified with an infection or receiving antimicrobials.

RESULTS:
A total of 357 residents were receiving antimicrobial therapy at time of survey with ten residents receiving two antimicrobials. The prevalence of antimicrobial use was 7.3% (95%CI 6.6 to 8.1). The most commonly prescribed antimicrobials were trimethoprim, nitrofurantoin and amoxicillin. Data were analysed for antimicrobial prescribing by infection type. The total number of GPs coordinating medical care in each care home were collected for each resident who was identified with an infection or receiving antimicrobials.

CONCLUSIONS:
The results from this survey have provided valuable insight into antimicrobial use in Scottish care homes. The wide variety of antimicrobials and high number of prescribers reported per home identified a need for standardisation to improve stewardship and reduce the threat of antimicrobial resistance.

PRESENTED BY:
Fiona Murdoch

Keywords: Healthcare associated infection, Antimicrobial Resistance
ESCAIDE REFERENCE NUMBER: 20121872

Occurrence and Burden of Infectious Diseases in Dutch Day Care; Results of 2 years of Surveillance

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BACKGROUND:
The direct and indirect effects of day-care related infectious diseases for both child and society are widely recognized as being substantial. Surveillance of these diseases in day care seems warranted, but is restricted to information provided by mandatory outbreak reporting systems and voluntary physician reporting. These systems underestimate true incidence and burden of day-care associated infectious diseases. This paper presents day care estimates for the occurrence and burden of infectious diseases as part of an ongoing prospective cohort study.

METHODS:
Day care centers reported common illness episodes (gastroenteritis, influenza-like illness, common cold, ear/eye infection, chicken pox and impetigo) and related disease burden (absenteeism, general practitioner visits, hospitalization) among their child population on a daily basis from March 2010 – March 2012.

RESULTS:
The study comprised 1768 follow up years among children in 42 day care centers. The most common diagnoses, expressed as incidence per 1000 child years, were gastroenteritis (355) influenza-like illness (226), common cold (261), ear infection (159), chickenpox (135), eye infection (106) and impetigo (65). Gastroenteritis and influenza-like illness accounted for almost half of reported illness episodes among children. 16% of illness episodes required a general practitioner visit, 7% required antibiotics, and 1% of children required hospitalization due to their illness.

CONCLUSIONS:
Our study is among the first to present national estimates for the occurrence and burden of a broad range of day-care associated infectious diseases. Data provided here will help to improve the evidence base on which infectious disease control and public health recommendations for day care are formulated.

PRESENTED BY:
Remko Enserink

Keywords: Day Care, Surveillance, Cohort Studies, Communicable Diseases
ESCAIDE REFERENCE NUMBER: 20121879

Oral Session Abstracts
Impact on varicella incidence 5 years after vaccine introduction in Spain, 2006 – 2011
Gloria Carrero (ECDC - ISC III, Spain), Maribel Varela (Hospital Clinic CARITAS, Spain), Carmen Calvo (Centro Nacional de Epidemiología, ISCIII, Madrid), José María Sánchez-Luna (Centro Nacional de Epidemiología, ISCIII, Madrid)

BACKGROUND: In 2006-2007, in order to protect children against varicella, vaccinations were included in the national routine vaccination program in Spain. Vaccination was introduced in Madrid. Children aged 11 months to 4 years of age were eligible for vaccination. Vaccination was given from 2007 (pre-vaccination period) to 2011 (post-vaccination period).

METHODS: We calculated varicella incidence rates (IR) by period and period incidence rate ratios (IRR) adjusted by region using negative binomial regression.

RESULTS: We included 1,400,476 cases of varicella in the first period and 851,793 in the second. National varicella IR decreased from 10.5/100,000 (95%CI: 10.0-11.0) in 1998-2004 to 3.2/100,000 (95%CI: 2.7-3.4) in 2006-2011.razonwaves the post-vaccination period. We performed a stratified analysis of the pre (1998-2004) and post (2006-2011) vaccination periods. We calculated the varicella incidence rates (IR) by period and period incidence rate ratios (IRR) adjusted by region using negative binomial regression.

RESULTS:

Estimated varicella incidence in children 1-10 years old increased from 3.2/100,000 (95% CI: 2.7-3.4) in 2006-2011 to 4.6/100,000 (95% CI: 3.9-5.4) in 2012-2013. This increase was significant for both sexes and all age groups. The highest increase was observed in children aged 0-4 years old, with an increase of 37% (95% CI: 19-55) compared to the pre-vaccination period. The increase was also significant in children aged 5-9 years old, with an increase of 10% (95% CI: 0-22).

CONCLUSIONS: The introduction of varicella vaccination has led to a significant decrease in varicella incidence in Spain. However, the results of this study suggest that the coverage of the vaccination program needs to be improved to achieve herd immunity and prevent outbreaks in the future.

PRESENTED BY: Esteban Ruiz (Servicio de Epidemiología y Salud Pública, ISCIII, Madrid)

Keywords: Varicella, varicella vaccine, incidence
ESCIDE Reference Number: 2012/293

Influenza vaccine effectiveness in Europe, 2011-12: estimates from the I-MOVE multicentre case-control study among target groups for vaccination
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BACKGROUND: Methodologies for estimating vaccine effectiveness (VE) against severe influenza need to be developed, using data from fixed-effects models with mild and severe outcomes.

RESULTS: The number of influenza cases this season was exceptionally low. The proportion of patients without associated risk factors decreased from 26% during the pandemic to 76% in 2010-11 and decreased to 19% in 2011-12. A decline of the vaccine effectiveness for high-risk individuals was observed in 2011/12 (VE: 30% [95% CI: 22–39]), as compared to 2010/11 (VE: 53% [95% CI: 0–87]).

CONCLUSIONS: These data confirm the specific characteristics of severe influenza cases according to the virus type. They indicate that A(H1N1) viruses are more effective than A(H3N2) viruses. They also show a decrease in the context of vaccine effectiveness in those ≥65 years old, and suggest that the vaccine effectiveness for those vaccinated <3 months before vaccine coverage is provided by the National Social Security Scheme through reimbursement claims.

PRESENTED BY: Isabelle Bonmarin (InVS, France), Emmanuel Belcher (InVS, France), Arnaud Leblanc (InVS, France)

Keywords: Influenza vaccines, Intensive care units, Use effectiveness
ESCIDE Reference Number: 2012/104
Individual and programme factors associated with uptake of Influenza vaccine in frontline healthcare workers in Northern Ireland, 2012: a case-control study

Galena Kuyumdzhieva (Public Health Agency, United Kingdom), Neil Price (Public Health Agency, Northern Ireland), Richard Smithson (Public Health Agency, United Kingdom), K Connors (Northern Health and Social Care Trust, United Kingdom), C Campbell (Southern Health and Social Care Trust, United Kingdom), O’Connor (Northern Health and Social Care Trust, United Kingdom), C Parkes (Belfast Health and Social Care Trust, United Kingdom), I Rodgers (Belfast Health and Social Care Trust, United Kingdom), J Sweeney (South Eastern Health and Social Care Trust, United Kingdom), J Devine (Public Health Agency, United Kingdom)

BACKGROUND: Historically, annual uptake of influenza vaccine among healthcare workers (HCWs) in Northern Ireland (NI) is low and reached its highest level (20%) in 2011/12. We aimed to identify programme factors and HCW knowledge, attitudes and beliefs associated with vaccine uptake.

METHODS: We compared cases (vaccinated during 2011/12) and controls (unvaccinated) among 3400 HCWs in five Health Trusts, using a self-administered questionnaire. We summarized demographic characteristics, vaccination history, programme factors and compared groups with chi-square test (5% significance). We used logistic regression to calculate odds ratios with 95% confidence intervals (CIs) to examine factors associated with being vaccinated adjusted (aOR) for other variables.

RESULTS: Overall, 1942/2257 cases and 955/1179 controls responded. A higher proportion of cases were working in hospital setting (97% vs. 95%, p=0.018) and were doctors (15% vs. 8%, p=0.001). Controls were more concerned about adverse effects (65% versus 30%, p<0.001) and would be more likely to be vaccinated in the future if clinics were available on site (95%) and written information was available (44%). Factors associated with being vaccinated were age over 50 years (aOR 1.4, 95%CI 1.2-1.6), “staff vaccination can protect patients” (aOR 2.89, 95%CI 2.5-3.3), “HCWs are at greater risk of acquiring flu than the general population” (aOR 1.81, 95%CI 1.2-2.4) and agreement with “flu vaccination is ineffective” (aOR 2.29, 95%CI 1.9-2.7) and “vaccine causes flu-like illness” (aOR 1.61, 95%CI 1.2-2.2). 

CONCLUSIONS: Health Trusts should continue to provide vaccination clinics at the HCW’s workplace. Key messages on leaflets and campaigns should focus on vaccine effectiveness, potential benefit to patients and adverse effects.

PRESENTED BY: Galena Kuyumdzhieva

Keywords: Influenza vaccine, uptake, HCW

ESC AIDE REFERENCE NUMBER: 201256

08 Novel methodological approaches (i)

Word clouds as a potential method enhancement in outbreak investigations

Mia Brostrom (Swedish Institute for Communicable Disease Control, Sweden), Sharon Ashford-Bennett (NIHR, Sweden)

BACKGROUND: Outbreak investigation questionnaires often include free text questions on e.g. places visited and own assessment of possible cause of the outbreak. These variables are however seldom systematically analyzed. We retrospectively applied word cloud, a method for visualizing the frequency of individual words in a text, to data from a waterborne Cryptosporidium outbreak investigation in Sweden in 2011, in order to assess the potential of the method in these types of situations.

METHODS: We evaluated answers on suspected sources of the outbreak, visited eateries and additional comments. After processing the texts and eliminating stop words, word clouds were produced for each question, based on the frequency of individual words. Clouds were also compared between cases and non-cases, where the size of a word in the cloud depended on the maximum difference between the frequency in the group and the average frequency in both groups.

RESULTS: The word cloud containing suspected cases included water as the top candidate among the 5023 cases; this was not surprising since a recommendation to boil all tap water was issued early during the outbreak. Among cases providing information on eateries (n=1312), the words “school” and “day-care” were the most frequent, whereas non-cases (n=392) often included specific commercial establishments. The word cloud on additional comments from 1483 cases, however, did not provide any new information.

CONCLUSIONS: The word clouds did not identify the source of the Cryptosporidium outbreak. Nevertheless, comparing eateries between cases and non-cases could have shed light early on less likely exposures such as specific restaurants. Word cloud is a fast method for analyzing free text data and can be useful to enhance important and to identify potential sources of the outbreak.

PRESENTED BY: Johan Lindh

Keywords: Disease outbreak Questionnaires Text mining Communicable diseases

ESC AIDE REFERENCE NUMBER: 201278

The use of mapping to identify priority areas for intervention during a typhoid fever outbreak in Harare, Zimbabwe, 2012

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BACKGROUND: An outbreak of typhoid fever occurred in Harare City (Zimbabwe) in October, 2012. We conducted an investigation to identify priority areas for water and sanitation intervention through mapping of the most affected suburbs, K uwaZanu (KZ) and Dzivaraseela (DZ).

METHODS: We used individual data from all typhoid fever suspected cases (clinically diagnosed patients) to describe the epidemic in Harare. This information was provided by the Ministry of Health. We calculated attack rates (AR) by gender, age and place of residence. Data collection for mapping was limited to KZ and DZ. We recorded GPS coordinates of the residence of cases included in the typhoid fever registers and generated 2000 random points serving as controls within shape files of KZ and DZ. We used gis functions and Kernel smoothing techniques to detect clustering. We carried out data analysis using STATA and R.

RESULTS: From 10/10/2012 to 17/03/2013, 3,795 suspected cases of typhoid fever were reported in Harare; of them 2572 (67.2%) were in DZ and KZ. The median age was 16 years [interquartile-range 4 – 50 years] and 54.3% were female. The AR in DZ was 0.61% and 1.13% in KZ. We traced and recorded 2,212 (86.3%) GPS coordinates of suspected cases in DZ and KZ. Cases were more clustered than controls (p<0.001). Two clusters were identified in KZ and DZ (the latter was apparent already within the first week of the outbreak), both of which were located next to a water source.

CONCLUSIONS: We could highlight two clusters (surrounding boreholes), indicative of high typhoid fever transmission. Spatial analysis is a useful tool to identify potential sources of transmission and to target water, sanitation and health education interventions to contain outbreaks.

PRESENTED BY: Luziane Testa

Keywords: Typhoid Fever Disease Outbreaks Cluster Analysis Spatial Analysis

ESC AIDE REFERENCE NUMBER: 201277
An electronic manual and resource e-library to monitor and evaluate surveillance systems’ quality

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BACKGROUND:
Improving surveillance systems’ quality for communicable diseases is critical to inform public health stakeholders and decision makers. A working group (WG) from 16 European Union (EU) Member States and ECDC launched an initiative to develop an electronic manual and resource-library to guide processes for monitoring data quality and evaluation of surveillance systems (MAE).

METHODS:
Based on a 2011 survey among EU national surveillance coordinators and WG field experience, a conceptual framework and systematic approaches to MAE were developed. Examples and case studies, WG experts drafted and reviewed chapters of a manual to guide users in surveillance systems’ MAE. Additionally, an e-library was developed to host MAE documents collected among rigorous web searches of open-source, applied and academic publications.

RESULTS:
A common stepwise approach to monitor completeness, validity and timeliness was used, including planning, measurement of attributes, and regular display and interpretation of the results in light of predefined standards. A trigger-oriented approach was used to support MAE decisions and to establish links to patient-specific issues. The e-library is searchable using keywords, document types, levels of importance, and relation to e-manual chapters. It hosts over 170 open-source protocols, procedures and manuals.

CONCLUSIONS:
We conceived a novel approach to MAE decision-making and support it with an e-manual and resource-library. The manual will be accessible on an electronic platform with a structure and navigation that addresses the needs and questions from stakeholders seeking guidance. After testing, the e-manual and resource-library will be available for workers in EU public health institutions.

PRESENTED BY:
Isabelle Daviaux
Keywords: Data quality, evaluation, surveillance, e-manual
ESCAIDE REFERENCE NUMBER: 2012675

Laboratory preparedness for detection of Shiga toxin-producing E.coli (STEC) O104:H4 in the EU/EEA: capacity building in response to the 2011 outbreak

Polina Rozin (ECDC, Sweden), Tineke Niemeyer (ECDC, Sweden), Daniel Pohlen (ECDC, Sweden), Mike Strokes (ECDC, Sweden), Johannes Falscher (ECDC, Sweden), Flemming Schuetze (WHO CC for Reference and Research on Escherichia and Klebsiella, Statens Seruminstitut, Denmark), National Laboratory Experts for Shiga-toxin producing Escherichia coli from the European Food- and Waterborne Diseases and Zoonoses Network (European Food- and Waterborne Diseases and Zoonoses Network, ECDC, Sweden)

BACKGROUND:
Between May and July 2011 an outbreak of enteraggregative Shiga toxin 3 producing Escherichia coli (EAE/STEC O104:H4) affected close to 4000 cases, causing over 50 deaths. This epidemic strain was of a rare serotype and possessed unusual virulence characteristics, making diagnosis and case confirmation challenging. Data were rapidly needed to assess possible gaps in case detection and epidemic strain identification by diagnostic and reference laboratories.

METHODS:
The European Centre for Disease Prevention and Control conducted two surveys on laboratories for the identification of the epidemic STEC O104:H4 strain according to the EU epidemiological case definition, among the laboratories in the EU Food- and Waterborne Diseases and Zoonoses Network: the first in June 2011 and the second in January 2012, with the latter survey including the pre-outbreak period. i.e. April 2011, retrospectively. Capacity building activities took place from May to August 2011 at EU and national levels to strengthen diagnostic and strain characterization capabilities.

METHODS:
In April 2011, 20/29 (69%) National Reference Laboratories (NRLs) in EU/EEA MSs lacked epidemic STEC case confirmation capacity. In June 2011, 12/24 (50%) of responding Member States (MS) reported no access to Shiga Toxin (STx) or STx toxin assays or STx gene assays in clinical laboratories. An outbreak was declared national and international capacity building initiatives including sharing updated testing protocols, reagents and control strains. As a result, in January 2012, 21/24 (88%) NRLs had developed full capabilities to detect EAE/STEC infection and confirm the epidemic O104:H4 strain.

CONCLUSIONS:
These data state the EU added value of coordinated laboratory-based surveillance support through EU networks in response to a major outbreak caused by a pathogen variant.

PRESENTED BY:
Polina Rozin
Keywords: Laboratory capacity, Diagnostic Shiga toxin Escherichia coli European Union Surveillance
ESCAIDE REFERENCE NUMBER: 2012691

“Ailing” social media – use of Facebook as a recruitment tool in an outbreak investigation, The Netherlands

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BACKGROUND:
Social networking sites (SNSs) such as Facebook offer health researchers a novel means to reach and engage with the public. To test best practices this potential is still developing. Following a mumps outbreak in a Dutch village after a youth Club party organised via Facebook Events, we used Facebook to recruit attendees to an outbreak investigation.

METHODS:
We developed an online questionnaire and published the webform via posters, a press release, email and Youth Club-specific web-media. Following a poor response, we adopted an active Facebook campaign for encouragement, and incentivised participation using gift vouchers. We opened a Facebook account under the study name and used this to send direct messages about the study to all individuals listed in the Facebook Event as invited to the party. We only informed individuals who had responded “yes” to the Event invite of the incentive. We regularly posted the questionnaire webform to the online notice boards (”Wall”) on the Youth Club and our Facebook accounts. Finally, we sent “Friend Requests” to study participants using Facebook to further publicise the study among their online friends if those Requests were accepted.

RESULTS:
Following introduction of the incentive and Facebook account, participant numbers increased from ten to 60 (response ~60%). 81% of participants reported hearing about the study via Facebook, and 75% of Friend Requests were accepted.

CONCLUSIONS:
Although impossible to disentangle the effects of the Facebook campaign and the incentive, Facebook offered us a means of directly contacting attendees and avoiding advertising the incentive to non-attendees. The approach helped increase recruitment to a sufficient level to conduct an investigation, demonstrating how SNSs can contribute to modern public health research.

PRESENTED BY:
Georgia Leadbury
Keywords: Social networking, outbreak investigation
ESCAIDE REFERENCE NUMBER: 2012694

09 Outbreaks (1)

A norovirus outbreak in a boarding school associated with raw food, Austria, November

Shu-Wan Jian (AGES, Austria), Erica Simons (AGES, Austria), Ingeborg Cederer (Institute of Medical Microbiology and Hygiene, Austrian Agency for Health and Food Safety, Vienna, Austria), Marina Hoehne (Robert Koch Institute, Germany), Elisabeth Offer (Austrian Agency for Health and Food Safety, Vienna, Austria), Fiona Allerberger (Austrian Agency for Health and Food Safety (AGES), Austria), Daniela Schmid (Institute of Medical Microbiology and Hygiene, Austrian Agency for Health and Food Safety, Vienna, Austria)

BACKGROUND:
AGES investigated an outbreak about 40 cases of gastroenteritis on 24/ 25/11/2011 among all 370 students of a boarding school in Salzburg. Three of total seven stool specimens were positive for norovirus (NV). We conducted a retrospective cohort study among all students to identify the source(s) of infection.

METHODS:
A probable case was a student with diarrhoea or vomiting between 21/12-25/12/2011, considering kitchen closure on 26/12. A confirmed case was a probable case with a NV-positive stool sample. We collected information on food prepared and consumed at the school on 21/12- 25/12 via a self-administered questionnaire. We calculated day-specific attack rates (ARS) in students exposed to any food on 21/12 – 25/12, and subsequently food-day-specific ARS and relative risks (RRs). To disentangle the effects of different food items, we conducted stratified analyses. Environmental health inspectors inspected the school kitchen.

RESULTS:
The outbreak started on 21/12, peaked on 24/12 and ended on 5/12. Forty-eight students fulfilled the case definitions among 351 respondents. Highest ARS were on 22/12 and 23/12 (50%, 12%, respectively). Several foods were associated with illness, including two raw food items - sour cream (RR: 16; 95% CI: 3.9-67) and turkey-strip salad (RR: 5; 95% CI: 2.9-13). After stratifying for consumption of these two, no other food remained associated with illness. These exposures explain 33 of 39 (86%) suspected foodborne cases. A hazard analysis critical control point (HACCP) was lacking in the kitchen.

CONCLUSIONS:
Raw food prepared in the kitchen is the probable outbreak source. A HACCP in the kitchen could have identified failures in hand hygiene and prevented contamination of surfaces and food with NV. The school kitchen should implement this system.

PRESENTED BY:
Shu-Wan Jian
Keywords: Gastroenteritis, Foodborne Diseases, Schools
ESCAIDE REFERENCE NUMBER: 2012675
A nationwide outbreak of Salmonella Newport associated with mung bean sprouts, Germany 2011

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BACKGROUND: The number of reported Salmonella Newport infections in Germany increased from an average of 2.3 cases per week (2000-2010) to 67 in week 23/2011. As mung bean sprouts contaminated with S. Newport had been detected at a distributor in Lower Saxony we tested the hypothesis of sprouts being the infection vehicle in this outbreak.

METHODS: We compared all notified S. Newport cases with disease onset between 20/10/2011 and 08/11/2011 with S. Enteritidis cases of the same age group (18-31, 32-48 and 49-68 years) notified in October-November 2011 regarding their food consumption, in particular sprouts, as possible vehicles.

RESULTS: Sprouts were consumed by 14/50 S. Newport and 1/45 S. Enteritidis cases. Median age of cases (n=106) was 38 years (range 0-91 years), 52% were female. Sprouts had been consumed by 14/50 S. Newport and 1/45 S. Enteritidis cases. Median age of cases (n=106) was 38 years (range 0-91 years), 52% were female. Sprouts were consumed by 14/50 S. Newport and 1/45 S. Enteritidis cases. Median age of cases (n=106) was 38 years (range 0-91 years), 52% were female.

CONCLUSIONS: Epidemiological, laboratory and trace back evidence point to sprouts as the vehicle of infection. Since sprouts are known to be frequently contaminated with microorganisms, consumption of raw sprouts may as the vehicle of infection. Since sprouts are known to be frequently contaminated with microorganisms, consumption of raw sprouts may

Q Fever: Single-Point Source Outbreak with High Attack Rates and Massive Numbers of Undetected Infections across an Entire Region

Volker Hartung-Haiden (Public Health Service South Limburg, The Netherlands), Wim van der Hoeek (National Institute for Public Health and the Environment, Bilthoven, The Netherlands), Nicole HMR Hubers-Plagens PhD (Public Health Service South Limburg, The Netherlands), Arnaud de Bruin (National Institute for Public Health and the Environment, The Netherlands), Saskia Al Dhauch (Federal Institute for Risk Assessment, Germany), Hendrik Nystrom (Federal Research Institute for Animal Health, Germany), Christian Hohe MD PhD (Public Health Service South Limburg, The Netherlands), Cathrin Bruggenman (Meerstein University Medical Center, The Netherlands)

BACKGROUND: Early 2009, a dairy-goat annex care farm in South Limburg, Netherlands, reported 220 C. burnetii-related abortions in 40 pregnant goats. These preceded human cases and occurred in a region Q fever-free before 2009, providing a unique quasi-experimental setting for investigating regional transmission patterns associated with a Q fever point source.

METHODS: Index farm residents/employees, visitors, and their household contacts were traced and screened for C. burnetii. Distribution of community cases was analysed using a geographic information system (GIS). True incidence, including undetected infections, was estimated regionwide by seroprevalence in a pre- versus post-outbreak sample, and near-farm by IgM seroprevalence in a municipal population sample. Environmental bacterial load was repeatedly measured in surface and aerosol samples.

RESULTS: Serological attack rate was 9% (24/266) in index farm residents/employees, 5% (2/50) in visitors, and 5% (1/14) in household contacts, with clinical attack rates of 48%. Notified symptomatic community cases (n=25) were scattered downwind from the index farm, following a significant exposure-response gradient. Observed incidence ranged from 0.1 to 0.9 per 1000. Incidence was highest in children 5-9 years. True incidence of infections was estimated 2.5% regionwide, extrapolating to 950 cases, estimated near-farm incidence was 12%. C. burnetii load was high on-farm (2009), and lower off-farm (2009-2010).

CONCLUSIONS: Indexing a single dairy-goat farm to a human Q-fever cluster, we show widespread transmission, massive numbers of undetected infections, and high attack rates on-and off-farm, even beyond a 5 km high-risk zone. Our investigation may serve as an essential case study for risk assessment in public health and related fields like bioterrorism response and preparedness.

PRESENTER BY:

European Scientific Conference on Applied Infectious Disease Epidemiology 24-26 October 2012 Edinburgh, UK
Nothing new on the Eastern Front – Exceptional agreements after Europe’s eastern expansion paved the way to a new EPINET training format.

Marcos Merhav (ECDC, Sweden), Yoon Huhn (ECDC, Sweden), Arnold Rozen (ECDC, Sweden)

BACKGROUND: EPINEET started in 1995 to strengthen public health (PH) capacity throughout European Union (EU) Member States (MS) by providing on-the-job training of fellows in countries other than their own. By 2003, 11 of 15 MS had EPINEET training sites. The EU expanded to 27 MS by 2006, yet EPINEET had difficulty establishing training sites in the 12 new MS. In 2010, we evaluated the program to assess if EPINEET’s cross-border training approach was appropriate to address MS’s capacity needs.

METHODS: We reviewed programme data, commissioned an external evaluation in 2009 and held discussions with key stakeholders on how to address specific MS capacity needs.

RESULTS:
- While EPINEET’s on-the-job training principle worked well, not all MS were equally engaged in the program. By 2010, only 3 of the 12 new MS had established training sites.
- Of 17 fellows from new MS trained abroad from 2004-2010, 10 did not return. The key stakeholders consulted raised the opinion of training staff locally, especially for new MS, to avoid “brain-drain” issues and increase MS engagement.

CONCLUSIONS: EPINEET’s traditional requirement to train fellows abroad may not apply to the new EU/PH reality. In 2010, ECDC created the “MS-track” to recruit fellows in their home country. In September 2012, 23 MS-track fellows were currently in training on MS salaries provided by their MS while ECDC covered costs of training modules. Further consultations and efforts are necessary to ensure uniform engagement across Europe, equitable distribution of resources for capacity building and evaluation to determine if MS-track benefits new MS as intended.

PRESENTED BY: Patty Kostkova

Keywords: Capacity building, training, intervention epidemiology, FETP

ESCAIDE REFERENCE NUMBER: 20121090

The European Diphtheria Surveillance Network (EDSN): a strong model to combat a rare disease and use resources efficiently, share knowledge openly, and give support effectively.

Shona Neal (Health Protection Agency, United Kingdom), Androulla Efstratiou (Health Protection Agency, United Kingdom), Yvan Hutin (ECDC, Sweden)

BACKGROUND: As diphtheria is uncommon within the EU, complacency and minimal awareness is constantly observed. However, diphtheria is still seen sporadically in many EU countries and recent outbreaks have occurred worldwide. From the success of the EU-funded Diphtheria Network (DIPNET), the European Diphtheria Surveillance Network (EDSN) was established in 2010 under the auspices of ECDC, and continues to integrate epidemiologists and microbiologists. Microbiological activities have been tended to the Health Protection Agency and managed as work packages; coordination, diagnostic external quality assurance (EQA) scheme; serology EQA; training workshops and molecular typing. The main objective is to strengthen laboratory diagnosis to ensure accurate and comparative diphtheria surveillance across Europe.

METHODS: Thirty laboratory experts were nominated from the EU and EEA countries. Since February 2010, there have been two network meetings, two diagnostic EQAs, one serology EQA and two training workshops.

RESULTS:
- The first diagnostic EQA generated unaccepted identification and toxigenicity reports of 14% and 10%, respectively from 26 countries. The two workshops provided the opportunity for non-DIPNET countries and those that performed poorly in the EQA to improve in diphtheria diagnostic methods; good feedback was received from all participants. Preliminary results of the second EQA revealed slight improvements in results where only 8% gave an unaccepted identification and 10% unaccepted toxigenicity reports (24 countries).

CONCLUSIONS: All network members agree that EDSN should continue under ECDC, as this continues to provide the infrastructure essential for harmonised and improved public health management for diphtheria across the EU. However, EQA results emphasised that further training and EQA exercises should continue so as to maintain expertise, assess capabilities and aid standardisation for diphtheria diagnostics and ultimately surveillance.

PRESENTED BY: Shona Neal

Keywords: Diphtheria; evaluation; methods, EU

ESCAIDE REFERENCE NUMBER: 20121099

11 Healthcare-associated infections (g)

Estimating the healthcare costs of post-surgical infection in patients undergoing caesarean section in England

Catherine Woch (Health Protection Agency, United Kingdom), Theoam Moageli (S, United Kingdom), Joanne Connolly (Health Protection Agency, United Kingdom), Pauline Harrington (Health Protection Agency, United Kingdom), Suizanne Elphinstone (Health Protection Agency, United Kingdom), Albert van Hoek (Health Protection Agency, United Kingdom), Jannie Wilson (Imperial College Healthcare NHS Trust, United Kingdom), Elisabeth Shoutlend (Health Protection Agency, United Kingdom)

BACKGROUND: Although most surgical site infections (SSI) in women having undergone caesarean section (C-section) are superficial, the high frequency of infections (9.4%) combined with large volume of procedures (160,000/year) translate into a substantial burden to the health economy. This study assessed costs resulting from SSI following C-section and potential savings from surveillance, a proven means of reducing infections through improved clinical practice.

METHODS: Data on SSI following C-section and resources for surveillance were collected during a pilot study involving 14 NHS hospitals in England. Direct costs attributable to SSI (2010/11) were estimated from the National Schedule of Reference Costs, Personal Social Services Research Unit and the NHS Drug Tariff. Costs were modelled on a hospital performing 800 C-sections a year with readmissions to hospital (6.6%) and community-detected infection rates (8%). Based on pilot study findings.

RESULTS:
- Additional costs due to SSI were estimated at £12,018 per hospital per year arising from extended hospital stay, readmission and treatment. Costs to community healthcare services resulting from additional midwife/GP visits and treatment were estimated at £5,358. Overall this was equivalent to £25,367 per infection or £3.39 million nationally/year. Costs of staffing and consumables associated with surveillance for one quarter of each year were estimated at £5,577. On the basis of these preliminary calculations, a reduction in infections of 32% would cover the cost of surveillance whilst tackling this important public health problem.

CONCLUSIONS: There are potential savings to be made in both hospital and community settings by funding surveillance, as well as improved patient experience, from the likely reduction in SSI rates. Reducing rates of infection by a third should be achievable given the reductions attained by our pilot sites.

PRESENTED BY: Catherine Woch

Keywords: Caesarean section Surgical wound infection Health care costs Postnatal care Community health services

ESCAIDE REFERENCE NUMBER: 20121482

Parallel Session Abstracts
Implementation of a nationwide centralized system for surveillance of healthcare-associated outbreaks in Germany, 2011/2012

Suzanne Elgohari

The risk of post-operative bacteraemia is associated with increased risk. There are implications for targeted intervention. Using linked national surveillance data, this study was able to estimate the risk of post-operative bacteraemia.

CONCLUSIONS:
- Mixed effects analysis identified older age (≥65 years; OR: 1.28; 95% CIs: 1.23-1.34), male sex (OR: 1.31; 95% CIs: 1.26-1.37), and abdominal surgery (OR: 1.40; 95% CIs: 1.28-1.55) as independent risk factors for post-operative bacteraemia.

METHODS:
- Data on 66 different categories of surgical procedures between January and December 2011 collected through HPA’s surgical site infection (SSI) surveillance programme were linked to bacteraemia episodes (all causes) between January 2011 and January 2012 using a probabilistic matching algorithm. A mixed effects model was used to examine the association with age, pre-operative health status (ASA score) and patient sex adjusting for surgical category and variation between hospitals.

RESULTS:
- A total of 128,512 procedures submitted by 267 hospitals were linked to 2,126 bacteraemia episodes, of which 610 occurred within 30 days of surgery. The 30-day risk of post-operative bacteraemia varied by surgical category being highest in cholecystectomy (6.79%; 95%CIs: 3.44%-10.63%) and bile duct/pancreatic surgery (4.85%; 95%CIs: 3.17%-7.08%). The most frequent pathogens isolated were coagulase negative staphylococci (30%), E. coli (20%) and S. aureus (1%). Of the 650 bacteraemia episodes, 38 (6%) had a prior diagnosis of SSI; overall, the risk of bacteraemia was significantly higher in this group than those without SSI (2.44% vs 0.79%; P<0.001). The mixed effects analysis identified older age (65 years; OR: 1.28; 95%CIs: 1.24-1.31), male sex (OR: 1.31; 95%CIs: 1.27-1.35) and abdominal surgery (OR: 1.40; 95%CIs: 1.29-1.54) as independent risk factors for post-operative bacteraemia.

CONCLUSIONS:
- Using linked national surveillance data, this study was able to estimate the risk of post-operative bacteraemia, being highest in cholecystectomy. Being older, having an ASA score of 3 and being male were significantly associated with increased risk. There are implications for targeted intervention given the risk factors identified in this study.

PRESENTED BY:
- Suzanne Elgohari

Keywords: Nosocomial bacteraemia surgery site infections surgical wound infections

ESECAIDE REFERENCE NUMBER: 2012932

12 Burden of disease

The impact of demographic change on the estimated future burden of infectious diseases: Examples from hepatitis B and seasonal influenza in the Netherlands

Scott McDowell (NIBR, The Netherlands), Alex van der (National Institute for Public Health and the Environment, Bilthoven, the Netherlands), Dietrich Tim (Department of Public Health Medicine, School of Public Health, University of Bielefeld, Germany), Mirjam Kratschmer (National Institute for Public Health and the Environment, Bilthoven, the Netherlands)

BACKGROUND:
- For accurate estimation of the future burden of communicable diseases, the dynamics of the population at-risk–population growth and aging–need to be taken into account. Accurate burden estimates are necessary for informing the planning of vaccination and other control/prevention measures. Our aim was to qualitatively explore the impact of population aging on the burden of seasonal influenza and hepatitis B (HBV) infection in the Netherlands, in the period 2000–2030.

METHODS:
- Population-level disease burden was quantified using the disability-adjusted life years (DALY) measure applied to all health outcomes following acute infection. We used national notification data, pre-defined disease progression models, and a model of demographic dynamics to investigate the impact of population ageing on burden of seasonal influenza and HBV. Scenario analyses were conducted to explore the potential impact of intervention-associated changes in incidence.

RESULTS:
- Including population dynamics resulted in increasing burden over the study period for influenza, whereas a relatively stable burden was predicted for HBV. For influenza, the increase in DALYs was localised within YLL for the older age-groups (55 years), and for HBV the effect of longer life expectancy in the future was offset by a reduction in incidence in the age-groups most at risk. For both infections, the predicted burden was greater than if assuming a steady-state demography: 1.0 (in 2000) to 2.3-fold (in 2030) higher DALYs for influenza; 1.3 (2000) to 1.5-fold (2030) higher for HBV.

CONCLUSIONS:
- There are diverging effects of an ageing population on the estimated future disease burden of influenza and HBV in the Netherlands. Replacing steady-state assumptions with a dynamic demographic approach appears essential for deriving realistic burden estimates for informing health-economics policy.

PRESENTED BY:
- Scott McDowell

Keywords: Disability-Adjusted Life Years, Ageing, Influenza, Hepatitis B

ESECAIDE REFERENCE NUMBER: 2012946

Epidemics of Mycoplasma pneumoniae infections have limited impact on pneumonia-associated hospitalizations and macrolides consumption, Finland, 1995–2011

Aleksandras Piltuskiene (European Programme for Intervention Epidemiology Training (EPIET), Finland), Jukka Oligny (National Institute for Health and Welfare, Finland), Pauli Järvinen (National Institute for Health and Welfare, Finland)

BACKGROUND:
- Mycoplasma pneumoniae (MP) is a common cause of community-acquired pneumonia. In 2010-2011, epidemics occurred in Nordic countries, consistent with 3-5-year interval cycles. To evaluate the burden of this new wave of MP infections, we measured the impact of MP epidemics on pneumonia-associated hospitalizations and macrolides/doxycycline consumption.

METHODS:
- We analyzed time-series using (1) laboratory-confirmed cases of respiratory pathogens reported to National Infectious Diseases Register (1995-2011), (2) ICD-10 code-defined weekly pneumonia-associated hospitalizations by age group from National Hospital Discharge Registry (1996-2010) and (3) monthly consumption of macrolides/doxycycline from Finnish Medicines Agency (Defined Daily Dose/1,000/day, 1997-2011). To examine the association between MP cases and pneumonia-associated hospitalizations, we modelled data using negative binomial regression. To examine the association between antimicrobials consumption and MP cases, we built linear regression model with Newey-West standard error estimates. We adjusted both models using linear trend (quadratic), seasonal long-term cycles, monthly indicator and incidence of other respiratory pathogens.

RESULTS:
- In 1995-2011, the overall mean reported rate was 26 cases per 100,000, highest in children and juveniles aged 5-14 years old (63 per 100,000). Pneumonia-associated hospitalizations among those aged 5-14 incidence rate ratio (IRR) 1.0999, p-value (P=0.02) and 15.64 (IRR 1.03; P=0.02) years old were associated with MP cases; however, rates of pneumonia-associated hospitalizations were not higher during epidemics. The mean macrolides/doxycycline consumption increased from a 7 DDD/1,000/day in 1997-2010 to 9.04 in 2011 with a marginal overall impact of epidemics on consumption (IRR 1.02; Confidence interval 0.99-1.05).

CONCLUSIONS:
- M. pneumoniae caused mainly mild disease and the results of our analysis suggest that recent epidemics were well managed, without overdose of antibiotics and excess in hospitalization. We recommend considering use of combined surveillance database for public health impact assessment using time series analyses.

PRESENTED BY:
- Aleksandras Piltuskiene

Keywords: Mycoplasma pneumoniae, disease outbreaks, hospitalizations, macrolides

ESECAIDE REFERENCE NUMBER: 2012926

Parallell Session Abstracts
Timing more important than number of doses: a randomized controlled trial to compare four different immunization schedules with 13-valent pneumococcal conjugate vaccine in healthy infants

Judith Spierikman (University Medical Center Utrecht, The Netherlands), Mirjam Knol (National Institute of Public Health and the Environment, Centre for Infectious Disease control, The Netherlands), Patrick Verhoeven (Sparre Hospital Foundation, The Netherlands), Korn Elbers (National Institute of Public Health and the Environment, Centre for Infectious Disease control, The Netherlands), Pietro Van Gulikten (National Institute of Public Health and the Environment, Centre for Infectious Disease control, The Netherlands), Alketa Wyerenaga (National Institute of Public Health and the Environment, Centre for Infectious Disease control, The Netherlands), Hester de Moller (BIVN, The Netherlands), Elisabeth Sanders (University Medical Center Utrecht, The Netherlands), Leo Schouls (National Institute of Public Health and the Environment, Centre for Infectious Disease control, The Netherlands), Guy Beber (National Institute of Public Health and the Environment, Centre for Infectious Disease control, The Netherlands)

BACKGROUND:
Immunization schedules with pneumococcal conjugate vaccine (PCV) differ largely between countries with respect to number of doses, interval between doses, and age at first dose. To assess the optimal primary schedule in the first 6 months of life, we performed an open-label randomized controlled trial to compare immunogenicity of 13-valent PCV between four immunization schedules.

METHODS:
We randomly assigned 410 healthy ‘at term’ born infants to receive PCV3 at 2, 4, 6 months, 15, 35, 39 months or 4-months in the primary series with a booster dose at 11 months. All infants received DTaP/IPV-Hib vaccine at 2-3 and 15 months. Blood samples were collected at 1-month, 2-3-4-6 months, 11 months, and 1 month after the booster dose. Differences between schedules in geometric mean concentrations (GmCs) of pneumococcal serotype-specific IgG antibodies were analyzed with ANOVA in the intention-to-treat population.

RESULTS:
One month after the primary series, the 2-4-6 schedule was superior to the 3-5, 2-3-4-6 24 schedule for 4, 9 and 15 serotypes, respectively. The 3-5 schedule was superior to the 2-3-4-6 schedule for 4 serotypes, and the 2-4 schedule for 17 serotypes. The 2-3-4 schedule was superior to the 24 schedule for 5 serotypes. After the booster dose, virtually no inferiority or superiority between the various schedules was observed.

CONCLUSIONS:
Starting the primary series 1 month later and larger intervals between doses resulted in higher antibody levels after PCV13 administration. These factors proved to be more important than the number of primary doses. After the booster dose at 11 months of age, the differences between schedules disappeared. The 24-dose 3-5 schedules are advised as the preferred primary schedule.

Presented by:
Mirjam Knol

Keywords: 13-valent pneumococcal vaccine Pneumococcal infections Immunogenicity Immunization schedule ESCAIDE Reference Number: 2012106

Compliance with national childhood vaccination recommendations of children born 2006/07/08 in Germany

Thorsten Reck (Robert Koch Institute, Germany), Marcel P.' (Robert Koch Institute, Germany), Emirates Tom (Robert Koch Institute, Germany), Gabrielle Posagem (Robert Koch Institute, Germany), Justus Benedik (Robert Koch Institute, Germany)

BACKGROUND:
In Germany, primary childhood immunization should be complete at 24 months of age. Because continuous, nationwide surveillance of vaccination coverage (VC) of this age-group is nonexistent, health services data for birth cohorts 2006/07/08 were analyzed instead.

METHODS:
Anonymized billing data from Associations of Statutory Health Insurance Physicians (ASHIP) were analyzed, covering 85% of the population in 12 out of 16 federal states. Patients can be followed over time within their associated ASHIP and were included if physician contacts both at 0-4 months and at 24-25 months within the same ASHIP were documented. Vaccination histories were construed for these individuals. VC on federal state level was weighted by the according number of annual live births and summarized to nationwide VC. Follow-up over longer time periods allowed validating the method with available VC data from kindergarten and school children and the German Health Survey for Children and Adolescents (KiGGS).

RESULTS:
Wide variations of VC of diphtheria, tetanus, pertussis, polio and Hib vaccines was 89% (no difference between birth cohorts). VC for 4-doses of HepB and pneumococcal conjugate vaccine (PCV) increased from 78% to 73% and from 42% to 70%, respectively. VC of MMR was high for dose 1 (94%) compared to dose 2 (66%) (no difference between cohorts). VC increased across 2006-07/08 cohorts for 1-dose MCV (75/77/79%) and first (77/78/85%) and second varicella dose (93/93/94%). Validation showed good agreement with all other data sources.

CONCLUSIONS:
VC of established vaccines is at moderate levels at 24 months, first dose VC of established vaccines is at moderate levels at 24 months, first dose of MMR even high. VC of recently introduced vaccines PCV, MCV, and varicella is increasing. ASHIP data analysis can serve as continuous, nationwide surveillance system to monitor completeness of childhood vaccination recommendations.

Presented by:
Mirjam Knol

Keywords: Vaccination coverage surveillance health services research ESCAIDE Reference Number: 2012107

Is Germany on the road to eliminating rubella?

Sofie Gilsingk Lensen (Robert Koch Institute (1), European Programme for Intervention Epidemiology Training (EPIT) (2), Germany), Doris Altmann (Robert Koch Institute, Germany), Thorsten Reck (Robert Koch Institute, Germany), Sofie Gilsingk (Robert Koch Institute, Germany), Gabrielle Posagem (Robert Koch Institute, Germany), Dorothée Malysoko-Klaver (Robert Koch Institute, Germany)

BACKGROUND:
Rubella is targeted for elimination in Europe by 2015. Since 2001, the German national surveillance system (NSS) includes nationwide case-based notifications for congenital rubella syndrome (CRS), but rubella is notifiable only in the 11 western federal states (EFS). Using available data sources, we aimed to assess the status of rubella elimination according to WHO indicators (i.e. rubella-incidence <1/million total population, CRS-incidence <1/100,000 live-births, and 2-dose vaccination coverage >95%).

METHODS:
For 2001-2009, rubella and CRS-data from the NSS (inpatients and outpatients) and the Federal Statistical Office (hospital statistics) were described by age and federal state. Cases included fulfilled the case reference definition for rubella or CRS in the NSS or were coded with rubella or CRS in hospital statistics using the International Classification of Diseases (ICD-10).

RESULTS:
From the EFS 107 rubella cases were notified (2009-incidence: 0.46/1,000,000), six were hospitalised. Among the 117 rubella cases registered in hospital statistics 38 (33%) were from the EFS, 63 (56%) were 15-25 years old. While 10 CRS cases were reported in the NSS, 27 CRS-patients 1 year were registered in hospital statistics (incidence 0.2 vs. 0.1/100,000 live-births). Two-dose vaccination coverage increased from 1998 and 2010 from 31.6% to 92.7% in the EFS and from 11.7% to 19.1% in the NSS.

CONCLUSIONS:
The utilized data-sources indicate that there is progress towards rubella elimination in Germany. However, rubella incidence-data from the EFS cannot be extrapolated to the NSS, and hospitalization statistics indicate substantial rubella and CRS underreporting. Nationwide rubella surveillance is needed for documentation of rubella elimination and a capture-recapture study to quantify the degree of underreporting.

Presented by:
Sofie Gilsingk Lensen

Keywords: Rubella Elimination Surveillance Germany WHO targets ESCAIDE Reference Number: 2012109

13 Vaccine-preventable diseases (1)

Immunogenicity Immunization schedule

Keywords: Measles, burden of Illness, vaccination, Intervention studies ESCAIDE Reference Number: J00251

DAY 2 D 24-26 October 2012 Edinburgh, UK
Reasons for non-vaccination against Human Papillomavirus (HPV) in a sample of Italian girls (results from VALORE project, 2012)

Cristina Giambi (Istituto Superiore di Sanità, Italy), Martina De Benedetti (Istituto Superiore di Sanità, Italy), Fortunato D’Arrigo (Istituto Superiore di Sanità, Italy), Martina Deleo (Istituto Superiore di Sanità, Italy), Gabriella Deidda (Istituto Superiore di Sanità, Italy), Valentina Losco (Istituto Superiore di Sanità, Italy), Carmen Monte (European Programme for Intervention Epidemiology Training (EPET); ECDC, Sweden), Vito Giannelli (Istituto Superiore di Sanità, Italy), Chiara Cattaneo (European Programme for Intervention Epidemiology Training (EPET); ECDC, Sweden), Fortunato D’Arrigo (Istituto Superiore di Sanità, Italy). Silvano Dolcetti (Infectious Diseases Epidemiology Unit, Istituto Superiore di Sanità, Italy). Local Representations for VALORE (Multiple affiliations, listed at: http://www.epicentro.iss.it/problemi/hpv/valore.asp, Italy)

BACKGROUND: In Italy, five-of-chige Human Papillomavirus (HPV) vaccination is actively offered to 11 year-old girls since 2008. National vaccination coverage for this three doses is 65% (range: 25-82% among Regions). We performed the reasons for non-vaccination.

METHODS: We recruited non-vaccinated girls of birth cohort 1997 or 1998 (who were offered vaccination in 2008 and 2009 respectively), identified by voluntarily participating Local Health Units (LHU) through the immunization registries. Between January-March 2012, LHUs sent a standardized questionnaire by mail to parents of the identified girls, including closed questions on reasons/barriers for non-vaccination, knowledge on HPV, source of information, attitude towards vaccinations. We performed a descriptive analysis of variables.

RESULTS: So far we have received 2015 (42.4%) questionnaires from 56 LHUs in 10 Italian regions and included 1701 valid questionnaires in the analysis. Main reasons for non-vaccination were: fear of adverse events (24.6%); lack of trust in a new vaccine (7.3%); discord (6.4%) and scarce (5.3%) information on HPV vaccination; cervical cancer prevention by pap-smear (2.7%); parents considered their daughter too young to be at risk (2.4%). The most reported sources of information were: GPs (pediatricians 44.6%, family/friends 34.7%, internet 31.6%, gynecologists 26.8%). GPs pediatrics (72.7%) and gynecologists (57.4%) were reported as the best sources to receive adequate information. Most girls (48.5%) had received other pediatric vaccinations; most families (68.9%) considered vaccinations fundamental for health children and 47.7% considered them dangerous.

CONCLUSIONS: Our results suggest that a more complete and transparent communication may help reducing fear and increasing trust in vaccination among parents. Sensitizing and training health care workers is essential to the WHO goal of 95%. Efforts such as offering easily accessible vaccination services in schools and enhancing NERP-participation are necessary to close vaccination gaps in this age group.

PRESENTED BY:

Cristina Giambi
Keywords: Human Papillomavirus Vaccines Vaccination Uterine Cervical Cancer Immunization Programs
ESCAIDE REFERENCE NUMBER: 2012080

14 SURVEILLANCE (2)

Evaluation of the Austrian Salonnella Surveillance System following the implementation of a new electronic reporting system, 2012

Sabine Martschink (Austrian Agency for Health and Food Safety, Austria), Franco Allbracht (Austrian Agency for Health and Food Safety, Austria), Daniel Schmid (Institute of Medical Microbiology and Hygiene, Austrian Agency for Health and Food Safety, Vienna, Austria)

BACKGROUND: The Kingdom of Saudi Arabia (KSA) bears a high risk of outbreaks with Nisseria meningitidis due to the annual Haj pilgrimage. Following large outbreaks of Invasive Menegococcic Disease (IMD) in 2000 and 2001, quadravalant A/CW135y vaccines became obligatory for pilgrims and residents in Mecca and Medina. The objective of this study was to perform a descriptive analysis for IMD incidences and mortality among citizens and pilgrims in the KSA, before and after the new vaccination policy in 2002.

METHODS: We extracted data on laboratory confirmed cases from 1995-2011 from the national IMD surveillance database in KSA. These data comprised 1103 cases, notified by laboratories to the KSA Ministry of Health. We calculated age and region specific disease incidences for Saudi residents by dividing the number of cases by mid-year population sizes. Confidence intervals were determined for annual means.

RESULTS: There were no signs of epidemics among pilgrims or residents after 2002. The annual incidence for IMD decreased from 0.15 cases/100.000pop. in the pre-epidemic period (1995-1999) to 0.06 cases/100.000pop. after the epidemics (2002-2010). Also, the case fatality ratio (CFR) dropped from 19.5% (95%-CI 17.0-21.5) to 11.4% (95%-CI 6.4-16.4). Bas du formulébaus du formulébaund the annual number of total cases in Mecca and Medina during the Haj season decreased from 13.45(95%-CI 1.3-31.5) to 1.7 (95%-CI 0.3-3.1). In Mecca and Medina the disease incidence among children below 5 years was significantly lower from 2002 (0.25 cases/100.000pop.) compared to all other KSA regions(0.95 cases/100.000pop.).

CONCLUSIONS: After the introduction of compulsory A/CW135y vaccination, the disease incidence and CFR decreased. Extending the vaccination programme beyond Mecca and Medina for the general pediatric population will likely further reduce the IMD incidence.

PRESENTED BY:

Sabine Martschink
Keywords: Austria Salonnella surveillance system evaluation disease notification
ESCAIDE REFERENCE NUMBER: 20121044

European Scientific Conference on Applied Infectious Disease Epidemiology 24-26 October 2012 Edinburgh, UK
Electronic laboratory report Period from onset to laboratory report, follow-up interviews. we define the time between onset and action as (1) of electronic reporting (days) and measure the completeness of EHD investigations / follow-up in London and South East (SE) regions to identify opportunities for improvement.

METHODS: We surveyed laboratories, HPU and EHDs in London and SE during December 2010 and April 2011 to describe processes, assess timeliness of electronic reporting Period was 22 days in SE and 24 days in London. Median Electronic laboratory report Period was 22 days in SE and 24 days in London. HPU report management Period was within the same day in SE and one day in London. EHD follow-up was within the same day in SE and one day in London. Reports were produced every Thursday. We evaluated the calculated median time needed to detect alerted, defined as number of consecutive days with observed mortality exceeding the expected daily average, above the 90th percentile of consecutive days observed in the previous 2 years.

RESULTS: Yearly, proportion of late notifications varied between 6-7%. This proportion was 12.2% (95% CI: 11.6-12.7%) in small and 6.5% (95% CI: 6.4-6.6%) in big districts. Time required from the notification of deaths till reaching the alert threshold varied between 5-20 days and the median was 6 days (IQR: 5-9). The median was 5 days (IQR: 4-8) in 2009 and 6 days (IQR: 5-6) in 2009 and 6.5 days (IQR: 4-6) in 2010.

CONCLUSIONS: Delays in notification are bigger in small districts and time required in detecting an alert is almost one week. Based on these findings and in assessing causes and implementing measures, we aimed to estimate delays in reporting and time required for detecting alerts during summers 2009 to 2011.

METHODS: We included notifications of the years 2009-2011. Delays in reporting were defined as more than 8 days between date of death and date of data reception. We stratified per size of district (100,000 [small] inhabitants versus over 100,000 [big]). We calculated the median time needed to detect alerted, defined as number of consecutive days with observed mortality exceeding the expected daily average, above the 90th percentile of consecutive days observed in the previous 2 years.

RESULTS: Yearly, proportion of late notifications varied between 6-7%. This proportion was 12.2% (95% CI: 11.6-12.7%) in small and 6.5% (95% CI: 6.4-6.6%) in big districts. Time required from the notification of deaths till reaching the alert threshold varied between 5-20 days and the median was 6 days (IQR: 5-9). The median was 5 days (IQR: 4-8) in 2009 and 6 days (IQR: 5-6) in 2009 and 6.5 days (IQR: 4-6) in 2010.

CONCLUSIONS: Delays in notification are bigger in small districts and time required in detecting an alert is almost one week. Based on these findings and in order to improve real-time detection of alerts, the system should develop models estimating and correcting delays of daily death notification.
European outbreak of Salmonella Strathcona caused by small tomatoes, August – November 2011

Luise Müller (Statens Serum Institut, Denmark), Charlotte Kjelsoe (Statens Serum Institut, Denmark), Christine Freund (Robert Koch Institute, Germany), Sona Jansen (Danish Veterinary and Food Administration, Denmark), Rita Tordrup (Statens Serum Institut, Denmark), Bolte Seburg (Statens Serum Institut, Department of Infectious Disease Epidemiology, Denmark), Frederik Skarles (Statens Serum Institut, Denmark), Anne Rihkgård (National Food Institute, Denmark), Rhi Friger (Robert Koch Institute, Germany), Ceillem Goetz (EDE, Sweden), Steen Ethersby (Statens Serum Institut, Denmark).

BACKGROUND: In September 2011 a small cluster of Salmonella Strathcona was identified in Denmark. An urgent inquiry was posted on the Epidemiological Intelligence Information System (EPIIS) for the Food and Waterborne Disease Network and cases were reported from Germany and Austria. An outbreak investigation was initiated to reveal the source in order to stop the outbreak.

METHODS: A case was defined as a laboratory confirmed Salmonella Strathcona patient in Europe with a specific pulse-field gel electrophoresis (PFGE) pattern III between August and November 2011. Hypothesis-generating interviews were performed in Denmark, Germany and Austria, and further studies in Denmark included comparative analyses of patients’ shopping lists obtained from supermarket computers, and a case-control study with 25 cases and 16 population register controls matched on age, sex and municipality.

RESULTS: In total, 43 cases of Salmonella Strathcona were reported in Denmark, 13 in Germany, two in Italy and one in Austria with the same PFGE pattern. The comparative analyses of patients’ shopping lists showed that 8/10 cases had bought a specific type of Datterino tomatoes prior to disease onset. In a case-control study illness was associated with a specific supermarket chain, Moreno, 95% CI [2.6, 101]. Trace-back investigation showed that the tomatoes came from an Italian producer and had been sold both in Germany and Austria, although a detailed European trace-back investigation could not be performed.

CONCLUSIONS: Non-animal food vehicles are increasingly recognized as causing outbreaks in Europe. This outbreak emphasises the challenges in investigating contaminated food items across borders in Europe. We recommend that cooperation between epidemiological investigators and food authorities within Europe are strengthened to address such outbreaks.

PRESENTED BY: Luise Müller
Keywords: Europe, Salmonella Strathcona, Outbreak, Tomatoes
ESCAIDE REFERENCE NUMBER: 210395

Molecular investigation of a legionellosis outbreak in a hotel in Calpe (Spain)


BACKGROUND: On January 11th, Elsionet notified several cases of travel-associated legionellosis in British patients that pointed to a hotel in Calpe as the source of an outbreak. This presented in several bouts, from November 2011 until February 2012, and caused 21 cases (5 fatalities). Despite its apparent control in early February, it reappeared in March, May and June, causing 21 additional cases. We report here our findings on the epidemiological investigation and intervention measures to control this outbreak.

METHODS: A case definition was adopted by the ECDC using clinical and epidemiological information. Enquiries were completed with environmental investigations, including checking of routine control measures, exhaustive inspection of risk installations, sampling of water and biofilms, and general and targeted interventions.

RESULTS: 37 cases (UK, 16; Spain, 12; Belgium, 7; France, 2) were travel-associated and the remaining had professional exposure. The hotel abided with the current regulations and exceptional cleaning and control measures were adopted on January 16-17, after which samples were negative for Legionella. Biofilm samples from January 15th were positive the same day one new case was declared by ELsIONET: the hotel was closed immediately. It reopened one week later, and new water samples were negative but biofilms revealed the presence of Legionella. Additional inspections in June identified several closed chambers connected to the spa as likely reservoirs for Legionella which could be disseminated to the hotel hall through the doors and air-conducts. Intervention measures were facilitated by analyzing biofilms. A new reservoir for Legionella has been identified connected to the spa. This finding has led to dismantling the spa and allowed the hotel to reopen once the outbreak has been controlled.

PRESENTED BY: Fernando Gonzalez-Candelas
Keywords: Sequence typing, PCR, Biofilms, Environmental samples, Legionellosis outbreaks
ESCAIDE REFERENCE NUMBER: 210385

Epidemiological investigation and intervention in a legionellosis outbreak in a hotel in Calpe (Spain)

Fernando Gonzalez-Candelas (Genomics and Health, CSISP-Universitat de Valencia, COMEBIP, Spain), Herminio Vanoncozo (Surveillance and Epidemiologic Control Unit. Public Health Directorate. Regional Government Valencia, Spain), Juan Capite (Environmental Health Unit, Public Health Center. Axyz, Spain), Francisco Gonzalez (Surveillance and Epidemiologic Control Unit. Public Health Directorate. Regional Government Valencia, Spain), Jose Braver (Environmental Health Unit, Public Health Center. Denia, Spain), Rosa Carlos (Surveillance and Epidemiologic Control Unit. Public Health Directorate. Regional Government Valencia, Spain).

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PRESENTED BY: Fernando Gonzalez-Candelas
Keywords: Sequence typing, PCR, Biofilms, Environmental samples
ESCAIDE REFERENCE NUMBER: 210385

Impact of rotavirus vaccination in regions with low and moderate vaccine uptake in Germany

Sandra Dudareva-Vizule (Robert Koch Institute, Germany), Judith Koch (Robert Koch Institute, Germany), Matthias en de Neefe (Robert Koch Institute, Germany), Dennis Oehlver (Paul Ehrlich Institute, Germany), Wolfgang Kuehn-Meissel (Paul Ehrlich Institute, Germany), Die Brueck, Robert Koch Institute, Germany).

BACKGROUND: In Germany, routine rotavirus (RV) vaccination is not adopted into the national immunization schedule. However, because RV-vaccines were already on the market since 2006, in 2010 a moderate (58%) and low (22%) vaccine uptake was observed in the 5 western (EFS) and the 11 western federal states (WFS), respectively. Our aim was to assess the impact of RV-vaccination on RV hospitalisations in Germany.

METHODS: We computed incidence rates (IR) by utilising population data and RV-related hospitalisations identified through the national mandatory reporting system. First, we compared IR of seasons after (2008-2010/11) to the mean IR of seasons before (2004/05-2006/06) RV-vaccine introduction by age-group and region (EFS and WFS). Second, we tested effects of seasonal trend, vaccination coverage, age-group, and region on IR with negative binomial regression and computed IR-ratios (IRR) in the seasons after mid-2006. A p-value <0.05 was considered statistically significant.

RESULTS: IR gradually decreased by each post-introduction season. For children aged 6-14, 15-23 and 16-23 months the IR in the EFS was reduced in 2010/11 by 40%, 57%, 41%, and 22%, respectively. There was no significant IR-reduction in those aged ≥24 months. In WFS, the IR-reduction in 2010/11 in respective age-groups was 27%, 28%, 14%, and not detectable among those aged ≥8 months. In regression analysis, the effect of vaccination was independent from the region. Vaccination of 50% of the unvaccinated children population was significantly associated with a reduction in the RV-hospitalisation incidence in the age-groups 6-11 (IRR=0.58), 12-17 (IRR=0.61), and 18-23 months (IRR=0.78).

CONCLUSIONS: In the German setting with low to moderate vaccine uptake, RV-related hospitalisation incidence decreased substantially depending on the achieved vaccination coverage, but only in children ≥12 months of age.

PRESENTED BY: Sandra Dudareva-Vizule
Keywords: Rotavirus, Hospitalisation, vaccination, Impact, Germany
ESCAIDE REFERENCE NUMBER: 210387
The changing serotype distribution of Streptococcus pneumoniae in Ireland, since introducing pneumococcal conjugate vaccines

Margaret Fitzgerald (HSE - Health Protection Surveillance Centre, Ireland), Inside Victoria (Children’s University Hospital, Temple Street, Dublin, Ireland), Stephen Marchen (HSE - Health Protection Surveillance Centre, Ireland), Suzanne Coter (EpiCentre, France), Darina O’Flanagan (Health Protection Surveillance Centre, Ireland), Robert Currey (Children’s University Hospital, Temple Street, Dublin, Ireland), Hilary Humphreys (Department of Clinical Epidemiology, Royal College of Surgeons in Ireland, Ireland)

BACKGROUND: The seven-valent pneumococcal conjugate vaccine (PCV7) was recommended in Ireland in September 2008 for all children 2 years of age. PCV13 replaced PCV7 in December 2010. PCV uptake is 90%. The objective of this study was to assess the impact of PCV on IPD burden and serotype distribution.

METHODS: IPD notification data from laboratories and clinicians available on the National Computerised Influenza Disease Reporting (CIDR) system and typing data from the pneumococcal laboratory were analysed. S. pneumoniae isolates from blood and CSF were submitted for typing by microbiology laboratories. Serotyping was performed.

RESULTS: Following the introduction of PCV7, the overall incidence of IPD declined by 12% in 2011 compared with 2008, the greatest decline was in children 2 years of age (55%). The burden of disease due to the PCV7 serotypes in this age group was reduced by 91%. Despite these overall reductions, the incidence of IPD due to non-PCV7 serotypes increased in these 2 years of age and older but not in younger children. The predominant serotypes in 2008 in rank order were 14, 4, 9v and 7F, in 2010-11 these were 7F, 4, 19A (PCV7 serotypes), 23F and 6.

CONCLUSIONS: Apart from children 2 years of age, the incidence of IPD due to non-PCV7 serotypes is increasing in Ireland. The potential impact PCV13 to reduce the burden of IPD, especially those cases caused by 7F and 19A remains to be seen. Ongoing surveillance is required to monitor serotype distribution and the impact of vaccination programmes.

PRESENTED BY: Oktawia Wojcik

Keywords: Pneumococcal Infections/prevention & control, Pneumococcal Infections/epidemiology/Pneumococcal Vaccines Serotyping

ESCAIDE Reference Number: 2012O701

Validation of Tdap-IPV booster registration in the Danish Childhood Vaccination Database: A survey in the 2000-2003 birth cohorts

Oleanna Mølholm (Statens Serum Institut, Denmark), Jacob Simonsen (Statens Serum Institut, Denmark), Kåre Mølbak (Statens Serum Institut, Denmark), Palle Valentin-Broholm (Statens Serum Institut, Denmark)

BACKGROUND: Vaccination coverage in Denmark is estimated using the Danish Childhood Vaccination Database (DCvD). The 5-year tetanus, diphtheria, pertussis and polio (Tdap-IPV) booster is the childhood vaccination with the lowest reported coverage. We conducted a cross-sectional study to validate the reporting of the Tdap-IPV-booster to the DCvD.

METHODS: Using proportional allocation (stratified by birth cohort, gender and region), we randomly selected children from the 2000-2003 birth cohorts, registered in the Danish Civil Registration System and without a recorded Tdap-IPV booster. We invited parents to respond to a postal questionnaire regarding unreceived vaccinations. Participants were considered vaccinated if they used a vaccination card to recall their child’s vaccination status and provided an exact date of vaccination. Adjusted vaccination coverage (VC) was calculated as follows: adjusted VC = (VC+registered VC) / (VC+non-registered VC) + registered VC.

RESULTS: Of the 517 contacted parents, 36% (67%) completed a questionnaire, 112% (79%) reported that their child received the Tdap-IPV-booster, with 3% (4%) providing the date of vaccination. Most commonly reported reasons for not receiving the booster included forgetting (53%) and not wanting the vaccination (16%). The majority (96%) of children who received the booster were vaccinated by their general practitioners (6%), 6% abroad and 1% in a hospital. The adjusted Tdap-IPV-booster VC was 86.6% (95% CI: 85.6-86.6%) compared to 84.3% from the DCvD, indicating an underreporting of at least 20.2%.

CONCLUSIONS: We identified substantial underreporting of the Tdap-IPV-booster in the DCvD, mainly due to GPs not registering given vaccinations. Validating data used for VC calculations is needed to obtain more precise estimates.

PRESENTED BY: Oleanna Mølholm

Keywords: Validation, vaccination coverage, Denmark, Tdap-IPV booster, vaccination database

ESCAIDE Reference Number: 2012O714

The introduction of MenAfricVac™ from AgaZzed to Zinder: results from the third phase of the vaccination campaign, Niger, November 2011 – January 2012

Sawera Sam (National Center of Epidemiology, Republic of Korea), Nan Sun-Beck (Transnational Research Division, International Vaccine Institute, Seoul, Republic of Korea), Hansoo Jaconis (Ministry of Public Health, Namibia, Niger), Abraham Maboko (Ministry of Public Health, Namibia, Niger), Idrissainges (Ministry of Public Health, Namibia, Niger), Abubakar Abdulkad (Ministry of Public Health, Namibia, Niger), Oktawia Wojcik (Transnational Research Division, International Vaccine Institute, Seoul, Republic of Korea), Abubakar Maiga (Ministry of Public Health, Namibia, Niger), Lorenzo Paolozzi (Transnational Research Division, International Vaccine Institute, Seoul, Republic of Korea)

BACKGROUND: MenAfricVac™ is a conjugate vaccine against meningitis A specifically designed for Africa. In Niger, the MenAfricVac™ vaccination campaign was conducted in people aged 2-9 years in three phases. The third phase was conducted in November/December 2011 targeting more than 7 million people in six regions (31 districts).

METHODS: We estimated vaccination coverage (by both card and verbal history of vaccination) and described reasons for non-vaccination at regional level by cluster sampling: expected coverage of 95%, precision of ±3%, confidence level of 95%, and design effect of 2. At district level, we conducted a cluster lot quality assurance sampling (lower threshold: 75%, upper threshold: 90%, alpha and beta errors below 10% and 15% respectively). We calculated risk ratios (RR) and 95% confidence intervals (95%CI) through Poisson regression with robust variance for the association between vaccination status and variables of interest.

RESULTS: We surveyed 2390 persons and estimated an overall coverage of 52% (95%CI 48.8-55.2%) by card-history and of 58.8% (95%CI 54.9-62.7%) by card-history and of 58.8% (95%CI 54.9-62.7%) by card-history. Of the 574 contacted parents, 386 (67%) completed a questionnaire; (RR 1.05, 95%CI 1.03-1.08). During the campaign At district level we defined five and 25 districts as the lowest reported coverage. we invited parents to respond to a postal questionnaire regarding unreceived vaccinations. Participants were considered vaccinated if they used a vaccination card to recall their child’s vaccination status and provided an exact date of vaccination. Adjusted vaccination coverage (VC) was calculated as follows: adjusted VC = (VC+registered VC) / (VC+non-registered VC) + registered VC.

RESULTS: Of the 517 contacted parents, 36% (67%) completed a questionnaire, 27% (73%) reported that their child received the Tdap-IPV-booster, with 3% (4%) providing the date of vaccination. Most commonly reported reasons for not receiving the booster included forgetting (53%) and not wanting the vaccination (16%). The majority (96%) of children who received the booster were vaccinated by their general practitioners (6%), 6% abroad and 1% in a hospital. The adjusted Tdap-IPV-booster VC was 86.6% (95% CI: 85.6-86.6%) compared to 84.3% from the DCvD, indicating an underreporting of at least 20.2%.

CONCLUSIONS: We identified substantial underreporting of the Tdap-IPV-booster in the DCvD, mainly due to GPs not registering given vaccinations. Validating data used for VC calculations is needed to obtain more precise estimates.

PRESENTED BY: Oleanna Mølholm

Keywords: Meningoococcal Meningitis, Serogroup A, Vaccination Coverage, Serum, Lot Quality Assurance Sampling, Cluster Sampling

ESCAIDE Reference Number: 2012O713

Keywords: Pneumococcal Infections/prevention & control, Pneumococcal Infections/epidemiology/Pneumococcal Vaccines Serotyping
Is Schmallenberg virus a new zoonotic agent? – a quick answer due to new (zoonotic) infectious disease control structures

Elena Pariani

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BACKGROUND: The new (zoonotic) infectious disease control structures enabled a quick response to the spread of Schmallenberg virus.

METHODS: The study aimed at reconstructing the evolutionary dynamics of the A(H1N1)pdm09 virus in Italy during two epidemic seasons (2009-2010 and 2010-2011), in the light of the forces driving the evolution of the virus.

RESULTS: The hemagglutinin (HA) gene was amplified and sequenced from 227 A(H1N1)pdm09-positive respiratory samples collected from patients with influenza-like illness during the two post-pandemic seasons (2010-2011). Phylogenetic and phylogeographic analyses were performed using Bayesian inference and Maximum Likelihood (ML). The analyses confirmed the existence of two clusters of isolates, which were associated with travel to Egypt.

CONCLUSIONS: The new (zoonotic) infectious disease control structures enabled a quick and adequate assessment of zoonotic risk of an emerging pathogen in livestock.

Supportive assay for measles case classification in low incidence settings: Immunoglobulin G (IgG) avidity testing of oral fluid samples

Katherine Zakikhany (1) Health Protection Agency, UK; 2) The EUPHEM programme, EEC, Stockholm, Sweden), David WG Brown (Health Protection Agency, United Kingdom), Kevin E Brown (Health Protection Agency, United Kingdom)

BACKGROUND: Oral fluid sampling has been increasingly introduced as a reliable and non-invasive means to collect samples for measles diagnostics, and the detection of immunoglobulin M (IgM) confirms infection. However, at present the incidence of measles infection is decreasing and the positive predictive value of single IgM tests is low. IgG avidity testing is an alternative to confirm recent infection, but is currently only available for measles diagnostics in serum samples. The aim of this study was to develop a platform for IgG avidity testing in oral fluid samples as a supportive tool for measles diagnostics in low transmission settings.

METHODS: An enzyme immunoassay (EIA)-based IgG avidity test for oral fluid samples was developed by modification of a commercially available human anti-measles IgG EIA (Microimmune). Specimens (oral fluid, sera) received by the Virus Reference Department for surveillance, reference and immunity status investigation were tested and results compared with results of routine testing and basic epidemiological information (e.g. vaccination history).

RESULTS: Evaluation of the modified EIA demonstrated that the avidity pattern in oral fluids paralleled that in serum. Oral fluid samples from 133 patients with suspected measles infections were subsequently investigated and a significantly lower mean relative avidity index (%), indicating recent infection, was determined for IgM positive samples (53.8%) compared to IgM negative oral fluids (79.3%). Further testing is in progress to determine sensitivity and specificity of the assay.

CONCLUSIONS: We have developed an EIA based assay for measles IgG avidity testing for oral fluid samples and demonstrate that IgG avidity testing correlates well with IgM results. Avidity testing is a useful supportive tool for measles classification in low incidence settings when interpreted together with epidemiological information.

PRESENTED BY: Katherine Zakikhany

Keywords: Measles, supportive diagnostics, IgG avidity testing

ESCAIDE REFERENCE NUMBER: 2013076

Use of Flagellin A short variable region sequencing and antimicrobial resistance profiling in outbreak assessment of Campylobacter in Denmark in 2011

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BACKGROUND: Surveillance data showed that the number of Campylobacter cases in Denmark increased above the expected seasonal peak of cases during the months of July and August in 2011. Here we aimed to analyse (i) whether the outbreak of Campylobacter was recent for the increase and (ii) whether similar Campylobacter types could be found in retail chicken meat and patients.

METHODS: Campylobacter isolates from human cases (587 isolates) and chicken meat (98 isolates) from three countries intended for the Danish market and isolated through routine sampling were typed by flagellin A ( flaA) Short Variable Region sequencing and antimicrobial resistance profiling. Patients were interviewed regarding travel abroad in the week before disease onset.

RESULTS: The human Campylobacter isolates showed six large flaA-nucleotide type clusters. Travel data showed 37% of cases could be attributed to foreign travel. Antimicrobial resistance profiling showed that 61% of domestically acquired Campylobacter isolates were sensitive to all tested antimicrobials, as opposed to 16% for travel related cases. When flaA-typing data, antimicrobial resistance profiles and travel information of the patients were combined, no large single cluster of isolates was observed. Comparison of the human isolates with isolates from retail chicken meat showed that 24 (33.5%) patients isolates had a flaA-type and antimicrobial resistance profile similar to Danish chicken meat isolates. Only four (2.1%) patients carried isolates specifically matching those isolated from chicken meat imported from two other European countries.

CONCLUSIONS: Based on the typing results, the increase in Campylobacter cases in Denmark in 2011 could not be attributed to a single source outbreak, an outbreak investigation was deemed unnecessary. In this study, similar Campylobacter isolates were observed in Danish patients and in Danish retail chicken meat.

PRESENTED BY: Lisa von Alphen

Keywords: Campylobacter flaA Short Variable Region sequencing antimicrobial resistance typing

ESCAIDE REFERENCE NUMBER: 2013055

European Scientific Conference on Applied Infectious Disease Epidemiology 24-26 October 2012 Edinburgh, UK
# 18 Outbreaks (3)

## Hill Tribe community outbreak of new Genotype of Measles transmitted from boarding school students retuning home for Buddhist Lent Day - Thailand, 2011

**Presented By:**

*Seunice Weichelteten (FELTP, Thailand)*

**Background:**

A total of 2,766 GAS emm/m3 strains from 2001 to 2011 (182 invasive and 159 non-invasive) were examined using whole genome sequencing.

**Results:**

- 58 GAS emm/m3 strains were differentiated into three sequence types (STs): ST15, ST35, ST54 or ST6. Strains from 2008/2009 period were scattered across all STs and lineages. There was no significant correlation between emm types, clinical features or the invasiveness of emm/m3 strains and clonal lineages.

- We have identified a phage present in 45/296 emm subtypes. Clinical features or the invasiveness of emm/m3 strains were differentiated into three sequence types (STs): ST15, ST35, ST54 or ST6.

**Conclusion:**

The unusual surge in invasive GAS infections could be attributed to large, to the emergence of the novel phage-containing clade (ST54) of emm/m3 GAS strains within the population. We hypothesised that phage-encoded proteins contributed to this emergence either through biological activity or through reduced population immunity. Prompt molecular analysis of GAS isolates emerging in the UK population could translate into improved advanced public health warning systems for newly emergent invasive strains.

**Keywords:** GAS infections, whole genome sequencing, phage, population immunity

**ESCAIDE Reference Number:** 2012826

## Cholera outbreak during mega floods, October 2010 at Darbello city District NaushahroFeroze, Sind, Pakistan

**Presented By:**

*Abeer Ali Ghangri (District Health Department (FELTP-Allies) Sind, Pakistan), Lahnas Abeer Ghangri (Health Department, Pakistan), M. Parvez Jilho (Health Department (FELTP-Allies), Pakistan), Jamiel Ahmad Ansari (FELTP-Pakistan, Pakistan)*

**Background:**

On 6th October 2010 a medical practitioner reported that an outbreak of acute watery diarrhoea struck within the Chana/Mashori colony, Darbello, District NaushahroFeroze where his clinic treated 17 patients while one person died. We conducted a retrospective matched case-control study to define risk factors associated with ABO antibodies in the community and identify interventions that could prevent further cases and future outbreaks.

**Methods:**

- Cross sectional study was conducted by reviewing records of hospitalized patients and immunization records and conducting active case finding in the school and villages. Cases were persons under 15 years old who have fever, rash and cough with at least one of: Koplik spot, conjunctivitis 27th July – 14th Sep 2011. Serum and throat swab samples were obtained from eligible cases for measles culture, IgM ELISA serology and PCR genotype identification.

**Results:**

- 15 cases were detected in the school (attack rate 2.18%); 08 cases were identified as the genotype. New student immunization program had not yet occurred. Two infected students returned to their hill tribe villages. In August, 147 cases (attack rate 22.1%) were detected in these villages. Serum specimens from villagers were 94% (46/10) positive. Sputum culture from a village patient was found positive for 08 cases as found same genotype from school outbreak.

**Conclusion:**

Amplified transmission occurred due to infected patients from the smaller boarding school outbreak becoming index cases in the hill tribe villages. A mop up MMR campaign was conducted, including doses given throughout the hill tribe community. Program monitoring in vulnerable setting like school is needed to prevent amplified transmission to community.

**Keywords:** Measles D8 genotype, hill tribes outbreaks, measles outbreak, measles

**ESCAIDE Reference Number:** 20121048

## A large outbreak of epidemic keratoconjunctivitis caused by adenovirus type 37 in Southern Germany, 2011-2012

**Presented By:**

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**Background:**

Between November 2011 and February 2012, Baden-Wuerttemberg reported an outbreak of epidemic keratoconjunctivitis (EKC) with 112 cases as estimated from 28 to 112. 114 community-acquired cases were defined as cases who presented symptoms at their initial visit, while nosocomial cases developed symptoms after visiting clinic A. We collected demographic, treatment, clinical data and self-reported symptom severity (scale: light; moderate, severe, very severe) using a structured questionnaire, and genotyped available isolates from conjunctival swabs.

**Methods:**

- We defined cases as persons with clinically-diagnosed EKC between 15/11/2011 and 3/2/2012. Community-acquired cases were defined as cases who presented symptoms at their initial visit, while nosocomial cases developed symptoms after visiting clinic A. We collected demographic, treatment, clinical data and self-reported symptom severity (scale: light; moderate, severe, very severe) using a structured questionnaire, and genotyped available isolates from conjunctival swabs.

**Results:**

- Sixty-two of 104 cases (60%) completed the questionnaire (mean age 59, 52% females). Twenty-six cases were community-acquired. The remaining 36 cases who developed EKC symptoms after a median of 12 days after consultation (Range: 3-33) were nosocomial cases. We detected adenovirus type 37 in 44 conjunctival swabs from nosocomial cases. Symptoms lasted a median of 19 days (Range: 2 – 41) and included red eyes (94%), watery eyes (82%), foreign body sensation (87%) and conjunctival discharge (98%). Nosocomial cases were more likely to report severe or very severe symptoms (92%) than community-acquired cases (60%), relative risk: 1.6, 95% confidence interval: 1.1-2.2). On 14/12/2011 the clinic implemented disinfection, dedicated rooms and equipment for EKC patients and the number of cases decreased, with a last nosocomial case on 30/11/2011.

**Conclusion:**

Community outbreak of EKC may lead to sub-clusters of nosocomial transmission. We recommended rapid dissemination of recommendations to eye clinics so that they implement separate treatment paths and contact isolation methods for EKC patients.

**Keywords:** Adenovirus, Viral conjunctivitis, Outbreak, Germany

**ESCAIDE Reference Number:** 20121043

**ESCAIDE Reference Number:** 20121045
ESCAIDE European Scientific Conference on Applied Infectious Disease Epidemiology
24-26 October 2012 Edinburgh, UK

19 Vector-borne diseases and Zooneses

Ecological niche modelling of West Nile virus vector mosquito species in Italy: habitat suitability range and association with epizootics in equines

Lepa Blughru Gasi (Istituto Superiore di Sanità, Italy), Paolo Mazidt (Istituto Zooprofilattico Sperimentale dellaVeneto, Italy), Francesco Severini (Istituto Superiore di Sanità, Italy), Daniele Bisceglia (Istituto Superiore di Sanità, Italy), Raffaele Riva (Istituto Superiore di Sanità, Italy), Giacomo Biraghi (Istituto Superiore di Sanità, Italy)

BACKGROUND:
In Italy, West Nile virus (WNV) equine outbreaks have occurred annually since 2008. Characterising WNV vector habitat requirements allows for the identification of areas at risk of viral introduction, amplification and transmission.

METHODS:
We developed MaxEnt-based ecological niche models using literature records of 15 potential WNV Italian vector mosquitoes to predict their habitat suitability range. We produced municipality-based countrywide maps of vectors’ potential distribution and assessed different climate, landscape and host population variables in modelling their niches. We also tested for associations between vector habitat suitability and occurrence of 2008-2010 Italian WNV equine outbreaks using GEE analysis.

RESULTS:
Suitable habitats for Culex pipiens, Aedes albopictus and Anopheles maculipennis were widely distributed. Suitable habitats for Culex modestus, Ochlerotatus gencus, Ochlerotatus caspius, Coquillettidia richardi, Aedes vexans and Anopheles plumbeus were concentrated in north-central Italy. Species were widespread predicted in the Po valley, where Usutu and Chikungunya viruses have recently emerged additionally to WNV. Suitable habitats for Aedes cinereus, Culex theileri, Ochlerotatus dorsalis and Culex longipalpis were restricted to coastal and southern areas. Altitude, temperature and rainfall variables showed the highest predictive power. Host population and landscape variables provided minor contributions. Significant associations between vector habitat suitability and WNV equine outbreak occurrence were found for Cr. modestus (OR=4.52, 95%CI:2.16-9.43), Ae. albopictus (OR=3.85, 95%CI:1.60-8.00) and Cx. pipiens (OR=2.66, 95%CI:1.50-4.73). Cx. modestus and Cx. pipiens habitat suitability interacted significantly (OR=2.07, 95%CI: 1.97-2.07).

CONCLUSIONS:
We identified areas potentially occupied by WNV vectors and found significant geographical associations between the observed occurrence of WNV equine outbreaks and the predicted habitat suitability for three WNV vectors, providing circumstantial evidence of their possible involvement in WNV epidemiology in Italy.

PRESENTED BY:
Savio Cani
Keywords: West Nile virus, mosquitoes, ecological niche modelling, equine, Italy
ESCAIDE REFERENCE NUMBER: 3016720

ECOLOGICAL NICHE MODELLING OF WEST NILE VIRUS VECTOR MOSQUITO SPECIES IN ITALY: HABITAT SUITABILITY RANGE AND ASSOCIATION WITH EPIZOOTICS IN EQUINES

European Scientific Conference on Applied Infectious Disease Epidemiology
24-26 October 2012 Edinburgh, UK
Cryptosporidiosis outbreak among schoolchildren visiting a holiday farm in Norway
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BACKGROUND:
On 25 March 2012, the Norwegian Institute of Public Health was notified about gastroenteritis cases among children following one-week stays at a Norwegian holiday farm. During a cryptosporidiosis outbreak linked to the same farm in March 2009, no source could be identified. We investigated the outbreak to identify its source and prevent further cases.

METHODS:
We conducted a retrospective cohort study among children who had visited the farm from March 5 to 23. A case was defined as a child having diarrhea or at least two of the following symptoms: vomiting, nausea, abdominal pain, fever, duration of illness > 4 days; and symptom onset within two weeks of visit. Through a web-based questionnaire we gathered information on demographics, symptoms and exposures. Environmental investigation included inspection of the premises, water sampling, and fecal sampling from visitors, animals and employees.

RESULTS:
A total of 157/246 (64%) children answered the questionnaire, of which 40/157 (25%) were cases. Cryptosporidium oocysts were detected from 15/40 visitors, 2/8 employees and 6/24 animals sampled. An identical subtype of Cryptosporidium parvum was found in both human and animal samples, which matched human samples from 2009. Water samples were negative. We observed a dose response relationship between number of optional sessions with animals and illness, increasing from RR=2.7 (95%CI:1.6-4.5) with two sessions to RR=8.0 (95%CI:1.7-32.7) with six sessions.

CONCLUSIONS:
The occurrence of two outbreaks three years apart suggests that Cryptosporidium is established in the farm’s environment. In spring, the number of newborns, newly infected ruminants rises and consequently the oocyst output is very high. We recommend improving hand hygiene information and routines related to animal contact.

PRESENTED BY:
Heidt Lange
Keywords: Cryptosporidiosis, Cryptosporidium parvum, gastronomists, children, Norway
ESCAIDE Reference Number: 201212

Identification of various animal tapeworms other than T. solium by molecular methods inhuman cysticercosis cases
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BACKGROUND:
Various zoonotic tapeworms with predator-prey transmission cycles such as the pork tapeworm Taenia solium are known. Some of these may rarely cause infections (cysticercosis) in immunocompromised humans, but they are not yet known to be relevant pathogens of immunocompetent humans.

METHODS:
We established PCR-protocols for the amplification of mitochondrial sequences of tapeworms using both newly designed and previously published primers. Different PCR-c products were applied to parasitic cysts removed from human tissues and also for a retrospective analysis of archived paraffin-embedded formalin-fixed samples which had been diagnosed as cysticercosis by histological methods before. The amplicons were sequenced and compared to Genbank entries.

RESULTS:
The first human case of an infection with the larval stage of the marten tapeworm T. martis was molecularly diagnosed which showed histological features of a conventional T. solium-cysticercosis. In the series of ten archived paraffin-embedded samples, one case was retrospectively identified as T. serialis and one as T. crassiceps infection. Molecular methods were shown to be suitable for the identification of tissue-invasive larval tapeworms in humans. A surprisingly high number of animal tapeworms other than T. solium were identified in the series of human cases examined here that had been (mis-) diagnosed as conventional cysticercosis by histological methods before. An exact species diagnosis is probably of limited relevance as far as therapy is concerned, however, for epidemiological reasons the correct identification of the larval tapeworm is important to conclude the circumstances of transmission – and thus to prevent future infections. We therefore recommend molecular identification of parasites found in human tissue in addition to conventional histology.

PRESENTED BY:
Denise Topper
Keywords: Tapeworms, Zoonosis, Molecular Identification, Transmission
ESCAIDE Reference Number: 201209
Sexually transmitted infections among female sex workers (FSW) in Germany: Need to protect young migrants with poor language skills

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BACKGROUND:
Migrant female sex workers often face higher prevalence of sexually transmitted infections (STI) than native FSW. To understand whether this applies to Germany and to direct prevention strategies, we first compared migrant with German FSW in terms of STI prevalence and then examined factors associated with STI among migrant FSW.

METHODS:
From 1 January 2010 to 3 April 2011, physicians providing outpatient services in 24 German local health departments offering STI-testing collected and transmitted information monthly or quarterly to Robert Koch-Institute. In this convenience sample, we defined STI positive results for Chlamydia, Gonorrhoea, Sphingis or Trichomoniasis, calculated prevalence of STI, tested for dependencies between migrant status and STI positivity using chi2-test and modeled risk factors in multiple logistic regression using odds ratios.

RESULTS:
Of 1,408 patients newly diagnosed with HIV/STI (N=282) for whom PAN was indicated, 221 MSMD had STI prevalences related significantly to partners. Proportion of notifiable partners (MSM 42%, N= 555; heterosexuals: 90%, N= 64; pro.001) and notifiable partners being notified (89%, N= 434 vs 72%, N= 4, pro.001) differed significantly between MSMD and heterosexuals. The overall CFE was 43% for MSMD and 33% for heterosexuals with the largest difference found for HIV (MSM: 1%; heterosexuals: 9%).

CONCLUSIONS:
The major challenge in PAN among MSMD remains the large proportion of unnotifiable (often anonymous) partners. Among heterosexuals, the actual notification of partners was more difficult. Anonymous internet-based PAN could improve both capability (reachability of unnotifiable (often anonymous) partners. Among heterosexuals, the study suggests avoiding using culture-based methods to enable the use of cultural mediators during consultations and information material in different languages as these would help mitigate language barriers.

PRESENTED BY:
Melanie Schocher
Keywords: HIV, STI, partner notification, prevention, culture, effectiveness
ESCAIDE REFERENCE NUMBER: 201272

A response plan to manage the threat of untreatable gonorrhoea

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BACKGROUND:
Reports of treatment failure of third generation cephalosporins in patients with gonorrhoea are of concern as these antibiotics are recommended by current European treatment guidelines and are among the last options for single antimicrobial treatment. The European Gonococcal Antimicrobial Surveillance Programme (Euro-GASP), a laboratory sentinel surveillance programme funded by the European Centre for Disease Prevention and Control (ECDC), has been established to monitor antimicrobial susceptibility patterns and to inform national and international treatment guidelines.

METHODS:
Gonococcal antimicrobial susceptibility data for 2010 were collected from 21 EU/EEA countries through Euro-GASP. Participating laboratories performed susceptibility testing by Etest or agar dilution breakpoint method, or sent isolates to reference laboratories in Denmark, Sweden or the UK for testing using these methods. Proficiency and result accuracy were validated through an external quality assurance scheme.

RESULTS:
A total of 1,062 isolates were collected and tested. A significant increase in the percentage of tested isolates with decreased susceptibility to ceftriaxone (5% in 2009 to 9% in 2010, p<0.01) was identified. Isolates with decreased susceptibility to ceftriaxone. Rates of ciprofloxacin and azithromycin resistance remain high (53% and 7%, respectively). The minimum inhibitory concentration (mIC) of cefixime (5% in 2009 to 9% in 2010, p<0.01) was identified. Isolates with decreased susceptibility to cefixime (5% in 2009 to 9% in 2010, p<0.01) were associated with higher STI prevalence among migrants, while health insurance (OR 0.6, 95%CI 0.4-0.8), condom use for birth control (OR 0.2, 95%CI 0.1-0.5) and meeting clients at a brothel (OR 0.2, 95%CI 0.1-0.5) were associated with lower STI prevalence.

CONCLUSIONS:
Our convenience sample suggests that most FSW in Germany are migrants at higher risk for STI. Access to health insurance for migrant FSW should be increased. Policy-makers should make funds available to enable the use of cultural mediators during consultations and information material in different languages as these would help mitigate language barriers.

PRESENTED BY:
Melanie Schocher
Keywords: STI, Female Sex Workers, Migrants, FSW, STD
ESCAIDE REFERENCE NUMBER: 201269
21 Vaccine-preventable diseases (g)

Estimating the Number of Infants Needed to Vaccinate a Case of serogroup B Invasive Meningococcal Disease
Shelley Dewes (Public Health Ontario, Canada), Yina Heng (Public Health Ontario, Canada), Frances Jamieson (Public Health Ontario, Canada), Gillian Lim (Public Health Ontario, Canada), Prasad Rawte (Public Health Ontario, Canada), Natasha Crowcroft (Public Health Ontario, Canada)

BACKGROUND:
The anticipated availability of vaccines for serogroup B invasive meningococcal disease (IMD) prompted a review of serogroup B meningococcal disease (MMR) incidence in Ontario to assess disease burden and estimate the number of infants needed to vaccinate (NNV) to prevent a case of disease.

METHODS:
We used a combination of probabilistic and deterministic methods to link confirmed IMD cases reported to Ontario’s integrated Public Health Information System to Public Health Ontario Laboratory records between January 1, 2000 and December 31, 2010. We calculated incidence using Statistics Canada population data. We calculated a crude NNV using the inverse of the age-specific (1 year) incidence multiplied by expected vaccine efficiencies between 70% and 80% and assumed no herd effects.

RESULTS:
A total of 276 serogroup B IMD cases were identified over 12 years. Incidence ranged from 0.15 to 0.19/100,000/year, and fluctuated over time. Cases ranged in age from 1 to 101 years; 21.2% occurred in infants, of which 46.1% were < 1 month of age. The average annual increase in IMD rate among infants was 2.5% per year. If we assume that all cases < 1 year are IMD preventable, we would need to vaccinate between 35,211 and 40,241 infants to prevent one IMD case. However if all cases < 1 year are vaccine preventable (i.e., 46.1% of these cases), the NNV would increase to between 68,107 and 72,786 infants.

CONCLUSIONS:
Although a criterion for an acceptable NNV for a new vaccine is not defined, the crude NNV to prevent a single IMD case based on our epidemiology is relatively high. Decisions regarding public funding of serogroup B meningococcal vaccines will not be straightforward. Cost effectiveness and herd immunity will be extremely important considerations.

PRESENTED BY:
Natasha Crowcroft

Keywords: Invasive meningococcal disease Immunization Number needed to treat Vaccine policy
ESCAIDE Reference Number: 2012980

The incidence of narcolepsy in Europe: before, during, and after the influenza A(H1N1)pdm09 pandemic and vaccination campaigns
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BACKGROUND:
In August 2010, a report of a possible association between exposure to AS03 adjuvanted pandemic A/H1N1pdm09 vaccine and occurrence of narcolepsy in children and adolescents was published in Sweden and Finland. In response to this signal, the background rates of narcolepsy in Europe were reassessed to provide information for signal verification.

METHODS:
We performed a dynamic retrospective cohort study to assess the incidence of narcolepsy across the period 2010-2010 using linked automated health care databases in 6 countries: Denmark, Italy, Finland, the Netherlands, Sweden, and the United Kingdom.

RESULTS:
Overall, 2,506 narcolepsy cases were identified in almost 280 million person-years (PY). The pooled incidence rate was 0.93 (95% CI: 0.90 - 0.97) per 100,000 PY, with peaks between 15-30 (womenmen) and around 60 years of age. Increased rates were observed after the start of pandemic vaccination in Denmark, Finland, and Sweden.

CONCLUSIONS:
The results of this incidence study provided useful information for signal verification across the period. The signal of increased narcolepsy diagnosis following the start of the pandemic vaccination campaign was observed in Sweden and Finland but could be observed with this approach. In contrast, an increase in narcolepsy diagnosis was not observed in other countries or did not follow A/H1N1pdm09 vaccination.

PRESENTED BY:
Daniel Weibel

Keywords: Narcolepsy, Incidence, background rates, Influenza vaccine, AS03B adjuvant
ESCAIDE Reference Number: 2012980

Serotype replacement in paediatric pneumococcal carriage during conjugate vaccine implementation
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BACKGROUND:
The 2-valent pneumococcal conjugate vaccine (PCV-2) was added to the UK routine childhood vaccination schedule in 2006 and superseded by PCV-13 in 2010, to help prevent invasive pneumococcal disease. Pneumococcal colonisation is a recognised precursor to disease. We describe changes to pneumococcal carriage in young children during PCV implementation.

METHODS:
We gathered clinical information from parents’ charts, including vaccination status where available. Nasopharyngeal swabs were taken from children aged 4 years old in the outpatient departments of a general hospital during winters 2006/2007-2010/11. Pneumococci were isolated using conventional methodology and serotyped by PCR and the Quellung reaction. Multi-locus sequence typing and whole genome sequencing were employed to genotype isolates.

RESULTS:
528 pneumococci were collected during the five year period. The annual pneumococcal carriage rate was 31% (range 28-37%). PCV-7 vaccine types (VT) decreased significantly between 2006/7 and 2010/11 (p=0.0001) with a corresponding increase in non-vaccine types (nVT). PCV-13-only VT (nVT) decreased significantly between 2009/10 and 2010/11 (p=0.038). By year 5, replacement of PCV-2 VT was complete, with only a single strain of 6B detected. The number of sequence types (ST) observed annually was stable (42-48 STs), with 10%, of observed STs, accounting for 50% of the isolates annually. Genotype distribution varied annually, with only 7% of STs occurring in all years. ST149 was the single most common ST observed in all years, 45% of which were associated with serotype 19A.

CONCLUSIONS:
Carried genotypes are diverse and shift temporally but clonal expansion has clinical implications as carried pneumococci act as a circulating reservoir for disease.

PRESENTED BY:
Rebecca A. Gladstone

Keywords: Streptococcus pneumoniae pneumococcal Vaccines
ESCAIDE Reference Number: 2012990

Influenza outbreak in a nursing home in Ireland in April 2011: high case fatality rate with low vaccination coverage among staff
Janine Rehleib (ECDC/HPSC, Ireland), Louise Doherty (HPSC, Ireland), Joan O Driomail (HPSC, Ireland), Darina D’Iannace (Health Protection Surveillance Centre, Ireland), Peter Whitley (HPSC, Ireland)

BACKGROUND:
On April 9th an outbreak of influenza-like illness (ILI) in a nursing home in Ireland was notified. At this point, five deaths had already occurred in the preceding 10 days among residents with 37 residents and three staff ill. We investigated the outbreak to: determine its magnitude, identify reasons for its occurrence and implement control measures.

METHODS:
We gathered clinical information from patients’ charts, including vaccination status where available. Nasopharyngeal swabs were taken for influenza. We defined confirmed (ILI and laboratory confirmed influenza) and possible (ILI only) cases. We calculated attack rates (AR), case fatality rate (CFR) and vaccination coverage (VC).

RESULTS:
The facility had 46 residents and 75 staff (working in all units with no assignment to any particular outlier at this time. Of these, three staff (AR: 4%) with unknown vaccination status and not swabbed) and 35 residents (AR: 76%) (24 confirmed, 11 probable) were symptomatic. Four confirmed cases in residents were hospitalised and seven died (CFR: 20%). Of the 29 residents tested, 11 (38%) were positive for influenza A(H1N1)pdm09. VC was 69% (31/46) among all residents, 6% (2/30) among staff, 65% (22/35) among cases in residents, and 67% among unknown staff cases.

CONCLUSIONS:
Delay in notification, atypical clinical presentation, the late influenza season leading to waning immunity, the low influenza vaccine effectiveness reported in Europe, and suboptimal VC especially among staff (who may act as carriers and contribute to transmission of infection) may have contributed to the high attack and case fatality rate of this outbreak. Our findings highlight the importance of prompt notification and show that influenza vaccination should be actively promoted among staff and included in the routine care of nursing home residents.

PRESENTED BY:
Janine Rehleib

Keywords: Influenza, outbreak, nursing-home, vaccination, elderly, staff
ESCAIDE Reference Number: 2012940

European Scientific Conference on Applied Infectious Disease Epidemiology
24-26 October 2012 Edinburgh, UK
Recurrent measles outbreaks in population groups with suboptimal immunizations uptake

Chen Stein Zamir (Jerusalem District Health Office, Israel), Hanna Shoob (Jerusalem District Health Office, Israel), Gary Zentner (Jerusalem District Health Office, Israel)

BACKGROUND: Measles is a significant vaccine – preventable disease. In 2003, 2004 and 2007/8 three measles outbreaks occurred in Jerusalem – all emerged within ultra-Orthodox communities.

METHODS: An epidemiologic investigation of the measles outbreaks and a case-control study among children in the Jerusalem district.

RESULTS: The index case of the 2003 outbreak was a 2 year-old unvaccinated child from Switzerland. Within 5 months, 107 cases emerged in three crowded neighborhoods. The first cases of the 2004 outbreak were three girls aged 4-5 years, in one kindergarten. Within 5 months, 117 cases emerged, with one fatality. In August 2007 a tourist from the UK attended a wedding in Jerusalem and two days later diagnosed with measles. The subsequent outbreak lasted for some ten months (the largest in the last decade) with 1277 reported cases nationally, 992 (61%) in the Jerusalem district, mainly among unvaccinated children in Ultra-Orthodox communities.

Most cases (72.6%) were under 15 years, 42.9% under five years, 12.8% infants under one year. The peak incidence rate in 2002-2008 was among 6-12 month-old infants (96.2/100000), representing a significant shift from 2003-2004, where the peak incidence was in 1-4 year-olds. In a case-control study (74 cases/148 controls) children who developed measles were less likely to be registered in a well-baby clinic and had lower overall immunization coverage. The differences in proportions for registration, DTaP3 and MMRs coverage were 35.1%, 48.6% and 80.8%, respectively (all p<0.001). Increasing birth order of cases and their siblings was associated with non-registration and non-compliance with MMR immunization.

CONCLUSIONS: The worrying rise in vulnerability of young infants to measles and the suboptimal immunization uptake among young children in specific communities should be taken into account in planning intervention programmes.

PRESENTED BY: Chen Stein Zamir

Keywords: Measles, immunization uptake, epidemiology, prevention, children.

ESCAIDE Reference Number: 20121002
Antimicrobial Resistance

Ward based cohort study of the first reported outbreak of Vancomycin resistant enterococci in a Norwegian hospital

Oliver Kaukelvik (Norwegian Institute of Public Health, Norway), Dorthea Oma (Haukeland University Hospital, Norway), Thale Berg (Norwegian Institute of Public Health, Norway), Hanne Merete Eriksson (Norwegian Institute of Public Health, Norway)

BACKGROUND: In June 2010, Haukeland University Hospital diagnosed a patient with vancomycin resistant enterococci. By December 2011 there were 272 cases from 21 wards. Some wards had more cases than others, even after temporary ward closure and terminal cleaning. Our aim was to conduct an outbreak investigation with ward (the level deemed most likely to respond to intervention) as the unit of the study, in order to identify areas where action would lead reduced spread.

METHODS: We conducted a retrospective cohort study (January 2010 – December 2012) including all the wards at Haukeland. Data sources included administrative, radiology, pharmacy, microbiology records and a ward questionnaire. We calculated the number of patient days per ward and estimated incidence risk ratios (IRR) for factors such as single rooms, use of hand-hygiene products and antibiotics, using a negative binomial regression.

RESULTS: Of 39 wards 21 had cases, with one accounting for 28%. We were able to match 95% of all reports to ward. 95%CI: 4–59) were associated with higher number of cases. wards using cephalosporins (Irr=25; 95%CI:4 -163) and metronidazole (Irr=16; 95%CI:0.4–20) also associated with reduced number of isolates. Of 39 wards 21 had cases, with one accounting for 28%. 95%CI: 4–59) were associated with higher number of cases. wards using cephalosporins (Irr=25; 95%CI:4 -163) and metronidazole (Irr=16; 95%CI:0.4–20) also associated with reduced number of isolates.

CONCLUSIONS: Selecting wards as the unit of analysis enabled us to target interventions that were readily applicable and not based on individual patient characteristics. Whilst good hand-hygiene appeared effective to stop the spread, high volume use of some antibiotics may have contributed to the problem. If hospitals organized designated outbreak-groups in advance to ensure information availability this method could be efficient at tackling multi-ward hospital outbreaks.

Tigecycline multidrug resistant enterococci: an emerging issue

Julie Wilson (Health Protection Scotland, United Kingdom), Carmille Wolf (Health Protection Scotland, United Kingdom), Alistair Leard (University of Glasgow/ Health Protection Scotland, United Kingdom)

BACKGROUND: The Antimicrobial Resistance Team at Health Protection Scotland (HPS) monitors antimicrobial resistance to highlight the extent and nature of resistance, provide an early warning system for emerging resistance and measure the effects of intervention strategies on rates of resistance at a national level.

METHODS: All Scottish laboratories transfer microbiology data electronically to HPS on a regular basis. These data are monitored using an automated system that flags up any unusual resistance patterns that may have an adverse public health impact. The list of alert organisms and antimicrobial resistance patterns is extensive and includes enterococci with combined resistance to vancomycin and tigecycline.

RESULTS: In total 13 isolates of enterococci with combined tigecycline and vancomycin resistance have been reported in Scotland since 2007. Six of these isolates were E. fæcalium. Nearly half of all reports were in 2011. In 2012 no reports have been received between January to June.

CONCLUSIONS: Enterococci are a leading cause of healthcare associated bacteraemia, wound infection and urinary tract infection and are capable of causing outbreaks of infection. Scotland isolated its first combined glycopeptide and glycolcycline resistant enterococcal isolate in 2007. This type of resistance remains rare throughout the world and there is little published data available on these types of isolates. The number of these resistant isolates remains low in Scotland, however there was a marked increase in numbers reported in 2011 compared to all previous years, although no isolates as been reported in 2012 to date. This is an emerging threat to public health in Scotland that requires to be closely monitored by all countries by having robust surveillance systems to detect these types of isolates. Proliferant antimicrobial prescribing is also essential.

Prevalence of MRSA nasal colonization over time in veterinarians and their household contacts in Germany

Julie Hermes (Robert Koch Institute, Germany), Wolfgang Witt (Robert Koch Institute, Germany), Christiane Cuny (Robert Koch Institute, Germany), Nelis Kleinmad (Robert Koch Institute, Germany), Andreas Jansen (ECDC, Sweden), Eckmanns Tim (Robert Koch Institute, Germany)

BACKGROUND: Nasal colonization with livestock-associated methicillin-resistant Staphylococcus aureus (LA-MRSA) is common in exposed humans and infections occur. We report on nasal colonization with LA-MRSA and its dynamics over time in a cohort of veterinarians and its further spread to their unexposed household contacts.

METHODS: Our study is based on a cohort with 7.7% MRSA carriers from three MRSA prevalence studies conducted in Germany 2008-09. A case was defined as a former study participant with MRSA-positive nasal swab, eligible controls were study participants without MRSA. All cases were contacted and compared to 1 controls per case. Respondents and their household contacts (H/C) received questionnaires and material for self-swabbing. Retesting was offered to cases that now tested MRSA-negative. We described background data and conducted comparative molecular typing of isolates.

RESULTS: We included 34 cases and 515 controls. MRSA was detected in 42 cases (56.8%), 38 carried spa types identical to the 2008-09, 69.0% carried ST398 and ST734, and 1 ST737. Among 144 HC of cases, 58 (12.8%) were MRSA-positive; all carried the same clonal complex as the associated case (7 ST398, 1 ST734, and 1 ST737). The same spa type. One/215 (0.4%) H/C of controls was LA-MRSA positive.

CONCLUSIONS: MRSA carriage decreased markedly since 2008, decolonisation and exposure changes need to be studied. The LA-MRSA prevalence among HC suggests prolonged exposure time to LA-MRSA at home is a risk factor as it was described for HC of pig farmers. Identical spa types in one household indicate intrafamilial spread, although risk exposures await evaluation. HC of a known LA-MRSA carrier might be considered when defining risk groups for preventative measures.

Antimicrobial Resistance Monitoring in Lower Saxony (ARMIN): is it useful for physicians?

Michaela Dienel (Robert Koch-Institute, Germany), Martin Scharbach (Governmental Institute of Public Health of Lower Saxony (NLGA), Hannover, Germany), Doris Wagner (Governmental Institute of Public Health of Lower Saxony (NLGA), Hannover, Germany), Matthias Pult (Governmental Institute of Public Health of Lower Saxony (NLGA), Hannover, Germany)

BACKGROUND: Since 2006, the Antimicrobial Resistance Monitoring in Lower Saxony (ARMIN) collects antimicrobial test results from ten laboratories. To guide physicians in their antibiotic prescribing, annually published data can be retrieved from the ARMIN website choosing susceptibility results by pathogen and antibiotic agent in interactive queries. We evaluated this monitoring system to assess the acceptability by its users.

METHODS: In 2011, we asked participating laboratories for strengths, weaknesses, opportunities and threats (SWOT) of ARMIN with a self-completion paper-questionnaire. To evaluate the acceptability by physicians, we performed an online survey with questions on antibiotic prescribing behaviour, content and layout of the ARMIN website. Links to the survey were published through several physician associations.

RESULTS: The SWOT analysis (12 participants) identified lack of knowledge among physicians about ARMIN next to data quality issues (e.g. different diagnostic standards between laboratories) as main weaknesses. Between October 2011 and March 2012, 186 persons participated in the online survey, 55% were general practitioners (GP), 20% clinicians, 12% public health physicians. Median age of respondents was 50 years, 55% were male. In their everyday work 5% of GP and 47% of clinicians treat at least weekly patients with multidrug-resistant bacteria. Only 35% had used ARMIN before. The majority of physicians agreed that the content of the ARMIN website is informative (84%), tables 90%, tests 93% and the layout is user-friendly (95%) and clear (92%). Physicians claimed that queries are not adapted to antibiotic prescribing in practice, reducing ARMIN’s usefulness.

PRESENTED BY: Julia Hermes

Keywords: Antimicrobial drug resistance, surveillance system, evaluation, acceptability

ESCAIDE reference number: 2012964

Tigecycline multidrug resistant enterococci: an emerging issue

Julie Wilson

Keywords: Drug Resistance, Microbial Enterococcus Epidemiology

ESCAIDE Reference number: 2012762

Prevalence of MRSA nasal colonization over time in veterinarians and their household contacts in Germany

Julie Hermes, Wolfgang Witt, Christiane Cuny, Nelis Kleinmad, Andreas Jansen

Keywords: Microbial Enterococcus Epidemiology

ESCAIDE Reference number: 2012762

Antimicrobial Resistance Monitoring in Lower Saxony (ARMIN): is it useful for physicians?

Michaela Dienel, Martin Scharbach, Doris Wagner, Matthias Pult

Keywords: Microbial Enterococcus Epidemiology

ESCAIDE Reference number: 2012964
In-vitro susceptibilities of Legionella spp environmental isolates to seven antibiotics.

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BACKGROUND: The aim of this study was the investigation of the antibiotic susceptibility profile of Legionella isolates derived from environmental samples, for antimicrobial agents commonly used for the treatment of legionella infections.

METHODS: The susceptibilities for seven antimicrobial agents (tetracycline, erythromycin, azithromycin, clarithromycin, moxifloxacin, sulfamethoxazole, and trimethoprim/sulfamethoxazole) of 68 Legionella spp isolates were investigated. The above isolates originate from water samples (n=44) collected during a 2-year period (2004-2006) from 24 hotels from the four prefectures in Crete (Greece) as part of routine investigation following a human case on traveller or as part of the routine surveillance program. Legionella spp isolates were identified by PCR-Reaction, Mass spectrometry and latex agglutination methodology as: l. pneumophila SG1 (2/68), SG2 (1/68), SG3 (7/68), SG5 (1/68), SG6 (1/68), SG8 (1/68), SG9 (6/68), SG12 (1/68), l. ariana (5/68), l. rubrufaciens (1/68), l. maceachernii (1/68), l. quintiivini (1/68), l. oatkeligenis (1/68) and l. taumatin (4/68). MICs were determined by disk-diffusion and E-test methods, performed on EBYE.

RESULTS: A great distribution was recorded for each species and each antibiotic tested. Rifaxicine (MIC range 12.5-62.5 mg/ml) was the most potent antibiotic regardless the Legionella species, tetracycline (MIC range 12.5-256 mg/ml) had the least activity. Azithromycin and erythromycin appeared to be less active against Legionella spp, rifampicin and trimethoprim/sulfamethoxazole were more active against l. pneumophila sg1 and l. oakridgensis (1/68) and l. taurinensis (14/68). MICs were determined by PCR-Sequencing, mass spectrometry and latex agglutination methodology as: l. pneumophila SG1 (7/68), SG2 (2/68), SG3 (7/68), SG5 (1/68), SG6 (1/68), SG8 (1/68), SG9 (1/68), SG12 (1/68), l. ariana (5/68), l. rubrufaciens (1/68), l. maceachernii (1/68), l. quintiivini (1/68), l. oatkeligenis (1/68) and l. taumatin (4/68). MICs were determined by disk-diffusion and E-test methods, performed on EBYE.

CONCLUSIONS: The decreased sensitivity against the antibiotics tested should raise concern. There is an increasing need for the establishment of a standardized antibiotic susceptibility method for legionella spp. E-test approach is an easy, although not so cost-effective, way to define MICs in Legionella species.

PRESENTED BY: Vasilis Sandalakis

Lassa fever outbreak investigation in Ebonyi State, Nigeria, January 2012

Willem Meashukhu (Nigerian Field Epidemiology and Laboratory Training Programme, Nigeria), A M Adeniyi (Nigerian Field Epidemiology, Nigeria), A A Akembe (Nigerian Field Epidemiology and Laboratory Training Programme, Nigeria), P Nguku (Nigerian Field Epidemiology and Laboratory Training Programme, Nigeria), O C Ebewe (University of Nigeria Teaching Hospital, Enugu, Nigeria)

BACKGROUND: Lassa fever (SF) outbreaks are common in Nigeria. It is associated with high morbidity, mortality, economic and security consequences. It is an acute viral haemorrhagic fever of high virulence with incubation period of 6-21 days. LF outbreak occurred in Ebonyi State Nigeria January 2012. We investigated the outbreak to characterize it in time, place and person, to identify contacts and categorize them into high & low risk and institute control measures.

METHODS: A cross-sectional survey was conducted with cases categorized into suspected and confirmed. Contacts were categorized as high risk/low risk. The study population were all cases and their contacts. Records/reports were reviewed. Blood samples taken for viral studies using Polymerase Chain Reaction(PCR). Data was analysed with Statistical Package for Social Scientists (SPSS) version 19.

RESULTS: A total of Eleven cases were recorded. Four (36.4%)were laboratory confirmed cases using PCR with 2 deaths. Case fatality rate(CFR) 18.2%.

CONCLUSIONS: Ebola State had a confirmed outbreak of lassa fever in January 2012. And majority of contacts were in high risk group. We ensured effective case management, sensitized healthcare workers and provided personal protective equipment. Strategies to intensify active case-search, strengthen the disease surveillance activities in the state, establish virology laboratory/lassa fever treatment center in the hospital were recommended.

PRESENTED BY: Willem Meashukhu

Keywords: Lassa Fever, Outbreak, Investigation, Ebonyi State, Nigeria.

Infections due to Carbapenem-Resistant Klebsiella pneumoniae (CR-KP) among patients in Intensive Care Units (ICUs) in Greece: therapeutic implications and outcome.

Melina Mihalou (Melanic Center for Disease Control and Prevention, Greece), Floro Kompantou (Melanic Center for Disease Control and Prevention, Greece), Paras Katerelak (Melanic Center for Disease Control and Prevention, Greece), Antonios Maroulakis (Melanic Center for Disease Control and Prevention, Greece), Arifeth Dedoukou (Melanic Center for Disease Control and Prevention, Greece)

BACKGROUND: CR-KP is an emerging threat both for the patient and the health-care system globally. The aim of this study was to assess the extent of the CR-KP spread in ICUs in Greece, and to recognize risk factors, clinical characteristics, and outcome in relation to antimicrobial treatment.

METHODS: Of a total of 64 ICUs across the country, 28 general ICUs serving a mixed edical and surgical population with a mean of 8 beds (range: 5-22 beds), participated to the study.

RESULTS: During September 2009-June 2010, 20 ICUs reported 118 patients with CR-KP microbiologically documented infections. Data were collected retrospectively in 17 (53.4%) patients and prospectively in 6 (18.6%) patients. Patients had a mean age of 61.5 years. Their mean APACHE II score at the time of admission was 17.5. Overall, patients had received a mean of 2.3 antibiotics before the CR-KP detection. Pneumonia was the prevalent CR-KP infection, followed by bacteremia, accounting for 72 (67.5%) and 47 (44.7%) cases, respectively. Septic shock at the begging of the infection occurred in 15 (42.6%) patients. In terms of mechanism of carbapenem resistance, a KPC producing pathogen was found in 71% cases. CR-KP resistance to colistin and gentamicin was 20% and 21% respectively. In 14 days of the begging of the treatment 61 (46.2%) of the cases.

CONCLUSIONS: CR-KP are associated with high morbidity, mortality, utilization of health-care services, and costs in ICUs in Greece.

PRESENTED BY: Melina Mihalou

Keywords: Multi-resistant infections, Klebsiella pneumoniae, Intensive care units.


Francisco Nogareda (Institut de Veille Sanitaire / European Programme for Intervention-Epidemiology Training (EPIT), France), MAIN ZE STRK (UVS, France), Henriette de Ville (UVS, France), Walrousse Guilet (Institut de Veille Sanitaire, France)

BACKGROUND: Toxoplasmosis is a worldwide zoonosis due to Toxoplasma gondii. Primary infection in pregnant women may lead to severe malformations in newborns. Since 1978, a congenital toxoplasmosis prevention programme has been implemented, including serological screening of all seronegative pregnant women. However this programme does not produce systematic surveillance data. National Perinatal Surveys (NPS) and the National Surveillance of Congenital Toxoplasmosis are currently used to obtain limited epidemiological information on toxoplasmosis in France. Our objective was to estimate the incidence and prevalence of toxoplasmosis among women over time to describe toxoplasmosis epidemiology in France.

METHODS: We used a catalytic model to estimate incidence and prevalence of toxoplasmosis by age between 1980 and 2020 among women of childbearing age. We used age – and time-specific seroprevalence data obtained from the NPS conducted in 1995, 2003 and 2010.

RESULTS: We combined data of 42,708 women aged 15-45 years old with serology available from the three NPS. For women aged 30 years the estimated incidence decreased from 7.5 per 1000 susceptible women in 1980 to 3.5 in 2000. In 2010 the incidence was 2.4. The predicted incidence and prevalence for 2020 was 1.6 per 1000 and 27% respectively.

CONCLUSIONS: Our model shows a considerable decrease in incidence and prevalence of toxoplasmosis over the last 30 years. This drop may be explained by a lower exposure to the parasite by changes in food habits and by improved hygiene practices in the meat production. Modelled estimates were consistent with observed estimates from other studies previously published in France. The catalytic model provides reliable estimates of incidence and prevalence of toxoplasmosis over time. This approach might be useful for evaluating the preventive programme for toxoplasmosis.

PRESENTED BY: Francisco Nogareda

Keywords: Toxoplasmosis, Incidence, prevalence, modelling.

European Scientific Conference on Applied Infectious Disease Epidemiology 24-26 October 2012 Edinburgh, UK
**Modelling Legionnaires disease outbreaks: Estimating the timing of an aerosolised release using symptom-onset dates.**

*Josef Egan (Health Protection Agency, United Kingdom), Ian Holl (Health Protection Agency, United Kingdom), David Lemon (Health Protection Agency, United Kingdom), Steve Leach (Health Protection Agency, United Kingdom)*

**BACKGROUND:**
Over the last 30 years there have been a number of reported Legionnaires’ disease outbreaks resulting from the release of causative organisms from aerosol producing devices.

**METHODS:**
We model a Legionnaires’ disease epidemic curve as the convolution of an infection time distribution (representing the aerosolised release), and an incubation-period distribution. The model is fitted to symptom-onset data from specific outbreaks in order to estimate the start and end dates of the release. We also develop this retrospective “back-calculation” model into a prospective ‘real-time’ model that can estimate the final size of an ongoing outbreak, in addition to the timing of its release.

**RESULTS:**
In the retrospective analysis, the estimated release end dates were generally earlier than reported end dates. This suggests that, in many outbreaks, the release might have already ended by the time the source was reportedly cleared or cleaned. Prospective analysis showed that valid estimates of the release start date could be achieved early in the outbreak, the total number of cases could be reasonably determined shortly after the release had ended, and estimates of the release end date could be satisfactorily achieved in the latter stages of the outbreak.

**CONCLUSIONS:**
This model could be used in the course of a Legionnaires’ disease outbreak to provide early estimates of the total number of cases, thus helping to inform public-health planning. Towards the end of the outbreak, estimates of the release end date could help corroborate standard epidemiologic, environmental and microbiologic investigations that seek to identify the source.

**PRESENTED BY:**
*Josef Egan*

**Keywords:** Legionnaires’, Disease Infectious Disease Incubation Period Biostatistics Likelihood Functions

**ESCAIDE Reference Number:** 2012991

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**Factors that influence drop-out in a Chlamydia re-infection study in Sweden**

*Achilleas Tsoumanis (Swedish Institute for Communicable Disease Control, Sweden), Inga Velicko (Swedish Institute for Communicable Disease Control, Sweden), Maria Grönwall (Swedish Institute for Communicable Disease Control, Sweden), Sharon Kühnlein-Berenzon (Swedish Institute for Communicable Disease Control, Sweden)*

**BACKGROUND:**
Chlamydia trachomatis infection (CT) is the most frequent sexual transmitted disease (STD) in Sweden. A prospective cohort-study among visitors of a low-threshold STD clinic in Stockholm, Sweden was carried out in 2007 to examine risk factors associated to CT re-infection. Data collection was conducted upon inclusion in the study and a follow-up visit was requested from the participants after 6-8 months. During each visit, participants answered a questionnaire on sexual behavior and risk factors to CT. Out of the 2 843 persons recruited in the study, only 1 350 came to the follow-up visit. This large proportion of drop-out could imply participation bias in the study results. This sub-study aimed at identifying demographic and behavioral factors related to drop-out in the follow-up visit.

**METHODS:**
Logistic regression models were used to calculate the effect of selected demographic and sexual behavior factors, on the drop-out probability to the follow-up. Backward elimination was used for model selection.

**RESULTS:**
Participants with a positive lab test for CT tended to drop out less from the study than people with negative results (OR=0.64, 95% CI: 0.48-0.86). People who provided an answer to the question regarding relationship status, in comparison to those that did not, had higher odds for drop-out from 1.9 to 1.80 depending on the status. Also, answering the question regarding previous tests for CT, compared to not answering, decreased the odds of drop-out.

**CONCLUSIONS:**
This study presented odds ratios of a person dropping-out of the follow-up visit. Dropout profile should be kept in mind when designing questionnaires and collecting data in future studies of CT in order to minimize participation bias and drop-out.
**Food and Water Borne Diseases**

Multi-country outbreak investigations of food- and waterborne diseases at the European Union level: a toolkit

Steen Eiberg (Statens Serum Institut, Denmark), Kari Nyegaard (Norwegian Institute of Public Health, Norway), Åsa Larsson (Public Health Agency, Sweden), Søren Christensen (Faldet, Denmark), Emily MacDonald (Norwegian Institute of Public Health, Norway), Arne Langel (ECDC, Sweden)

**BACKGROUND:** Investigations of multi-country outbreaks of food – and waterborne diseases (FWDs) are inherently complicated because of delays in detection, language barriers and use of different protocols for epidemiological and microbiological investigations in affected countries. The FWD toolkit was developed in order to strengthen the coordination of the investigation of FWD multi-country events in the European Union (EU).

**METHODS:** The ten steps of an outbreak investigation were reviewed by a team of national and EU level epidemiologists and microbiologists for each step operational tools were developed that would strengthen the coordination between countries in the event of a multi-country outbreak investigations.

**RESULTS:**

- Eight practical tools have been developed currently: a) criteria for considering a coordinated multi-country approach, b) checklist and agenda template for teleconferences, c) guidance on developing case definitions, d) recommendations for case finding, e) Episcope tool for questionnaire construction, 6) EpiData tool for descriptive and ethnic transmission definitions, 4) recommendations for case finding, 5) EpiData tool agenda template for teleconferences, 3) guidance on developing case definitions, 7) EpiData tool for questionnaire construction, and 8) overview of EU and international alert systems relevant for FWD outbreaks. Beginning summer 2012, the toolkit is being used in ECDC training sessions and multi-disciplinary teams in countries are encouraged to use the tools during multi-country outbreaks. All tools are freely available at: http://ecdc.europa.eu/en/healthtopics/food_and_waterborne_disease/toolkit/Pages/index.aspx.

**CONCLUSIONS**

This toolkit is a first step to provide operational tools to strengthen the coordination and multidisciplinary investigation of multi-country FWD outbreaks both at ECDC and country level. ECDC will continue to advocate for countries to use the tools in actual outbreak investigations and collect feedback from the users. This will be used to implement future updates of the toolkit.

**PRESENTED BY:**
Aarnout Le Menac'h

**Keywords:** Outbreaks, Outbreak investigations, guidelines, Multi-country investigations, questionnaire;

ESCAIDE REFERENCE NUMBER: 2012094

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**Sporadic A cases associated with sun-dried tomatoes, England, July–December**

Carolin Carvalho (Health Protection Agency, United Kingdom), R. Lucy Thomas (Health Protection Agency, United Kingdom), Alaye Bekele (Health Protection Agency, United Kingdom), Richard Pelham (Health Protection Agency, United Kingdom), Richard Toader (Health Protection Agency, United Kingdom), Mary Ramsey (Health Protection Agency, United Kingdom), Siew Lin Ngai (Health Protection Agency, United Kingdom)

**BACKGROUND:**

In October 2011, the Health Protection Agency (HPA) in England received three reports of hepatitis A in persons who had eaten sun-dried tomatoes (SDT) with genotype Hu/Netherlands/RV6-006/2010 (SDT-strain, previously associated with SDT in the Netherlands, N=2) and another related strain (N=1). Both genotypes were also closely related to one observed in a large outbreak in Australia (2009), also associated with SDT consumption. We investigated to examine the association between SDT consumption and sporadic hepatitis A cases (of all all genotypes and (b) SDT-strain).

**METHODS:**

We compared (a) sporadic laboratory-confirmed primary hepatitis A cases without travel history with Campylobacter controls (case-control) and (b) SDT-strain cases with other/unknown strains (case-control). We collected food consumption histories through mailed questionnaires and calculated age and sex adjusted odds ratios (OR) in logistic regression.

**RESULTS:**

From July to December 2011, 43 sporadic hepatitis A cases were reported. Eighty-six controls were assigned. 42% of cases and 38% of controls responded to questionnaires. Of nine cases with genotyping results, three were the SDT-strain. The sporadic SDT cases did not significantly differ from Campylobacter controls in terms of SDT consumption (OR=1.2, 95%CI: 0.7-2.1) and genotype (SDT vs. other/unknown strains). The three SDT-strain cases, however, were more likely than the other/unknown strains to have eaten SDT sold loose (3/3 versus 21/22, adjusted OR=4.6, 95% CI: 1.2-∞).

**CONCLUSIONS:**

Genotyping and epidemiological investigations pointed to SDT as a cause of sporadic hepatitis A in the Netherlands and in England. Multiple strains and a small number of cases, however, prevented the identification of a precise source. Surveillance for SDT-associated hepatitis A must continue in Europe to identify a source that could be recalled/prevented.

**PRESENTED BY:**
Carolin Carvalho

**Keywords:** Hepatitis A, outbreak, case-control, case-control, England, sporadic

ESCAIDE REFERENCE NUMBER: 2012774

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**Psychological distress associated with an extensive waterborne gastroenteritis outbreak in Finland 2007**

Sofia Tolkkonen (National Institute for Health and Welfare (THL), Finland), Mikko Virunen (National Institute for Health and Welfare (THL), Finland), Elisa Huusom (National Institute for Health and Welfare (THL), Finland), Susanne Saris (National Institute for Health and Welfare (THL), Finland), Samuli Saimi (National Institute for Health and Welfare (THL), Finland), Joonas Saukkuri (National Institute for Health and Welfare (THL), Finland), Janne Laine (National Institute for Health and Welfare (THL), Finland), Petri Ruuska (National Institute for Health and Welfare, Finland)

**BACKGROUND:** In November 2007, a large gastroenteritis outbreak due to faecal contamination of tap water took place in a Finnish town. Estimated 28.2 % of the 30026 inhabitants of the town had gastroenteritis. Main objective of this study is to investigate psychological effects associated with the largest reported waterborne outbreak in Finland to date.

**METHODS:**

Two population based surveys were conducted, one 8 weeks and another 16 months after the exposure. They covered three areas: contaminated and uncontrolled parts of the affected town and a control town. A sample of 1000 residents was randomly selected from each area and both surveys were targeted to this population. Psychological distress was measured with standard 12-item General Health Questionnaire (GHQ-12). Besides computing the GHQ-12 sum scores, we analyzed also the GHQ-12 questions separately using logistic regression, treating the binary score in each question as outcome variable and self-reported disease status and geographical area as independent variables. The analyses were restricted to persons between 18 and 65 years (N=137 in the 1st and N=460 in the 2nd survey).

**RESULTS:**

In the contaminated area the GHQ-12 sum score was 3.0 (95% CI 2.7-3.3) in the 1st survey and 2.0 (1.6-2.5) in the 2nd survey, compared to 1.5 (1.2-1.8) and 1.4 (1.0-1.9) in the uncontaminated area and 1.0 (0.8-1.2) and 0.8 (0.5-3.2) in the control town. Furthermore, 8 weeks after the exposure respondents from the contaminated area had significantly more often scores indicating psychological distress in every GHQ-12 question compared to the control town (OR ranging from 2.0 to 5.8).

**CONCLUSIONS:**

Significant amount of acute psychological distress was associated with the outbreak.

**PRESENTED BY:**
Sofia Tolkkonen

**Keywords:** Epidemiology Infectious Disease Outbreaks Psychology Survey

ESCAIDE REFERENCE NUMBER: 2012789

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**European Scientific Conference on Applied Infectious Disease Epidemiology**

24-26 October 2012 Edinburgh, UK
### Salmonella Napoli waterborne outbreak in a school in Italy

**Presenter:** Massimo Zuliani, Giada Rizzo
**Much of the contamination was ascertained during the investigation. However it was not possible to identify the reservoir.**

**Method:**

- A case was defined as a schoolchild presenting diarrhea, abdominal pain, fever or vomiting.
- Stool samples were examined for enteric pathogens according to standard procedures.
- Salmonella isolates were sent to the reference laboratory for subtyping including antimicrobial susceptibility testing. Salmonella isolates were subsequently serotyped at the reference laboratory for subtyping including antimicrobial susceptibility testing.

**Results:**

- There were no confirmed cases of HUS, but only one probable case of HUS in the mother of a child with HUS during the outbreak. There were 2 confirmed and 9 probable cases of STEC O104:H4. Among these, 5 confirmed and 1 probable case were secondary infections in a cluster linked to a hospital procedure performed on an adult patient with diarrhea.
- The outbreak PFGE-pattern was detected in 3/7 samples.

**Conclusions:**

- To the best of our knowledge this is the first outbreak caused by S. Napoli in Italy. An incorrect maintenance of water and sewer pipes was ascertained during the investigation. However it was not possible to assess if the source of S. Napoli was a human asymptomatic carrier or a wild animal reservoir.

**Keywords:** Salmonella Napoli, outbreak, waterborne, school, Italy

**Presentation Number:** 2012B6

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### Post-outbreak surveillance for cases of STEC O104:H4 in Germany

**Presenter:** Christina Frank, Astrid Malle-Busch

**Background:**

- The unprecedented outbreak of gastroenteritis and hemolytic uremic syndrome (HUS) caused by Shiga toxin-producing Escherichia coli (STEC) O104:H4 in Germany was declared over on July 24, 2011. At this time it was unknown, whether the pathogen would cause future cases.

**Methods:**

- Post-outbreak surveillance based on mandatory reporting was maintained until year’s end. Notified infections with STEC O104 were considered confirmed post-outbreak infections if additionally available laboratory data (i.e., HUS, EHEC, E. coli O157) were provided.

**Results:**

- Among contacts of outbreak cases, symptomatic STEC infections without serogroup information but also no contradictory laboratory data were considered probable post-outbreak cases.

**Conclusions:**

- We identified 11 cases, aged 0 to 75 years; 6 males, 2 died. All cases had a migration background from Eastern Europe. We observed that the pathogen would cause future cases.

**Keywords:** STEC O104:H4, post-outbreak surveillance, school, Germany

**Presentation Number:** 2012B6

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### An outbreak of listeriosis traced to an industrial fish slicer, Germany, 2010-2011

**Presenter:** Elisabeth Aichinger

**Background:**

- Listeria monocytogenes (L. monocytogenes) is notifiable in Germany. Genotyping of isolates through pulsed-field gel electrophoresis (PFGE) is offered by the national reference laboratory (NRL), but is not mandatory. In October 2010, two cases of listeriosis with identical PFGE pattern in a couple who had consumed fish product X, “slices of salted herring in oil”, manufactured according to Russian tradition without preservatives in factory A, induced an outbreak investigation.

**Methods:**

- We defined cases as patients notified from 01.10.2010-31.03.2011 with the outbreak PFGE-pattern. Active case finding was performed through the NRL. Food control services analysed merchandise and factory site samples for a possible contamination with the outbreak clone.

**Results:**

- We identified 15 cases, aged 0 to 75 years; 6 males, 2 died. All cases had a migration background from Eastern Europe. Of the 9 adults, 7 had consumed product X, two could not be questioned due to poor health. After notification of the first two cases, food control services found the outbreak clone in merchandise samples of product X which was recalled from the market.

**Conclusions:**

- We identified 15 cases, aged 0 to 75 years; 6 males, 2 died. All cases had a migration background from Eastern Europe. Of the 9 adults, 7 had consumed product X, two could not be questioned due to poor health. After notification of the first two cases, food control services found the outbreak clone in merchandise samples of product X which was recalled from the market. The outbreak clone was detected in an industrial fish slicer, but neither in stored, raw fish nor in stool samples of staff.

**Keywords:** Listeria monocytogenes, fish products, stool samples

**Presentation Number:** 2012B6

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### Household contacts and shared meals as main risk factors driving gastroenteritis outbreak in a school setting, Poland 2011

**Presenter:** Ryszard Tomalicki

**Background:**

- In November 2011, local public health authorities were notified of a suspected gastroenteritis outbreak among students and staff at a primary school in Warsaw. We investigated the outbreak to identify possible risk factors for disease transmission.

**Methods:**

- We conducted a retrospective cohort study among students and staff, assessing symptoms and possible exposures. Cases were students and staff from the affected school with self-reported symptoms of diarrhea or vomiting between November 15th and December 1st, 2011. We calculated attack rates (ARs), risk ratios (RRs) and 95% confidence intervals (95%CI) for exposures using binomial regression at univariable and multivariable level. We stratified by status at school (student vs. teacher) and time of symptom onset (early vs. late cases).

**Results:**

- Of 427 eligible persons, 347 (81.3%) responded to questionnaires, and 172 (49.6%) were classified as cases. ARs among students and staff were 5.8% and 3% respectively. Risk factors for illness among students were:
  - Shared school lunches (ARR 1.9, 95%CI: 1.0-3.9), having household contacts (ARR 4.0, 95%CI: 0.6-23.4), and having child under 5 years (ARR 161.2, 95%CI: 7.9-3.4). Using school toilets was associated with illness (ARR 1.1, 95%CI: 1.0-1.2).

**Conclusions:**

- In outbreaks involving person-to-person transmission, interventions should focus on strengthening the message of personal hygiene, particularly in households. Shared meals could be the main factor driving the outbreak. To reduce such transmission, social advice should be paid to hand hygiene, especially before eating.

**Keywords:** Gastroenteritis, outbreak, infection transmission, school

**Presentation Number:** 2012B6

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### Poster Abstracts – Poster Session A

#### European Scientific Conference on Applied Infectious Disease Epidemiology

**Day:** 1

**Keywords:** listeria monocytogenes listeriosis fish Products foodborne infection transmission

**Presentation Number:** 2012A1

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### European Scientific Conference on Applied Infectious Disease Epidemiology

**Day:** 2

**Keywords:** Gastroenteritis, outbreak, infection transmission, school

**Presentation Number:** 2012A1
Escaide European Scientific Conference on Applied Infectious Disease Epidemiology 24-26 October 2012 Edinburgh, UK

Poster Abstracts – Poster Session A

**Epidemiology & Microbiology driving Public Health Policy**

**Survival activities, diagnosis and recent data of Mycoplasma pneumoniae infections in the European Union and European Economic Area, January 2012**

Zdenka Hendra (ECDC, Sweden), Anriit Lengsfi (ECDC, Sweden), Anna-Pekka Magorén (ECDC, Sweden), Katrin Lahnmayr (ECDC, Sweden), Dennis Czurchhn (ECDC, Sweden)

**BACKGROUND:**
In January 2012, a report reached the Norwegian Medicines Agency about a national ehrlichiosis outbreak which led to an increase in Mycoplasma pneumonia (MP) incidence. Similar increases were reported by other northern European countries in autumn 2011. The European Centre for Disease Prevention and Control conducted a survey to better understand whether the increased reports were unusual in order to provide support for improved surveillance and outbreak control.

**METHODS:**

**RESULTS:**
Twenty out of thirty countries responded to the questionnaire. Thirteen reported some type of surveillance activities. Finland, the Netherlands, Norway, United Kingdom and the Czech Republic indicated an increase in MP infections during 2011-2012 compared with the previous season while data from Denmark and Sweden suggested that their epidemic wave started in 2010. Five countries reported using serology and PCR, two used mainly serological tests, two mostly PCR and only one serology, PCR or culture. Fifteen countries had some guidance available for atypical pneumonia treatment and six had specific guidance for institutional outbreaks.

**CONCLUSIONS:**
2011/2012 winter season showed an increase in reporting of MP cases mostly in northern European countries. This pattern is consistent with what has been observed in past epidemics. Surveillance for MP infections across responding countries is highly variable in terms of surveillance practices and diagnostic methods. Increasing awareness among healthcare providers is important to strengthen surveillance activities and ensure timely diagnosis and appropriate treatment of the disease.

**Presented by:**
Zdenka Hendra

**Keywords:** Mycoplasma infections, Mycoplasma pneumoniae, Pneumonia, Surveillance, Europe

**ESCAIDE reference number:** 2012/237

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**The need to develop control measures for salmonellosis to ensure safety of home-produced eggs, Poland 2011:**

**Lessons from an outbreak**

Anna Zielezinska-Hardy (NPZ-PZN, Poland), Dorota Zrenka (District Sanitary Station, Opole, Poland), Olita Sarch (National Institute of Public Health – National Institute of Hygiene, Poland), Gregor Madajczak (National Institute of Public Health – National Institute of Hygiene, Poland), Magdalena Sadowska-Trud (National Institute of Public Health – National Institute of Hygiene, Warsaw, Poland)

**BACKGROUND:**
Implementation of control measures in line with European Commission regulations led to a decrease in human salmonellosis in Europe. These regulations do not address laying hens whose eggs are produced for personal consumption or local sale. We report an outbreak linked to home-produced eggs in Warsaw’s suburbs in order to highlight the need for control measures to be developed.

**METHODS:**
We conducted a retrospective cohort study among chishtying party attendees, where angel cake prepared using home-produced eggs had been served. Cases were defined as Probable – a party attendee who, within 72 hours, developed one of the following: diarrhoea, vomiting, stomach cramps, or temperature >39°C. Confirmed: as above, with a positive stool test for Salmonella Enteritidis. We calculated food-specific attack rates (AR), relative risks (RR) and 95% confidence intervals (95% CI).

**RESULTS:**
Of the 48 attendances, 26 (54%) reported gastroenteritis-like symptoms. Angel cake was associated with illness (OR=9.54, 95% CI 2.79-30.4). The laboratory isolated S. Enteritidis in stools from 8 people and in 2 egg samples. Of 20 S. Enteritidis strains, seven were identified as phage type PT25c. Privately owned laying hens that lived on site at the party, were identified as the source of the outbreak and destroyed.

**CONCLUSIONS:**
Food items consisting of raw eggs that have not been screened for Salmonella, should not be overlooked as a risk factor for infection, associated with a confirmed laboratory interpretation regardless of IgM status to the national case registry (NCr) were calculated.

**RESULTS:**
The total number of cases associated with laboratory positive tests in the merged data set were 372 in 2009, 96 in 2010 and 51 in 2011. Among those, 166 (44%) in 2009, in 12 (12.5%) 2010 and 9 (18%) in 2011 were associated with a confirmed laboratory interpretation regardless of IgM phase II antibodies detection. The number of acute Q fever notifications to the NCr by the MHS were 338 (90% in 2009, 21 (23%) in 2010, and 12 (14%) in 2011.

**CONCLUSIONS:**
The case definition that included presence of solitary IgM phase II antibodies led to over reporting of laboratory notifications to the MHS. We recommend periodic reviews of case definitions in particular when new diagnostic developments occur, during different phases of an epidemic.

**Presented by:**
Anna Zielezinska-Hardy

**Keywords:** Salmonella, home-produced eggs, laying hens, Poland, control, phage typing

**ESCAIDE reference number:** 2012/104

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**Retrospective evaluation of the case definition of acute Q fever in the Netherlands, 2009-2011**

Giovanna Jaramillo-Gutierrez (National Institute for Public Health and the Environment (RIVM), The Netherlands), Ronald ter Schegget (Municipal Health Service ‘Brabant West’, Eindhoven, The Netherlands), Henk Bijlmer (National Institute for Public Health and the Environment (RIVM), The Netherlands), Marion Knoops (National Center for Infectious Disease Control, The Netherlands), Marijn Bijsterveld-Biem (Stichting MAMI, The Netherlands)

**BACKGROUND:**
The south of the Netherlands experienced large scale outbreaks of Q fever in 2009 and 2007. In 2009, the definition of acute Q fever, one of the laboratory criteria was the presence of serum IgM phase II antibodies. Subsequently, comparative diagnostic evaluations showed that these antibodies persisted up to 12 months, making them poor markers of acute cases. In order to evaluate the usefulness of the case definition, we analyzed the number of cases associated with a positive laboratory test from 2009-2011, integrating these new diagnostics findings.

**METHODS:**
A retrospective descriptive analysis of the number of acute Q fever cases that were reported in home Brabant (January 2009 to December 2011 was conducted, by merging data from the Municipal Health Services (MHS) with data from the regional laboratory. Frequencies of laboratory positive results and their interpretation grouped according to their notification status to the National case registry (NCR) were calculated.

**RESULTS:**
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Food items consisting of raw eggs that have not been screened for Salmonella, should not be overlooked as a risk factor for infection, associated with a confirmed laboratory interpretation regardless of IgM status to the national case registry (NCr) were calculated.

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**CONCLUSIONS:**
The case definition that included presence of solitary IgM phase II antibodies led to over reporting of laboratory notifications to the MHS. We recommend periodic reviews of case definitions in particular when new diagnostic developments occur, during different phases of an epidemic.

**Presented by:**
Giovanna Jaramillo-Gutierrez

**Keywords:** Acute Q fever notification, Cosilia burnetti, laboratory diagnostics

**ESCAIDE reference number:** 2012/41
The efforts to contrast the spread of Klebsiella pneumoniae resistant to carbapenems in Italy
Fortunato D’ancona (Istituto Superiore di Sanità, Italy), Alessandra Pantosi (Istituto Superiore Di Sanità, Italy), Gian Mario Rossolini (University of Sienna, Department of Bioengineering, Sienna University Hospital, Sienna, Italy), Pasquale Sicaini (Communicable Diseases Unit, Directorate General of Prevention, Ministry of Health, Rome, Italy), Annunziata Stato (CINECA, Italy)

BACKGROUND: Carbapenem-resistant Klebsiella pneumoniae (CR-Kp) has recently been reported as multidrug-resistant pathogens in several Italian hospitals. According to the EARS-Net data, the percentage of CR-Kp isolated from blood increased dramatically in Italy (5.6% in 2009; 19.3% in 2010). After Greece, Italy has become the second endemic country in Europe. The few therapeutic choices and the high lethality impose to tackle the problem with a multidisciplinary approach at national level.

METHODS: In 2012 a workshop was organized to increase the awareness of CR-Kp and discuss possible solutions. The surveillance was reinforced. Members of the MIC network, developed by Istituto Superiore di Sanità and CINECA monitors in real time antimicrobial resistance data in 55 laboratories from all clinical samples. From October 2012 to March 2013, 95 centers reporting data to EARS-NET were requested to send invasive isolates of CR-Kp for an advanced microbiological characterization. A circular letter was sent to hospitals. The measures to be taken at hospital level is going to be issued by MoH to strengthen infection control measures at national level.

RESULTS: From 2002 to 2011, 686 cases of CR-Kp were registered in 2011. Since 2002, the number of cases has increased to 129 cases in 2011. More than 47% of cases were reported in 2011. Almost all persons exposed to CR-Kp were not vaccinated with MMR vaccine. Most of cases were imported from other countries. During the last two years, 5 of the 9 cases were imported from other countries.

CONCLUSIONS: Cases of measles have to a minor, but travelling is a great opportunity to be exposed to measles. In 2011, 75% of the 9 cases were reported in 2011. Almost all persons exposed to CR-Kp were not vaccinated with MMR vaccine. Most of cases were imported from other countries. During the last two years, 5 of the 9 cases were imported from other countries.

PRESENTED BY:
Fortunato D’ancona
Keywords: Klebsiella pneumoniae, Surveillance, Drug resistance, Carbapenems
ESCAIDE Reference number: 2012052

Epidemiological situation of measles in Lithuania
Saulius Capitolins (Centre for Communicable Diseases and AIDS, Lithuania), Giedrius Polius (Lithuanian Centre for Communicable Disease and AIDS, Lithuania), Dainis Ramunovas (Centre for Communicable Diseases and AIDS, Lithuania)

BACKGROUND: Measles is usually a mild self-limited viral disease mainly affecting children and young adults. In recent years, European countries have reported large numbers of measles cases and outbreaks among the general population. In 2002 a measles outbreak was reported in Lithuania with 502 registered cases.

METHODS: Following the guidelines of the Ministry of Health of Lithuania, the epidemiological situation of measles in last decade was evaluated by investigation of the cases of medical aid to persons and identification of the sources of their exposition to measles. The epidemiological analysis of measles was performed at the Lithuanian Centre for Communicable Disease and AIDS. All data were submitted by territorial public health agencies.

RESULTS: From 2002 to 2011, 116 cases of measles were registered in Lithuania. Since 2002, the number of measles cases has decreased noticeably. After measles outbreak in 2002, only several cases were reported. No measles cases were registered in 2009 and 2010. Almost all persons exposed to measles were not vaccinated with MMR vaccine. Most of measles cases were imported from other countries. During the last two years, 5 of the 9 cases were imported from other countries.

CONCLUSIONS: Cases of measles have a tendency to reduce, but travelling is a great opportunity to be exposed to measles. In 2011, 75% of the 9 cases were imported from other countries. During the last two years, 5 of the 9 cases were imported from other countries.

PRESENTED BY:
Saulius Capitolins
Keywords: Measles, Lithuania, outbreak, vaccination
ESCAIDE Reference number: 2012092

Ongoing mother to child transmission of HIV, syphilis and hepatitis B in EU/EEA—Strength antenatal screening programmes!
Odilia Mura (ECDC, Sweden), Amanda Cheve (ECDC, Sweden), Lilavati Sirohi (ECDC, Sweden), Bjarne Thomsen (ECDC, Sweden), Egle Dubel (ECDC, Sweden), Anastasia Pharis (ECDC, Sweden), Marta van de Loosdrecht (ECDC, Sweden)

BACKGROUND: Although highly preventable, mother-to-child transmission (MTC) of human immunodeficiency virus (HIV), syphilis and hepatitis B virus (HBV) continues to be reported in the European Union and European Economic Area (EU/EEA). Global United Nations targets aim to eliminate new HIV infections in children and congenital syphilis by 2015.

METHODS: Data in the European Surveillance System (TESSy) from 2010 was analysed in order to describe the rates and demographic characteristics of cases of MTC of HIV, syphilis and HBV in the EU/EEA. MTC rates were calculated per 100,000 live births.

RESULTS: Of the 242 HIV cases being reported as acquired through MTC in 2010, 31% (81) were diagnosed in persons born in the EU/EEA, 49% (118) in persons originating from Sub-Saharan countries and 9% cases from other regions or unknown. Rates of HIV MTC diagnosed in individuals born in the reporting country (81) varied between 0.2 and 20.8, being highest in Latvia, Portugal, Romania and Bulgaria. Fifty-nine congenital syphilis cases were reported in 2010 from 13 countries. Rates higher than 1 per 1000 were reported in Portugal, Estonia, Lithuania and Poland. While data at EU-level on MTC for HBV is limited, fifteen countries reported 346 HBV infections in children under 5. The UK, Romania and Sweden, reported 1% of these cases. Among the 32 cases where transmission was reported, 26 were due to MTC.

CONCLUSIONS: The spread of cases of MTC of HIV, syphilis and HBV reflects differences in antenatal screening practices and policies, effectiveness of vaccination catch-up programmes, and unequal access to antenatal care for vulnerable groups across the EU/EEA. To address these challenges, there is a need to strengthen antenatal screening programmes in the EU/EEA.

PRESENTED BY:
Odilia Mura
Keywords: Maternal-child transmission, HIV, HBV, congenital syphilis, antenatal screening
ESCAIDE Reference number: 2012096

Using epidemiological data from point prevalence surveys to inform national healthcare associated infection policy
Shona Cairns (Health Protection Scotland, United Kingdom), Jocqui Baily (Health Protection Scotland, United Kingdom), Chris Robertson (University of Strathclyde, United Kingdom)

BACKGROUND: Healthcare associated infections (HAI) are a significant threat to public health and patient safety worldwide. Point prevalence surveys (PPS) are a useful tool to measure and monitor the burden of all HAI not just those routinely monitored using targeted surveillance programmes. The first Scottish annual point prevalence survey was carried out in Scotland in 2005/2006. The results provided an epidemiological evidence base that informed the Scottish Government’s HAI policy plan for 2008-2011. A number of national interventions have been implemented in Scotland since the first survey and a second national survey was undertaken in 2010 to track the current epidemiology of HAI in Scottish hospitals.

METHODS: HAI and antimicrobial prescribing point prevalence surveys were carried out in 2005/2006 and 2011 in all acute hospitals in Scotland. ECDC case definitions and protocol were used. This was extended to allow comparisons with the 2005/2006 survey.

RESULTS: After adjustment for differences in the patient population and survey protocols, HAI prevalence was significantly lower than 2005/6 by approximately one third. The proportion of HAI types reported had also changed. The proportion of HAI that were urinary tract infections, surgical site infections and pneumonia was higher in 2011 and gastrointestinal infections was lower in 2011.

CONCLUSIONS: The results from these surveys indicated that HAI prevalence was lower in this second survey compared with the first, and that the epidemiology of HAI had changed. These results together with national incidence data suggest the possibility of a temporal relationship between the national programme of HAI and antimicrobial stewardship interventions. New priority areas have been identified using current epidemiological intelligence and will now be used to inform future policy in Scotland.

PRESENTED BY:
Shona Cairns
Keywords: Epidemiology Infection Control Cross Infection Prevalence
ESCAIDE Reference number: 2012192

DAY 1

Poster Abstracts – Poster Session A

Poster Abstracts – Poster Session A

European Scientific Conference on Applied Infectious Disease Epidemiology
24-26 October 2012 Edinburgh, UK
Universal pertussis vaccination in a secondary school cough outbreak: few serious adverse reactions reported

Lucy McCann (Health Protection Agency, United Kingdom), Nival McCarthy (Health Protection Agency, United Kingdom), Karen Forde (University of Oxford, United Kingdom), Andrew Poole (University of Oxford, United Kingdom), Radoslav Kulvorn (Baltic Berlows, United Kingdom), Gaozhi Anshenhang (Health Protection Agency, United Kingdom), Aiky Smith (Health Protection Agency, United Kingdom)

BACKGROUND: Pertussis-containing vaccines are not routinely offered to children over 50 years in the UK but may be offered in outbreak settings. Following such an outbreak in 2012 in a boarding school in South East England, pertussis-containing vaccine was offered to all pupils (n=335); age range: 13-18 years. Current increases in pertussis in this age group highlight the need for evidence of adverse reactions following mass vaccination of adolescents with pertussis-containing vaccines. We investigated self-reported symptoms potentially associated with recent vaccination.

METHODS: A diary card, adapted from a validated card used in vaccine trials, listing a range of symptoms, was given to pupils at vaccination. Pupils scored from 0 to 3 (depending on severity), each symptom listed, for 3 days following vaccination. We calculated proportion and severity of symptoms and used chi-square to test association between potential adverse reactions and receiving any other non-pertussis vaccination in the 3 months prior.

RESULTS: Of 740 vaccinated, 23% (n=169) completed the card. Ninety (53.6%) reported symptoms; 71 (42.2%) used the card. Controls were IlI cases testing negative for any influenza. Data collected included laboratory information, vaccination status and data on different confusion factors identified in the literature. IV was calculated as 1 minus the odds ratio for vaccination. A 95% confidence interval (CI) was calculated around the point estimate.

CONCLUSIONS: If up to 20% of the population is offered pertussis vaccination there will be a need to monitor for adverse reactions. Adverse reactions following pertussis vaccination in this group are uncommon but some are serious.

Risk factors for rotavirus breakthrough-infections in young vaccinated children – a case–case study in Germany 2010-2011

Cemile Adicik (Robert Koch Institute, Germany), Marine Hotine (Robert Koch Institute, Germany), Martin Krämer (State Office for Public Health and Social Affairs, Mecklenburg-Western Pomerania, Germany), Andreas Mass Marques (Robert Koch Institute, Germany), Annett Leiche (State Office for Public Health and Social Affairs, Mecklenburg-Western Pomerania, Germany), Michael Dahmert (Robert Koch Institute, Germany), Eckehardt (Robert Koch Institute, Germany), Ole Bichmann (Robert Koch Institute, Germany), Judith Koch (Robert Koch Institute, Germany)

BACKGROUND: In the German federal state Mecklenburg-Western Pomerania (MV) routine rotavirus (RV) vaccination in infants is recommended since 2009. After a report of 35 RV-infections in fully RV-vaccinated children in 2009, we conducted a case–case study in MV to identify risk factors for breakthrough-infection and assess disease severity.

METHODS: Local health authorities interviewed parents of children 12 years notified in 2009/2010 with laboratory-confirmed RV-infection. We compared unvaccinated and completely vaccinated cases aged 2-4 years regarding clinical and non-clinical parameters. Genotyping was performed on stool samples of included cases. Complete vaccination was defined as 2 or 3 doses of Rotarix® or Rotatix® following the manufacturer’s requirements. For analysis of the severity of diarrhea, a 20-point modified Vesikari scoring scale was applied. Rank-sum, Chi2 and Fisher’s exact test were used. We calculated Odds Ratios (OR) using multivariable logistic regression adjusting for age and sex.

RESULTS: Of the 68/70 reported RV-infected children, 36/68 were included in the case–case study. Of those, 86 (15%) were completely vaccinated (44 Rotarix®, 42 Rotatix®) and 282 unvaccinated. Vaccinated cases had lower severity scores (median: 8 vs. 12; p<0.001) than unvaccinated cases. Genotype G9P[8] was detected in 8/18 (44%) Rotarix®-vaccinated and 2/19 (53%) Rotatix®-vaccinated (p=0.03), whereas G12P[6] was detected in 8/19 (42%) in Rotarix®-vaccinated and 1/19 (6%) Rotatix®-vaccinated children (p=0.02). Children who were breastfed (OR=4.0, 95% CI: 1.5-9.3) or who attended daycare (OR=3.4, 95% CI: 1.6-7.2) were more likely to present with breakthrough infections.

CONCLUSIONS: In our study, a significant proportion of RV breakthrough-infections was identified. However, these cases were less likely to develop severe disease. RV-antibodies in breast-milk might neutralize RV-vaccine virus. Studies should be conducted to identify the critical time-window when breastfeeding interferes with oral RV-vaccination.
Influenza vaccine effectiveness in Spain, 2011-12: estimates from the cycEVA case-control study

Silvia Jiménez-Jorge (Institute of Health, Spain), Francisco Pozo (National Center of Microbiology, ISCIII, Spain), Joaquin Sanchez (National Center of Microbiology, ISCIII, Spain), Amparo Larramendi (Institute of Health, Spain).

METHODS: Practitioners systematically swabbed ILI patients collecting information on exposure, outcome and confounding factors. Cases were A(H3N2) confirmed patients and controls those negative for any influenza virus. VE was estimated for the target groups for vaccination swabbed 18 days after symptom onset taking into account the phase of the influenza season (early or late in the season) and from 8/1/12 and time from vaccination to symptoms onset (time since vaccination). RESULTS: The overall adjusted VE was 45% (95% CI, 18;85). During the early but not in the late phase, the VE decreased with time since vaccination, 66% (95% CI, 49;82) and 32% (95% CI, -90;75) and 22% (95% CI, -762;93) among those with time since vaccination 0-24 days, 0-12 days and 123 days, respectively. CONCLUSIONS: Streptococcus pneumoniae is a major cause of morbidity and mortality worldwide. The aim was to describe the serotypes and antimicrobial susceptibilities of S. pneumoniae isolates causing invasive pneumococcal disease (IPD) in children ≤ 5 years following the introduction of pneumococcal conjugate vaccines (PCV) in the Greek National Immunization Programme. METHODS: A prospective nationwide study was conducted between September 2008 and November 2011 in 10 pediatric hospitals. Serotyping was performed by the agglutination and Quellung reactions using anti-sera (SSI, Copenhagen, Denmark). Susceptibilities to penicillin and other antimicrobials were determined by E-test and interpreted by the CLSI criteria. RESULTS: Among 434 isolates collected (80 boys, 63 girls) 74,1% (15 5%) a46% of the commensal isolates for IPD were penicillin resistant, 32,2% (11 75%) and 19,7% (6 3%). In this period a 48% reduction has been observed in the total number of IPD cases mainly due to the reduction of PCV7 serotypes. In children aged 3 the theoretical coverage for PCV10 and PCV13 changed from 19.5%, 35.7% and 73.8% respectively in 2008-2009 to 6.7%, 40.0% and 73.7% in 2010-2011. Conclusions: The authors are convinced that it is necessary to stress systematic use of evidence-based medicine and establish the professional activities on transparency and reproducibility of scientific opinions so that there would not be a need to rely on stress of trust. Reasons for correct decision-making should be presented in more stric scientific way.

PRESENTED BY: Lukas Morád Keywords: Vaccination, Internet, Slovakia, health communication ESCAPE REFERENCE NUMBER: 201175

Monitoring anti-vaccination web pages from Slovakia

Lukas Morád (LGA Epidemiology, Slovakia), Antonija Konopacka (Slovak University of Medicine, Slovakia), Andrea Kropeckova (Slovak University of Medicine, Slovakia), Jozef Culik (Slovak, Ltd., Slovakia), Hana Hubeckova (Slovak University of Medicine, Slovakia)

BACKGROUND: The aim of the work was to analyse content of websites from Slovakia focused on information regarding vaccination. METHODS: During October 2010 – October 2011 a systematic search of Slovak websites was carried out. By means of two international search engines (Google and Bing) and one Slovak search engine (Atlas) a search for information on vaccines and vaccination was done. Evaluation of websites was done according to their attitude toward vaccination, source of information, according to support of the information by scientific literature and according to relevance of the website. RESULTS: During the systematic search some 2,200 hits (results) were evaluated – there were 52 websites from Slovakia meeting the inclusion criteria. According to the survey there is a higher probability for the Internet users to come across Slovak websites containing positive information on vaccination, such as websites of regional offices of the Public health Authority or other state/public institutions or organisations which are in charge of vaccination. Differences in average numbers of visitors of pro- or contra-vaccination websites are not significant. Further evaluation of the websites shows that majority of available information is presented without reference to particular sources of scientific literature. On the contrary, opponents of vaccination use evidence-based argumentation more often.

CONCLUSIONS: The study recommended that HCWs should be screening for HBV as a short term policy. Hepatitis B vaccination and biopsia protection programme should be adopted for HCWs as a long term policy.

PRESENTED BY: Jozef Eldomna Keywords: Hepatitis B, Health care workers, Sudan ESCAPE REFERENCE NUMBER: 201144

Hepatitis B virus infection among staff in three hospitals in Khartoum, Sudan.

Adel Eldomna (National Laboratory for Public Health, Sudan), Nageeb Salim (National Laboratory for Public Health, Sudan)

BACKGROUND: This research was conducted to study the hepatitis B infection among health care workers in three teaching hospitals 2006-2007. Also, to study the risk factors associated with hepatitis B infection and history of vaccination was studied.

METHODS: 245 of health care workers (23 surgeons, 37 laboratory staff, 6 dentists, 73 nurses and 106 workers) were selected randomly to participate in this study. These participants from Omdurman, Khartoum and Khartoum North hospitals. Designed questionnaire was used to collect data from study population. The questionnaire included many variables, e.g. sex, occupation, history of vaccination, history of needle prick injuries, etc. Blood sample was collected and ELISA kit was used to detect HBsAg.

RESULTS: 168 of study population were female and 77 were male. 12 participants reacted positive for HBsAg (4.8%). 6 of the positive cases were nurses (50%), 4 workers (33.3%) and 2 of them laboratory staff. 46.4% Distribution of infection among female participants was 7 out of 168 (4.2%) and in male was 5 out 77 (6.4%). Distribution of infection by hospital was one case in Khartoum hospital (2%, Khartoum North 4 case (5%) and 7 (5.6%) cases were in Omdurman hospital. Only 37 of participants (15.4%) said that they attended training courses in biosafety. Regarding the history of hepatitis B vaccination, only 11 (4.5%) of participants indicated that they received full vaccination dose. 123 of participants (52.3%) declared they practiced a history of needle prick and sharp injuries during their work.

CONCLUSIONS: The study recommended that HCWs should be screening for HBV as a short term policy. Hepatitis B vaccination and biopsia protection programme should be adopted for HCWs as a long term policy.
A new preoperative index identifies patients at high-risk of surgical site infection after coronary artery bypass grafting, Scotland

Ida Prentice (NHS KSS Health Protection Scotland, United Kingdom), Henrikhina Bash (Golden Jubilee National Hospital, Clydebank, United Kingdom), Alpesh Mulla (Health Protection Scotland (HPS), United Kingdom), Jane McKinnon (NHS National Services Scotland - Health Protection Scotland, United Kingdom), Martin Donegan (Health Protection Scotland, United Kingdom), Chris Robertson (University of Strathclyde, United Kingdom), Soneha McKay (Golden Jubilee National Hospital, Clydebank, United Kingdom), Robert Gray (Golden Jubilee National Hospital, Clydebank, United Kingdom), Lorna Wilson (Golden Jubilee National Hospital, Clydebank, United Kingdom), Brian Lennon (Golden Jubilee National Hospital, Clydebank, United Kingdom), Geoff Berg (Golden Jubilee National Hospital, Clydebank, United Kingdom), Jackie Kelly (Health Protection Scotland, United Kingdom)

BACKGROUND: In Scotland, surgical site infections (SSI) are the second most common cause of healthcare-associated infections (HAI). Coronary artery bypass grafting (CABG) is among the highest SSI rates. As the CDC index used in Scotland, surgical site infection after Coronary artery bypass grafting (CABG) is among the highest SSI rates. As the CDC index used does not adequately estimate SSI risk for CABG, we aimed at identifying preoperative risk factors for SSI after CABG surgery to develop a new index.

METHODS: We retrospectively collected CABG performed in a regional Scottish centre through linkage of three datasets. We calculated the incidences and rate ratios for SSI for each risk factor and developed Poisson regression models to identify independent risk factors, which we used to develop a new preoperative risk index. We calculated the area under the receiver operating characteristic (ROC) curve to compare predictive performances to the CDC index.

RESULTS: A total of 2,507 CABG patients included developed 155 SSIs. Independent factors included in the new index were age above 74 years (Incidence rate ratio [IRR] 1.9, 95% Confidence Interval [CI]: 1.3-2.9), female gender (IRR 1.9, 95% CI: 1.4-2.5), body mass index class (IRR: 2.6, 95% CI: 1.0-6.4) for obese class 1 to IRR: 3.6, 95% CI: 1.6-8.3 for class III), complex procedure (IRR: 1.7, 95% CI: 1.2-2.5), left ventricular ejection fraction (v19%), diabetes (IRR: 1.7, 95% CI: 1.2-2.2) and insulin-dependent diabetes mellitus (IRR: 2.4, 95% CI: 1.4-3.9). The new risk index (c-statistic: 0.725; p<0.001) exceeded the predictive performance of the CDC index (c-statistic: 0.564).

CONCLUSIONS: Our new index improved estimation of SSI risk. Further piloting will allow (1) identifying high-risk patients, (2) intervening prior to procedure to reduce risk and (3) enhancing follow-up to intervene early on SSI.

 Presented by: Ida Prentice

Keywords: Surgical Wound Infection, Coronary Artery Bypass, Risk Factors, Risk Adjustment, Infection Control, Scotland

ESCAIDE reference number: 2012/77

Prevalence of healthcare-associated infections in a general hospital in Cyprus

Elene Ioannou (Department of Public Health, School of Medicine, University of Patras, Greece), Ioannis Ioannou (Nicosia General Hospital, Greece), Georgios Chamblessids (Pedagogical University, Athens, Greece)

BACKGROUND: Hospital infection is one of the most important public health problems that threaten the safety of the patients. The aim of this study was to estimate the prevalence of healthcare-associated infections (HAI) and its relationship with possible predisposing factors in the Nicosia General Hospital in Cyprus.

METHODS: During the period from 17 to 26 October 2011 data on HAI, including demographic characteristics, infection type and site, predisposing factors and laboratory results, were subsequently collected and electronically recorded in a patient-based standard protocol of ECDC by the infection control nurse of the 46-bed Nicosia General Hospital.

RESULTS: A total of 23 patients with 25 healthcare-associated infections were recorded, giving an overall prevalence of 6.3% (ICU 20.0%, surgical 6.1%, medical 6.6%). The prevalence ranged from 0-16.4% with highest incidence in nephrology (16.4%) and mixed intensive care (15.3%), followed by neurosurgery (13%) and cardiovascular surgery (11.5%). HAI were located most frequently in bloodstream (21%), followed by surgical sites (20%), lower respiratory (18.3%) and gastro-intestinal system (12%). In 26% of the recorded HAI, a total of 26 microorganisms were isolated, most frequently Staphylococcus aureus (19.2%), Pseudomonas aeruginosa (19.2%), Acinetobacter baumannii (13.5%) and Enterococcus spp. (12.7%). Antimicrobial resistance was observed in S. aureus (61%), P. aeruginosa (88%) and Acinetobacter (73%). In 76% of patients device-associated HAI were observed.

CONCLUSIONS: This study reveals relatively high HAI prevalence rates, mainly in the units of nephrology and intensive care with predominating bloodstream infections. The results highlight the need for repeated prevalence studies in order to enhance surveillance of HAI and the need for improving infection control and prevention programs, focusing on improving healthcare personnel education.

Presented by: Ioannis Ioannou

Keywords: Healthcare-associated infections, prevalence, infection control, antimicrobial resistance, Cyprus

ESCAIDE reference number: 2012/64

Deteriorating compliance with antimicrobial prophylaxis recommendations in hip replacement surgeries during the previous six years in Hungary

Paulus Gédrickx (National Centre for Epidemiology of Hungary, Lisbon, Portugal), Karolina Bintori (National Centre for Epidemiology, Budapest, Hungary), Andrew Karz (National Centre for Epidemiology, Budapest, Hungary)

BACKGROUND: In 2005, a study concluded that 57% of patients received appropriate antimicrobial prophylaxis (AP) regarding the choice of agent and duration of administration in hip prostheses (HPRO) in Hungary. We investigated whether AP practice in HPRO has improved during recent years.

METHODS: We analysed data reported to the surgical site infection module of the Hungarian National Nosocomial Surveillance System (NNSS) in 2010-2015. We calculated proportions of appropriate AP practice in relation to the choice of antimicrobial and duration of its administration.

RESULTS: We analysed records on 798 HPRO surgeries performed in 8 hospitals. Recommended Cefazolin and Ceftriaxone were used in 42.0% and 24.9% of surgeries, respectively, as first-and-only choice. There was an increase of recommended Cefazolin usage compared to previous study (42% vs. 34%, p<0.001). Not recommended third-generation cephalosporins (Cefaitoxin, Cefixime) were used in 24.9%. More than one antimicrobial was prescribed in 5% patients. The proportion of cases with AP lasting less than 24 hours on the day of surgery decreased compared to the previous study (19.4% vs. 54.0%, p<0.01). Overall 44% of patients received appropriate surgical prophylaxis, regarding both type of antimicrobial and duration of AP.

CONCLUSIONS: Our results suggest that AP practice in HPRO has deteriorated in Hungary since 2005, although improvements were seen in the first-choice agent. Extensive efforts, including communication with professional societies, local feedback and education should focus on improving surgeons’ compliance with the existing recommendations on antimicrobial prophylaxis. Collecting data on timing of AP in NNSS should be considered for better assessment.

Presented by: Paulus Gédrickx

Keywords: Hip prosthesis antibiotic prophylaxis recommendations

ESCAIDE reference number: 2013/03
First results of the national surveillance of healthcare-associated Clostridium difficile infections in Hungary, 2011
Ágnes Németh (National Center for Epidemiology, Hungary), Tamás Kádár (National Institute for Health and Welfare, Hungary), Katalin Pintér, Norbert Borsos (National Center for Epidemiology, Budapest, Hungary), Andrea Kurucz (National Center for Epidemiology, Budapest, Hungary)

BACKGROUND:
Clostridium difficile infection (CDI) is the most common cause of identified diarrhea in hospitalized patients. Several countries reported increased incidence and severity in the last decade, owing to emerging hypervirulent strains. In Hungary, voluntary, active reporting of healthcare-associated CDI was established in 2009 and enhanced in March 2011, including the publication of a national guideline to facilitate prevention and control of CDI.

METHODS:
We analysed the 2011 surveillance data with regard to geographical distribution, demographics, hospital stay, risk factors, clinical presentation and outcome. Only incident CDI-cases were considered, cases recurring within 8 weeks were excluded.

RESULTS:
Overall, 1,803 healthcare-associated CDI-cases were included from 64 hospitals. The mean incidence density was 1.2 per 10,000 patient-days, with variation across hospitals and regions (0.03–5.3 and 0.06–1.4 per 10,000 patient-days, respectively). Mean age of patients with CDI was 71 years (median: 74, range: 0–103), 56% were female. Median length of stay was 17 days. Three percent of the CDI-cases were reported to be outbreak-related and 16% as imported from another healthcare facility.

The most frequently reported clinical presentation was diarrhea (96%), followed by colitis without pseudomembrane formation and fever (3%). Pseudomembranous colitis (6%) and toxic megacolon (1%). Every fifth outbreak-related and 16% as imported from another healthcare facility.

CONCLUSIONS:
Of these, 23 had pseudomembranous colitis or toxic megacolon. Pseudomembranous colitis (6%) and toxic megacolon (1%). Every fifth hospital stay, risk factors, clinical presentation and outcome. Only incident CDI-cases were considered, cases recurring within 8 weeks were excluded.

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CONCLUSIONS:
Of these, 23 had pseudomembranous colitis or toxic megacolon. Pseudomembranous colitis (6%) and toxic megacolon (1%). Every fifth
Estimating sensitivity of HIV reporting in Poland 1986-2010: the importance of completeness
Anne Żwirko-Grzenda (NJP-PDF, Poland), Bogdan Wąszyński (National Institute of Public Health-National Institute of Hygiene, Warsaw, Poland), Małgorzata Zalewska (Wrocław Medical University, Department and Clinic of Infectious Diseases, Wrocław, Poland), Janusz Janiec (National Institute of Public Health – National Institute of Hygiene, Poland), Magdalena Rosińska (National Institute of Public Health-National Institute of Hygiene, Poland)

BACKGROUND: Poland has an HIV surveillance system since 1986, which has never been evaluated. The aim of the study was to quantify the sensitivity of HIV reporting in order to improve estimates of diagnosed (and undiagnosed) HIV infections and to advocate revision of reporting procedures.

METHODS: We conducted a capture-recapture study to estimate the number of people diagnosed with HIV (western blot or PCR) between 1986-2010, excluding those who died before 2006. A log-linear model was run on 3 datasets: National HIV Surveillance System 1986-2010 (NHISS), antiretroviral treatment dataset 2006-2010 (ARV) and hospital discharge records 2006-2010 (HD) using ICD codes B20–B24, Z21 or r75. The datasets were restricted to records that could be matched on gender, date of birth and area of residence. We based final model selection on Akaike’s information criteria. Sensitivity was defined as the proportion of complete records (for matching variables) in NHISS compared with the BED assay (OD ≤0.8) was used to assign recent infection status. Using logistic regression we examined the effect of new diagnoses among men who have sex with men (MSM). To gain insight into current transmission patterns, we evaluated the proportion recently infected (within 6 months) at the time of their first presentation for care at an HIV clinic.

RESULTS: NHISS contained 13,522 eligible records but only 8,463 (62%) had information on all matching variables. A total of 6,650 records from ARV and 5,445 from HD were used. The final model estimates the number of HIV cases is 22,006 (95%CI:21,326-22,744), hence the sensitivity of the NHISS is 38%. The final model demonstrated a positive dependency of HIV cases is 22,006 (95%CI:21,326-22,744), hence the sensitivity of the NHISS is 38%. The final model demonstrated a positive dependency between: ARV and HD and NHISS and HD, respectively.

CONCLUSIONS: Though HIV is clearly under-reported to NHISS, this evaluation is limited to selected age and/or risk groups. Education not limited to selected age and/or risk groups. Education not limited to selected age and/or risk groups.


Increasing HIV infection among men who have sex with men in Slovenia: surveillance data for 2002-2011
Tanja Kustec (National Institute of Public Health , Slovenia), Irena Klavs (National Institute of Public Health, Slovenia)

BACKGROUND: HIV surveillance in Slovenia is based on universal mandatory reporting of HIV/AIDS cases, monitoring HIV infection prevalence among several sentinel populations and behaviour surveillance in a several sentinel populations. Our objective was to present HIV surveillance data for men who have sex with men (MSM) in order to inform HIV prevention and control policies.

METHODS: We collected information on annual reported HIV cases, CD4 counts at diagnosis, HIV prevalence among male clients of STI outpatient services tested for syphilis and among sentinel population of MSM, as well as proportion reporting “condom use” and “HIV testing last year” in the same sentinel population of MSM.

RESULTS: In 2011, 35 of all 55 newly diagnosed HIV cases were reported among MSM. During 2002-2011, the annual reported incidence rate of HIV diagnoses among MSM increased from 12.6 to 48.0 per million men aged 15-64 years. Proportion of new HIV diagnosis among MSM that were late (CD4 counts <500/mm³) varied from 39% in 2005 to 62% in 2008. HIV prevalence in male STI patients tested for syphilis varied from 0.3% in 2005 to 3.4% in 2008 and in MSM increased from 0% in 2002 to 7.6% in 2011 (more than 5% for the first time). In the same sentinel population of MSM, the proportion reporting “condom use” increased from 47% in 2002 to 53% in 2011, and “HIV testing” varied from 27% in 2007 to 40% in 2009.

CONCLUSIONS: The burden of HIV among MSM in Slovenia is disproportionately high and increasing. Promotion of safer sexual behaviour and HIV testing among MSM as well as positive prevention among MSM with diagnosed HIV infection are urgently needed.

AUTHORS: Tanja Kustec

PRESENTED BY: Tanja Kustec

Keywords: HIV, men who have sex with men, surveillance, Slovenia ESCAIDE Reference Number: 2012016

Increasing HIV prevalence in sentinel groups in Slovenia, 2002-2011
Tanja Kustec (National Institute of Public Health - National Institute of Hygiene, National Institute of Public Health, Slovenia), Irena Klavs (National Institute of Public Health, Slovenia)

BACKGROUND: Even though unprotected sex between men is the predominant transmission mode for HIV in Slovenia, the virus is transmitted among other population groups, too. Our objective was to monitor changes in the prevalence of HIV in high-risk groups (injecting drug users (IDU), men who have sex with men (MSM), patients with sexually transmitted infections (STI) and one low-risk group (pregnancies)) during 2002-2011 in order to inform prevention and control policies.

METHODS: Residual sera from specimens obtained from patients with STI and pregnancies sent for syphilis serology were sampled in several syphilis serology laboratories. Saliva specimens were voluntarily obtained from IDU entering substitution treatment programmes and, once per year, from MSM in a community setting in Ljubljana. Specimens were labelled only with the type of sentinel population, sampling year, sex and age group and tested for anti-HIV antibodies.

RESULTS: 2,048 saliva specimens were collected from IDU, 1,064 from MSM, 6,337 serum specimens from patients with STI, and 39,544 from pregnancies. Prevalence estimates for MSM varied between 0% in 2002 and 7.6% in 2011, for patients with STI between 0.2% in 2003 and 2.7% in 2008, and for pregnancies from 0% in 2003 and 2007 to 0.5% in 2011. Among IDU specimens, only two tested anti-HIV positive, one in 2010 and one in 2011 (0.4% and 0.5% respectively).

CONCLUSIONS: The prevalence of HIV infection among pregnancies is low. In 2011, the prevalence of HIV infection in a sentinel population of MSM in Ljubljana has increased above 5% for the first time. Promotion of safer sexual behaviour and HIV testing among MSM as well as positive prevention among MSM with diagnosed HIV infection are urgently needed.

AUTHORS: Tanja Kustec

PRESENTED BY: Tanja Kustec

Keywords: HIV, unrelated anonymous testing, injecting drug users, men who have sex with men, sexually transmitted infections, pregnant women, Slovenia ESCAIDE Reference Number: 2012044
Who is at risk of presenting late with advanced HIV disease among men who have sex with men? Potenza, Italy. Andrea Pugliese (National Institute for Infectious Diseases “L. Spallanzani”, IRCCS, Rome, Italy), Massimo Giuliani (National Institute for Infectious Diseases “L. Spallanzani”, IRCCS, Rome, Italy), Giuliani Massimo. In the paper, the authors discuss the characteristics of men who present late with advanced HIV disease, with a focus on those who have sex with men (MSM). The study used a retrospective cohort design to identify factors associated with late presentation. The results showed that MSM with specific characteristics, such as older age, lower education, and being foreign-born, were more likely to present late with advanced HIV disease. The study highlights the importance of targeting interventions to these high-risk groups.

Trends in HIV prevalence and risk behaviors among vulnerable young populations aged 15-24 years in Nepal, 2001-2010. Keshab Deuba (Department of Public Health Sciences, Karolinska Institute, Sweden), Anno Mieklein (Karolinska Institute, Department of Public Health Sciences, Sweden), Barathie Sirinath (Nabig College, Pulshe University, Nepal), Krishna Kumar Rai (National Centre for AIDS and STD Control, Nepal). The paper presents results from a study conducted in Nepal between 2001 and 2010, focusing on the prevalence of HIV and its risk behaviors among young populations. The study used national survey data to analyze trends in HIV prevalence and risk behaviors. The results showed a decrease in HIV prevalence, with a decline in risky behaviors such as unprotected sexual activities. The study highlights the importance of targeted interventions to reduce HIV prevalence in young populations.

Prevalence of Sexually Transmitted Infections in HIV-infected women in Burkina Faso. Bruno Koingou (Centre of International Research for Health, University of Ouagadougou, Burkina Faso), Nicolas Mogé (Centre of International Research for Health, University of Ouagadougou, Burkina Faso), Mohamed Sow (Centre of International Research for Health, University of Ouagadougou, Burkina Faso). The paper reports on the prevalence of sexually transmitted infections (STIs) among HIV-infected women in Burkina Faso. The study used data from a surveillance system to analyze the prevalence of STIs, including Neisseria gonorrhoeae, Chlamydia trachomatis, Trichomonas vaginalis, and herpes simplex virus type 2 (HSV-2). The results showed a high prevalence of STIs, with Neisseria gonorrhoeae being the most common. The study highlights the importance of targeted interventions to reduce the burden of STIs in HIV-infected women.

ESCAIDE REFERENCE NUMBER: 2012963

Prevalence of Sexually Transmitted Infections in HIV-infected women in Burkina Faso

ESCAIDE REFERENCE NUMBER: 2012963
Low compliance with influenza outbreak recommendations in Norwegian nursing homes, season 2011-2012
Horst Bentele (Norwegian Institute of Public Health, Norway), Siv Helene Haug (Norwegian Institute of Public Health, Norway), Bent Toffol Hansen (Norwegian Institute of Public Health, Norway), Karin Nygård (Norwegian Institute of Public Health, Norway), Jørgen Vildshøj Bjørnholt (Norwegian Institute of Public Health, Norway)

BACKGROUND: Seasonal influenza and pneumococcal vaccination, laboratory diagnostics and the use of antiviral treatment during the influenza season is advised by Norwegian guidelines. In January 2012 an outbreak of clinical pneumonia in a nursing home (NH) was reported via the web-based outbreak surveillance system (VESUV). Outbreak investigation revealed low vaccine coverage among cases, inadequate microbiological testing, and indiscriminate use of antibiotics. In order to investigate if these findings were common in NHs, all outbreaks of upper/lower respiratory tract infections (RTI) in NHs reported to VESUV in 2012 were described.

METHODS: In addition to data from all RTI-outbreaks reported to VESUV from January to March 2012, we sent a questionnaire, collecting data on vaccination status (flu/pneumococci), microbiological diagnostics and treatment of the cases.

RESULTS: Ten RTI-outbreaks (in total 520 cases) in NHs were reported. Infection was confirmed in patients from 8/10 NHs that submitted patient specimens for microbiological investigation. 4/10 NHs (50%) responded to the questionnaire; the vaccination coverage among the cases for seasonal influenza vaccine was 59/100 cases (59%). Two NHs had vaccinated all 24 cases while in five nursing homes 34/86 cases (40%) were vaccinated. Pneumococcal vaccination status was known in 5/7 NHs; 3/15 cases (20%) were vaccinated. 6/70 cases were given empiric antibiotics treatment irrespective of microbiological diagnosis and 3/100 cases was given antiviral treatment.

CONCLUSIONS: Despite influenza was diagnosed/suspected in all NHs, antibiotics were seldom used and empiric antibiotic therapy were maintained. The vaccination status was difficult to obtain from the NHs. We recommend reinforcement of national guidelines and implementation of systems securing adequate vaccination in NHs.

PRESENTED BY: Horst Bentele

Keywords: Influenza, Disease Outbreaks, Anti-Bacterial Agents, Vaccination, Standard of Care

ESCAIDE REFERENCE NUMBER: 2012613

Symptoms associated with influenza and RSV infections among children with acute respiratory illness in Bavaria, Germany, 2012
Matthias England (Bayernisches Landesamt für Gesundheit und Lebensmittelsicherheit, Germany), Wolfgang Haustämm (Bayernisches Landesamt für Gesundheit und Lebensmittelsicherheit, Germany)

BACKGROUND: Every week, sentinel physicians in Bavaria swab the first two patients presenting with acute respiratory illness (ARI) in a given day and report their symptoms. All specimens from children

METHODS: We analysed correlations between symptoms and laboratory-confirmed infections using Pearson’s chi-square test and calculated adjusted odds ratios (AOR) using logistic regression to identify factors independently associated with the respective infections.

RESULTS: In 2012, 116/364 (32%) and 83/358 (23%) tested specimens were positive for influenza and RSV, respectively. Compared to patients negative for both viruses (test-negatives), influenza-positives more often reported cough (69.9% vs 73.3%; p<0.001), sore throat (64.6% vs 46.6%; p<0.001) and muscle/joint pains (56.3% vs 46.0%; p<0.001). Cough (AOR 2.5, 95% CI 1.5-4.5) and sore throat (AOR 1.8, 95% CI 1.1-3.1) were independently associated with influenza infection; RSV-positives more often reported cough (56.6% vs 74.6%; p<0.001), bronchitis (49.3% vs 22.1%; p<0.001) and pneumonia (7.7% vs. 4.8%; p=0.030) than test-negatives; cough (AOR 3.8, 95% CI 1.5-9.7) and bronchitis (AOR 2.6, 95% CI 1.5-4.5) were associated with RSV infection. Comparing the two infections, patients positive for influenza reported muscle/joint pains more often (64.5% vs. 45.5%; p<0.030), whereas RSV patients more had bronchitis (49.9% vs. 24.3%; p<0.001) and pneumonia (7.7% vs. 1.1%; p=0.030).

CONCLUSIONS: Sore throat and muscle/joint pains in children

PRESENTED BY: Matthias England

Keywords: Respiratory syncytial viruses; Influenza; sentinel surveillance; signs and symptoms; diagnosis

ESCAIDE REFERENCE NUMBER: 2012656

National seasonal influenza vaccination surveys in the European Union. Overview of consecutive surveys conducted by Vaccine European New Integrated Collaboration Effort (VENICE) project
Julie Merecenska (Health Protection Surveillance Centre, Ireland, Supervise Centre (EPiCeCell, United Kingdom), Angus Brown (ECDC, United Kingdom), P. Lefebvre (ECDC, United Kingdom), Fortunato Zaccaria (Istituto Superiore di Sanità, Italy), Cristina Giambelli (Istituto Superiore di Sanità, Italy), Daniel Levy-Bruhl (IHP, France), Luca Dematte (CINECA Consortium of University, Italy), Palle Vætsø-Moergaard (IHP, Denmark), Jolita Mereckiene (Health Protection Surveillance Centre, Ireland)

BACKGROUND: Of the 28 responding countries, all recommended seasonal influenza vaccine to the older age groups. 13 countries recommend vaccine for individuals > 65 years; nine countries have lower age cut-off (ranging from > 50 to 60 years of age). Seven countries recommend vaccine to children. Most countries recommend influenza vaccine for clinical risk groups, pregnant women and Health Care Workers (HCWs). The reported vaccination coverage varied by country and targeted group, ranging from 1.1% – 80.6% for older age groups (n=19); to between 29.4% – 68.3% for clinical risk groups (n=5); from 14%-63.5% for HCWs (n=3); and from 3.7% – 24.8% for pregnant women (n=2). Netherlands achieved and United Kingdom almost achieved EU goal among older targeted age groups.

RESULTS: In 2011 a survey was undertaken across Member States, Norway and Iceland (MS) to determine changes in seasonal influenza vaccination policy and compare vaccination coverage between countries using data obtained from previous surveys. The questionnaire was completed on-line by each MS gatekeeper by updating survey response fields which had been pre-filled with data from the previous survey.

METHODS: Prior to 2008, when VENICE conducted its first survey, there was no comprehensive information on the seasonal influenza vaccination programmes in Europe. Since then VENICE has conducted annual surveys to follow up changes and to identify compliance with European Commission recommendation to achieve the European Union (EU) goal of 75% for older age and risk groups by 2014-15.

CONCLUSIONS: Results of consecutive VENICE surveys indicate that most countries recommend influenza vaccine for the main risk groups, however few countries have achieved the recommended vaccination coverage rates. Additional work is needed to learn lessons from countries with high coverage to improve uptake across the EU region.

PRESENTED BY: Julie Merecenska

Keywords: Influenza, immunisation, vaccination, vaccination coverage, risk groups

ESCAIDE REFERENCE NUMBER: 2012609

External Quality Assessment for human influenza detection and characterisation in Europe, 2008 and 2010/11: evaluation of results (On behalf of the members of the Quality and Training task group and the Community Network of Reference Laboratories (CNRL))
Katherine Zatkoff (1) Health Protection Agency, London; 2) The EUPEM programme, ECDC, Stockholm, Sweden), Martine Violette (Istituto di Microbiologia, Uni, Torino, France), Rand Daniels (MRC-National Institute for Medical Research, United Kingdom), John McCauley (MRC-National Institute for Medical Research, United Kingdom), Maria Zembin (IHP, United Kingdom), Catherine Thompson (Health Protection Agency, United Kingdom)

BACKGROUND: Mechanisms for assessment of laboratory competency are important to monitor quality and identify training needs. Laboratories participating in the Community Network of Reference Laboratories for Human Influenza in Europe (CNRL), supported by ECDC were invited to participate in an External Quality Assessment (EQA) exercise for influenza virus rapid detection and culture (2008 and 2010/11). In this study we performed a detailed comparison of the outcome of both EQAs in order to identify key quality issues and formulate training needs across the network.

METHODS: For the analysis, CNRL-associated laboratories from 26 different countries which participated in both EQAs were considered. EQA panels consisted of 50 coded samples containing influenza A and B viruses for rapid molecular detection and virus culture (typing/subtyping and strain determination).

RESULTS: Twenty-nine (87.9%) laboratories returned results for both EQA panels (2008 and 2010/11). Improving trends in technical proficiency for rapid molecular detection and subtyping were observed from 2008 to 2010/11, but equally small trends in decreasing performance in virus culture proficiency were noted. Overall, 60% of participants achieved maximum scores in virus rapid detection in both years with an improvement of 7.2% in 2010/11 compared to 2008. Although most laboratories scored well in virus culture, wide-ranging capabilities for strain characterisation between laboratories were apparent.

CONCLUSIONS: Influenza virus rapid detection using molecular methods improved from 2008 to 2010/11 particularly for the number of laboratories returning subtyping results. However, minor errors in strain determination subsequent to virus culture in both years were observed. These results highlight the importance for pan-European network training activities and continuous EQA exercises in both molecular detection and influenza virus culture and strain characterisation; the latter activities being particularly important for informing the WHO vaccine recommendation process.

PRESENTED BY: Katherine Zatkoff

Keywords: Influenza, EQA, CNRL network

ESCAIDE REFERENCE NUMBER: 2012742
Severe influenza morbidity and mortality in Scotland in the 2010/11 and 2011/12 seasons –differential impact caused by influenza strain types?

Arielle Reynolds (Health Protection Scotland, United Kingdom), Beatris van Wormann (Health Protection Scotland, United Kingdom), Pery Gunster (West of Scotland Specialist Virology Centre, United Kingdom), Jim McManus (Health Protection Scotland, United Kingdom)

BACKGROUND: Health Protection Scotland (HPS) established monitoring of severe acute respiratory illness (SARI) in laboratory confirmed influenza hospitalisation: Pooled analysis from a European network of hospitals (HPS) sharing the same case-control test negative design protocol. For this report, we included patients hospitalised due to laboratory confirmed influenza from 2010/11 to 2011/12, with ILI onset in the previous 72 hours (n = 743) following ILI onset the adjusted vE was 35.3% [95%CI: 8.0; 75.2] among those younger than 65 years and 12.3% [95%CI: 0.2; 38.2] among those 65 years and older.

CONCLUSIONS: Reduced vaccine effectiveness for A/H1N1/09 compared with previous years may have contributed to the higher than predicted mortality. Further analysis is required to explore the reasons for the higher mortality observed in the 2011/12 season compared to 2010/11.

Keywords: Influenza, effectiveness, case fatality, hospitalisation, Europe.

Improvement of the influenza, ARI and SARI surveillance system in Republic of Moldova

Radu Craiuzu (National Centre for Public Health, Moldova, Republic of), Constantin Stanca (National Centre for Public Health, Moldova, Republic of), Stela Gheorghita Spinu (National Centre for Public Health, Moldova, Republic of), Igor Spinu (National Centre for Public Health, Moldova, Republic of), Petru Scoferta (National Centre for Public Health, Moldova, Republic of), Iparan Edar (National Centre for Public Health, Moldova, Republic of)

BACKGROUND: Surveillance of influenza, acute respiratory infections (ARI) and severe acute respiratory infection (SARI) in the Moldova is made according to WHO. In our previous work we showed that the number of SARI cases, which show a reduction of 20.0 times in morbidity during the same period of the previous season. ARI morbidity remained unchanged in comparison to the previous season.

RESULTS: During the epidemic season weeks 40/2011 – 18/2012 there were sporadic cases of influenza, caused mainly by influenza A/H1N1/09, with a low intensity of the epidemic process and minimal impact on medical services. Totally, during this season were registered 227 (870/0000) influenza cases, which show a reduction of 2.0 times in morbidity over the same period of the previous season.

CONCLUSIONS: Improvement of influenza, ARI and SARI surveillance system connected to the WHO, ECDC requirements has allowed us to monitor the epidemiological situation in those infections, appreciation of the epidemic process trend and the spread forecast with developing control and response measures. SARI morbidity served as an argument for implementation of public health policy and major intervention measures. SARI morbidity served as an argument for implementation of public health policy and major intervention measures.

Keywords: Influenza, ARI, SARI, surveillance, Europe.
Severe Influenza cases during the 2011-12 season in Greece
A. Bokis, (Hellenic Centre for Disease Control and Prevention (HCDCP), G. Spalea Hellenic Centre for Disease Control and Prevention (HCDCP), D. Khalilis, (Hellenic Centre for Disease Control and Prevention (HCDCP), A. Andreopoulou, (Hellenic Centre for Disease Control and Prevention (HCDCP), M. Parentakis, (Hellenic Centre for Disease Control and Prevention (HCDCP), M. Vovk, (University of Thessaly).)

**METHODS:**
Influenza season 2011-12 was atypical all over the northern hemisphere. Although the predominant influenza strain was B/H3N2, we saw a late peak of A/H1N1pdm activity, followed by a wave of A/H3N2 activity in May. In 2010-11 season influenza immunization is recommended. In 2009-10 we recorded 294 deaths in ICU patients and 499 deaths in hospital patients. Severe Influenza cases during the pandemic season 2009-10 were higher in ICU patients.

**RESULTS:**
- In 2011-12 deaths in ICU patients were lower than in 2010-11.
- 114/126 (90.5%) of cases and 49/53 (92.4%) of recorded deaths were attributable to infection with influenza-like illness (ILI). Cases are ili patients laboratory-confirmed by PCR as influenza. Controls are those who tested negative for influenza. The outcome of interest is medically attended, laboratory confirmed influenza. Influenza vaccination is defined as having received one dose influenza vaccine more than 14 days before onset of symptoms. IV vaccine effectiveness (IvE) is estimated as OR. Logistic regression is used to adjust for possible confounding factors.

**RESULTS:**
- In Hong Kong the population IvE estimates were as follows. In 2009-10 (55 cases and 306 controls) the adjusted seasonal IvE was 79.1% (95% confidence interval (CI) 72.8-84.3). In 2010-11 (119 cases and 608 controls) the adjusted seasonal IvE was 78.1% (95% CI 72.9-83.4). In 2011-12 (252 cases and 646 controls) the adjusted seasonal IvE was 51.4% (95% CI 46.2-57.2).

**CONCLUSIONS:**
- In 2009-10 the pandemic vaccine was effective in preventing laboratory confirmed cases of pandemic influenza. In 2009-10 the pandemic influenza vaccination was effective in preventing confirmed influenza. Our 2011-12 data were compatible with low effectiveness of the influenza vaccine to prevent laboratory-confirmed influenza in the 18+ population. Ungrouped data were included in the I-MOVE study to estimate IvE at European level.

**PRESENTED BY:**
Judit Kristina Horvath
Keywords: Influenza, influenza vaccine, vaccine effectiveness, communicable disease control, case control studies
ESCAIDE REFERENCE NUMBER: 20125397

**International Health**

**The first reported international microsporidial keratoconjunctivitis outbreak**

Forest Lam (Centre for Health Protection, Department of Health, Hong Kong), Monica Wong (Centre for Health Protection, Hong Kong), SK Chuang (Centre for Health Protection, Hong Kong)

**BACKGROUND:**
In May 2012, we recorded a microsporidial keratoconjunctivitis outbreak among Hong Kong rugby players who participated in a rugby tournament in Singapore on April 21 and 22, 2012. Players from Australia, Malaysia, Singapore and United Arab Emirates were also affected. We conducted a retrospective cohort study to identify potential risk and protective factors.

**METHODS:**
We collected demographic information from all Hong Kong players including potential risk and protective factors such as contact lens wearing, topical eye steroid, eye trauma, soil and muddy water exposure as well as eye washing by tap water, hosing and bottled water using standardized questionnaire. Attending ophthalmologist collected corneal scrapings for laboratory testing. We defined cases as any players who have eye redness and one of the following symptoms: pain, discharge, swelling or itchiness since April 21, 2012.

**RESULTS:**
We identified 54 cases (attack rate: 47%) aged 9 to 16 years (median: 13) out of 73 players. Symptoms onset was between April 26 and May 22, 5 to 31 (median: 15) days after the rugby tournament. Three corneal scrapings were tested positive for Vittaforma conaeae, one of the species of microsporidia by polymerase chain reaction. All players were exposed to soil and muddy water. We eye investigated by bottled water (RR: 0.49, 95%CI: 0.25-0.76) and tap water (RR: 0.50, 95%CI: 0.27-0.92) as protective factors.

**CONCLUSIONS:**
This was the first reported international microsporidial keratoconjunctivitis outbreak. Microsporidial keratoconjunctivitis should be considered as a differential diagnosis for patients presented with eye redness after soil or muddy water exposure. Rugby players should thoroughly wash their eyes after soil or muddy water exposure. Health advice should be given before tournament to minimise risk of international outbreak.

**PRESENTED BY:**
Forest Lam
Keywords: Keratoconjunctivitis, keratitis, conjunctivitis, outbreak, microsporidia, vittaforma
ESCAIDE REFERENCE NUMBER: 2012533

**Capacities, Practices and Perceptions of evidence-based public health in Europe**
Jonathan Latham (ECDC, United Kingdom), Andreas Jensen (ECDC, United Kingdom), Lukas Mureu (Eurosurveillance Epidemiology, United Kingdom), Thea Erland (Nordic Tropical Institute, Norway)

**BACKGROUND:**
Evidence-based methodologies are used to synthesize systematic high quality evidence. The success of evidence-based medicine inspired the adaptation and application of such methods to other fields including public health. Evidence-based public health is however still in its early stages. The European Centre for Disease Prevention and Control sought the insight of European public health institutions into the current practices, capacities, perceptions and predictions of evidence-based public health.

**METHODS:**
An online survey was developed and sent to 76 organisations selected for inclusion in the study through Elinnet and GIN associate, partner and member lists.

**RESULTS:**
A response rate of 36% was achieved, representing 27 organisations from 16 countries. Systematic reviews were the most commonly offered service, followed by health technology assessments and rapid assessments. 54% of respondents believed that evidence-based methodologies were poorly integrated into public health. Major perceived barriers to the further development of evidence-based public health included ‘a lack of formalised structure or system’, ‘resource constraints’ ‘a lack of understanding of evidence-based methodologies by policy makers’ and ‘a lack of data’. Despite this, 81% of respondents believed that evidence-based methodologies would play an increasingly important role in public health in future.

**CONCLUSIONS:**
The results reflect those from the literature and from the ECDC evidence-based methodologies for public health working group: that evidence-based methodologies are widely practiced in public health and are growing in importance. Several barriers however are preventing evidence-based methodologies from achieving a level of full integration. Steps should be taken to address these barriers and facilitate more rapid incorporation, translating into ultimately more successful public health policies.

**PRESENTED BY:**
Jonathan Latham
Keywords: Europe Evidence, based Practice Public Health
ESCAIDE REFERENCE NUMBER: 2012447
**Intervention Studies in Public Health**

**Pre-donation Screening of Volunteer Prisoner Blood Donors for Hepatitis B & C in Prisons of Central and Southern Punjab, Pakistan**

An intervention to minimize the risk of infectious diseases transmission through blood transfusion.

**Keywords:** Hepatitis, Blood Donation, Prison.

**PRESENTED BY:** Aamir Pervaiz (Infectious Diseases, Punjab, Lahore & PHOENIX Foundation, Pakistan), Naveed Zaman Raja (PHOENIX Foundation, Pakistan)

**RESULTS:**
- A total of 5894 volunteer prisoner donors were screened and 1398 (23.7%) were rejected. All were male. The mean age was 28 years (range, 17-70 years).
- 96% volunteer donors were up to 40 years of age.
- Of 5894, 967 (16.3%) were HCV positive and 222 (3.8%) were HBV positive.

**CONCLUSIONS:**
- Hepatitis B & C viruses are responsible for almost 18% prisoner blood donor rejection. Pre-donation screening of blood donors is an effective intervention to improve the safety and limit the cost of blood donation.

**Presented by:**

**Evaluation of the travel information on gastrointestinal infections reported to the Norwegian Surveillance System for Communicable Diseases, 2009-2010**

Bernadette Guzman Herrador (ICISSD, IFC, Norway), Line Hval (Norwegian Institute of Public Health, Norway), Kari Nybøgh (Norwegian Institute of Public Health, Norway)

**BACKGROUND:**
- High-quality information on travel-associated gastrointestinal infections (GI) is crucial for understanding trends in domestic and imported GI and evaluating implemented control measures in the food chain. The Norwegian Surveillance System for Communicable Diseases (MSIS) includes several variables related to travel that should be filled in by clinicians when reporting notifiable GI. We measured the completeness and validated the travel history information on GI reported to MSIS during 2009-2010.

**METHODS:**
- We measured the level of completeness of the variables “place of infection”, “return date to Norway” and “date of symptoms onset” for salmonellosis, campylobacteriosis, giardiasis and shigellosis. We validated the information about place of infection, Norway/abroad, by comparing the reported time between travel and illness onset and compared it to the incubation period (IP) of the pathogen.

**RESULTS:**
- Of all selected GI in MSIS, 96% (8,322/8,739) were reported with known place of infection, of which 65% were notified as acquired abroad. Of these, 95% had information on both return date to Norway and date of symptoms onset, and time between travel and illness onset could thereby be assessed. Of them, 98% had a registered date of symptom onset after returning to Norway within the IP described in the literature.

**CONCLUSIONS:**
- We found a high level of completeness in the variable “place of infection”. Our evaluation suggests that the validity of this information is high. However, because of incomplete data in the variables “return date to Norway” and “date of symptoms onset”, we only managed to assess the biological plausibility of being infected abroad in 59% of the cases. Therefore, we encourage clinicians to collect more complete travel information.

**Presented by:**

**TB and other respiratory diseases (excluding influenza)**

**One quarter of TB patients are hospitalised during their TB episode in England**

Victoria Hall (Health Protection Agency UK RTF Programme & EPHET, United Kingdom), Helen Waione (London Regional Epidemiology Unit, Health Protection Agency, London, United Kingdom), Neville Verlander (Health Protection Agency, United Kingdom), Sheehin Al-Akkabi (Respiratory Disease Department, Health Protection Agency – Colindale, London, United Kingdom)

**BACKGROUND:**
- National guidance suggests tuberculosis (TB) cases normally can be managed in outpatient care. Information on the extent of hospitalisation would inform funding allocations. We measured this and determined risk factors for hospitalisation.

**METHODS:**
- We conducted a cohort study to investigate hospitalisations for all newly-diagnosed TB patients in England notified to the Health Protection Agency between 01/01/2003 and 31/12/2008 (n=56,243). We defined a TB episode as a 24 or 12-month period from notification for Multiple Drug Resistant (MDR) and other TB respectively. Inpatient hospitalisation data (England 2000-2004), obtained from the national Hospital Episode Statistics, were probabilistically linked to patients using identifiers, including date of birth and postcode. A TB-related hospitalisation was defined as occurring within the TB episode, with TB recorded among the first three diagnoses. Risk factors for hospitalisation including demographics, site of disease and drug resistance were analysed using multivariable Poisson regression.

**RESULTS:**
- 14,693 (26%) TB patients were hospitalised at least once during their episode. Median overnight stay was 12 days (interquartile range 6 to 23). The highest risk of hospitalisation was for those aged over 65 (2907/7832, 37%) (RR 2.19 (95% CI 2.00-2.40)); male (8410/30,749, 27%) (RR 1.03 (95% CI 1.01-1.05)); born in Eastern Europe (58163, 31%) (RR 1.52 (95% CI 1.17-1.96)); living in North-East England 395/1,251, (31%) (RR 1.52 (95% CI 1.06-2.17)) and with multiple drug resistance (69/114, 51%) (RR 2.29 (95% CI 2.09-2.50)) and with multiple drug resistance (69/114, 51%) (RR 2.29 (95% CI 2.09-2.50)).

**CONCLUSIONS:**
- In a large cohort study over one quarter of TB patients were hospitalised, suggesting that inpatient care is an important component of routine TB treatment in England. Factors such as site of infection, MDR and area of residence significantly affect risk of hospitalisation.

**Presented by:**

**Trend of notification of childhood Tuberculosis in Nigeria 2009-2011 – where are the missing cases? A connotation for National Tuberculosis Program**

Morunoluwa Akin-Agbe (National Tuberculosis and Leprosy Control Programme, Department of Public Health, Nigeria), Akinsho-Gbadegesin (National Tuberculosis and Leprosy Control Programme, Department of Public Health, Nigeria), Ayodele Aderoju (World Health Organisation Nigeria, Nigeria), E. Oluwole-Apapana (National Tuberculosis and Leprosy Control Programme, Department of Public Health, Nigeria), Akin-Dele (National Tuberculosis and Leprosy Control Programme, Department of Public Health, Nigeria)

**BACKGROUND:**
- About one million children less than five years develop tuberculosis (TB) annually worldwide, accounting for about 11% of all TB cases. 25% of these childhood cases occur annually in 22 high-burden countries, with Nigeria ranking 6th. According to National guidelines, diagnosis of TB in children is the responsibility of clinicians. However, availability & distribution of the clinicians is limited to secondary and tertiary health facilities, whereas approximately 80% of TB treatment centers are located within the primary health centers.

**METHODS:**
- A retrospective data review between 2009-2011 in which records of age/ sex disaggregated TB case notification were analyzed to assess the trend of notification of TB among children.

**RESULTS:**
- Within the period reviewed case notification (new smear positive and all forms) were 44683 and 93149 in 2009, 44695 and 90546 in 2010, 44759 and 90379 in 2011 respectively. Childhood TB case numbers accounted for 3% of all new smear positive cases notified in 2009, and maintained at 2.5% for 2010 and 2011. The proportion of childhood cases among all forms of TB was 6% by the end of 2013. Overall, the notification of TB in children among new smear positive for this period and among all forms of TB in 2011 remained low which is not unrelated to low access to clinicians/ pediatricians; capacity for diagnosis by the latter and ineffective system for contact screening.

**CONCLUSIONS:**
- Potential barriers to address which require the concerted efforts among NTP and partners include task shifting of TB diagnosis in children by general health workers; capacity building among clinicians to diagnose childhood TB; full engagement of pediatricians, provision of adequate diagnostic support e.g. x-ray, culture; wide distribution of diagnostic guidelines and improvement in documentation.

**Presented by:**

**Keywords:** Tuberculosis, Childhood, Nigeria

**European Scientific Conference on Applied Infectious Disease Epidemiology**

24-26 October 2012 Edinburgh, UK

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Poster Abstracts – Poster Session B
Novel Methodological approaches for disease investigation surveillance and control

Enhancing syndromic surveillance of acute respiratory infections through self-collection of nasal specimens

Menas Alakmaw (Heilhofscher Centre for Infection Research, Germany), Anja Gubser---------------
(Ginzenberg City Health Centre for Infection Research, Germany), Klaus Schuhg---
(Heilhofscher Centre for Infection Research, Germany), Frank Pasveer (Heilhofscher 
Centre for Infection Research, Germany)

BACKGROUND:
Self-collection of nasal swabs can facilitate syndromic surveillance of acute respiratory infections (ARI) by providing diagnostic specimens in a cost-efficient manner. We examined the equivalence of self-and staff-collected nasal swabs in terms of acceptance, swabbing quality and detection of viral respiratory pathogens.

METHODS:
We conducted a prospective study among employees of our institution during the ARI season 2010/2011 (December-March). Symptomatic participants self-collected an anterior nasal swab from one nostril, and trained study personnel from the other. The participants self-collected another two nasal swabs at home on a subsequent day. Human b-actin DNA was detected in the swabs as a quality control. Viral respiratory pathogens were detected by multiplex RT-PCR (Seeplex RV15 kit, SeeGene, Eschborn, Germany).

RESULTS:
Of 84 participants, 56 (67%) reported at least one ARI episode. Self-swabbing was highly accepted by the participants. Most participants reported that self-swabbing was easy to perform. The amount of b-actin DNA per swab was higher in the self- than in the staff-collected swabs (p=0.008). b-actin concentration was higher in the nasal self-swabs collected at home on a subsequent day than in those collected on day 1 (p=0.005). A respiratory viral pathogen was detected in 31% (27/75) of staff- and in 36% (26/75) of self-collected swabs (p=0.36). With both approaches, the most frequently identified pathogens were rhinoviruses A/B/C (9/75 swabs, 12%) and human coronavirus OC43 (4/75 swabs, 5%). There was nearly perfect agreement between self- and staff-collected swabs in terms of pathogen detection (agreement=95%, kappa=0.85, p<0.0001).

CONCLUSIONS:
Nasal self-swabbing proved to be a highly accepted, feasible and valid method for identification of viral ARI pathogens in this population.

Development of an online Library of Incident and outbreak investigations: A new tool to support field investigations and the evidence-base, England, UK

Piera Batutkova (Health Protection Agency South West England, United Kingdom), Isabel Oliver (Health Protection Agency, United Kingdom), Exa Rashash (Health Protection Agency South East England, United Kingdom), Mark Raches (Health Protection Agency East of England, United Kingdom), Sam Organ (Health Protection Agency South West England, United Kingdom), Maya Gubin (Health Protection Agency South West Region, United Kingdom).

BACKGROUND:
Evidence-based Public Health is essential for problem solving and decision making. Many epidemiological findings, particularly outbreak investigations, remain unpublished in journals. In England we have developed a searchable library of outbreaks and incidents (O/I) to facilitate access to epidemiological evidence and lessons learnt during field investigations. It provides web-access to O/I reports to support field epidemiology decision and research and decision making.

METHODS:
We designed in-house a catalogue system based on Microsoft SQL Server 2012, supporting full-text search. We requested O/I control teams across England to send reports and other relevant documents (e.g. study protocols, questionnaires) prospectively and retrospectively to our administrator. The administrator enters key fields and uploads the report and documents with each record. The library provides unrestricted access for all HPA staff through HPA intranet, both locally and remotely.

RESULTS:
The library is now operational, and continuously being populated. The search functionality includes key fields, eg. ‘Organism’, ‘Setting’, ‘Source/Vehicle’, ‘Onset of First / Last case’. The user retrieves O/I records of interest including contact details of investigators and report authors if further information is required. The library contains no patient-identifiable information and provides advice on data protection.

CONCLUSIONS:
We demonstrate a newly developed tool that supports field investigations and the development of the evidence-based Public Health paradigm. It allows sharing knowledge and experience in epidemiological methods and techniques, helping healthcare practitioners and lessons identified during investigations in the entire HPA. Reviews of series of similar O/I can be used to inform guidelines and practice. Future developments of the system include alerts and notifications based on analysis of key fields.

Development of an online Library of Incident and outbreak investigations: A new tool to support field investigations and the evidence-base, England, UK

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Establishing a national Field Epidemiology Service in England

Jen McCullagh (Health Protection Agency (South West), United Kingdom), Catherine Quigley (Health Protection Agency, North West Region, United Kingdom), Paul Croxford (Health Protection Agency, United Kingdom), Isabel Oliver (Health Protection Agency, United Kingdom)

BACKGROUND: A review of epidemiology in the Health Protection Agency (HPA) recommended the strengthening of the function across the Agency, including establishing: clear leadership roles across the Agency, geographical dispersal of field epidemiology service operating to uniform high standards. Professional expertise is dispersed across epidemiologists, field epidemiology training programme.

METHODS: A field epidemiology advisory group was established to coordinate and oversee implementation and evaluation of a work programme to strengthen field epidemiology. The group works alongside the Director of the Field Epidemiology Training Programme, established in 2010.

RESULTS: We are implementing a new nationally managed and geographically dispersed field epidemiology service as part of Public Health England. The following have been established: a draft service specification including standards, professional esprit de corps amongst epidemiologists, field epidemiology training programme.

CONCLUSIONS: Educational cartoon booklets are a useful supplement to epidemiology training. They provide a fun summary of the training and a quick reference service. They were used in two trainings: in the Indian Ocean region (21 participants) and in an ECDC course for Mediterranean countries (22 participants). They were very popular and many copies were requested for colleagues of training participants. Participants gave a very positive evaluation of the cartoons and have since used them as a reference upon returning to work. A moustached Frenchman with glasses was a particularly favourite character. Translations into other languages were requested.

PRESENTED BY: Jen McCullagh

Keywords: Education, Epidemiology, Teaching; Books, Illustrated ESCAPE REFERENCE NUMBER: 201262

Use of log-binomial regression in the cohort studies

Karen Jakes (National Institute for Health and Welfare, Finland), Jyrki Montonen (University of Helsinki, Finland), Jukka Ollgren (National Institute for Health and Welfare, Finland)

BACKGROUND: Regression models have been used to control for confounding of food borne cohort studies, logistic regression has been commonly used due to its ability to converge in most situations. However, logistic regression provides estimates for OR which only can be used as RR estimates when the incidence is lower than 10%, an unlikely situation in food borne outbreaks. Recent developments have enabled to overcome convergence problems of log – binomial models.

METHODS: For the log-binomial model, egg mayonnaise RR 6.2 (2.2-14.7), garlic salad RR 6.1 (1.6-19.9) and rice salad RR 6.5 (2.2-19.0) were significant in the barbeque study, tiramisu RR 24.5 (11.1-89.3) was the only significant variable in the tiramisu study. The logistic regression identified coleslaw OR 3.3 (2.9-3.7) and tiramisu OR 66.3 (23.0-235.2) for barbeque and tiramisu studies, respectively.

RESULTS: We used two Epit Epidemiology case studies, “Gastroenteritis following a barbeque in Northern Ireland” and “Salmonella in tiramisu” as data. The cases were specified according to case definitions, only cases without missing values were used. For the barbeque study, any food containing mayonnaise (potato salad, rice salad egg mayonnaise, garlic mayonnaise and coleslaw) were used in the regression model, in tiramisu study, all dessert items (tiramisu, dark and white mousse, fruit salad, red jelly, vanilla sauce and beer) were included. We used both log and logistic regression models in R (packages glm and glm2) and Bayesian model in Winbugs by SPSS and R.

CONCLUSIONS: Log-binomial model should be used whenever possible for multivariable analysis of cohort studies in outbreak situations. Convergence problems were solved using Bayesian modelling. Log binomial model provided accurate and useful estimates of RR estimating the true risk.

PRESENTED BY: Karen Jakes

Keywords: Cohort studies, linear models, regression analysis, risk ESCAPE REFERENCE NUMBER: 201263

ESCAIDE Reference number: 201262

Drift influenza A(H3N2) virus variants originated during the last pandemic turn out to be predominant in the 2011-2012 season, Northern Italy.

Elisa Pantani, (Istituto Superiore di Sanità, Italy) Valerio Guidi (Istituto Superiore di Sanità, Italy), Marco Costantini (Istituto Superiore di Sanità, Italy), Eric Chatelet (Istituto Superiore di Sanità, Italy), Giuseppe Teresi (Istituto Superiore di Sanità, Italy), Paolo Pavone (Istituto Superiore di Sanità, Italy), Pierluigi Marongiu (Istituto Superiore di Sanità, Italy), Silvia Morosini (Istituto Superiore di Sanità, Italy), Gabriella Gori (Istituto Superiore di Sanità, Italy)

BACKGROUND: Within the framework of the Italian Influenza Surveillance Network, we performed molecular characterization of drift A(H3N2) variants and time-scaled phylogenetic analysis of viruses circulating during the 2011-2012 season in Northern Italy.

METHODS: In the 2011-2012 season, 568 samples were collected from outpatients with influenza-like illness (ILI) and analysed. The hemagglutinin (HA) gene of 42 A(H3N2) viruses was analysed both by maximum-likelihood method and Tamura-2 parameter model using MEAGA package, and by a Bayesian framework using Markov-Chain Monte Carlo method in BEAST program.

RESULTS: The 2011-2012 epidemic wave was sustained almost exclusively by influenza A(H3N2) viruses, (92.9% of total detection), predominating over influenza B viruses by a 4-fold margin. The consultation rates for ILI in the age group >65 years were 1.5 to 6-fold higher than those registered during the previous eight epidemics. The phylogenetic analysis showed A(H3N2) viruses belonging to A/Victoria/2/2009 genetic clade, characterized by substitutions in HA antigenic sites with respect to 2011-2012 vaccine strain. About 2/3 of sequences fell into group 6 A/Alaska/10/2011-like and 1/3 into group 3 – subdivided into 3A (A/Stockholm/99/2011-like), 3B (A/England/259/2011-like) and 3C (A/HongKong/199/2011-like). The time scale reconstruction of the phylogeny showed several independent introductions of A(H3N2) groups between summer and winter of 2011. However, the common origin of all circulating A(H3N2) strains dates back to the 2009 pandemic period (November 2009).

CONCLUSIONS: A close surveillance of genetic changes in the HA domain in a well-defined population may reveal immune escape. The Bayesian phylogenetic approach is of particular importance to evaluate the introduction and circulation of new variants in the area. Therefore, it should be implemented within the framework of influenza virological surveillance.

PRESENTED BY: Elisa Pantani

Keywords: Influenza A virus, epidemiology, genetic drift, time-scaled phylogenetic, viral evolution ESCAPE REFERENCE NUMBER: 201264

ESCAIDE Reference number: 201264

Keywords: Cohort studies, linear models, regression analysis, risk ESCAPE REFERENCE NUMBER: 201263

ESCAIDE Reference number: 201262

Keywords: Education, Epidemiology, Teaching; Books, Illustrated ESCAPE REFERENCE NUMBER: 201262

Keywords: Education, Epidemiology, Teaching; Books, Illustrated ESCAPE REFERENCE NUMBER: 201262

European Scientific Conference on Applied Infectious Disease Epidemiology 24-26 October 2012 Edinburgh, UK
Bacterial whole genome sequence data for epidemiological analysis

Peboeca A. Gladstone (University of Southampton, United Kingdom), Johanna M. Jeffersso (University of Southampton and University Hospital Southampton Foundation NHS Trust, United Kingdom), Saat M. Faiz (University of Southampton, University Hospital Southampton Foundation NHS Trust, United Kingdom), Stuart C. Clarke (University of Southampton, University Hospital Southampton Foundation NHS Trust and IH, United Kingdom).

BACKGROUND: Streptococcus pneumoniae is capable of causing invasive pneumococcal disease, whilst asymptomatic carriage is a recognised precursor to disease. The introduction of conjugate vaccines has affected pneumococcal epidemiology. The pneumococcus is routinely typed for surveillance purposes using genotypic methods such as polymerase chain reaction (PCR) for serotyping and Multi Locus Sequence Typing (MLST). We sought to utilise next generation sequencing technologies to genotype isolates from a carriage study during implementation of conjugate vaccines.

METHODS: Pneumococci were isolated from the nasopharynx of children 44 years old in a hospital inpatients department during winters 2006/7-2008/9. 9-528 pneumococcal isolates were whole genome sequenced using the Illumina HiSeq 2000 platform. Automated pipelines, software and scripts from the Sanger Institute were used to analyse the sequences. Pneumococal serotype, MLST and Pneumolysin toxin (Ply) allele were determined from the whole genome sequence data.

RESULTS: MLST performed using whole genome data reproduced conventionally assigned 5% in 50% of cases. There were no incidences of in silico serotype falsely positive and 1% in silico serotype falsely negatives. Twenty different Ply protein alleles including 1 novel protein alleles were detected, eight previously recognised Ply protein alleles were not observed in this population.

CONCLUSIONS: Conventional typing results were successfully reproduced from whole genome sequences. Determining serotype and Ply type from sequence data has the capacity to increased specificity and sensitivity to traditional genotyping methods. Whole genome sequence data are rich data sources offering genetic depth which can be utilised to perform multiple investigations from single datasets in addition to genome sequencing data and bioinformatics have the potential to replace some traditional genotypic methods and investigate genetic diversity in relation to clinical phenopma.
International outbreak investigation of Salmonella Heidelberg associated with in-flight catering, July 2011: The importance of international communication networks

Incorporating uncertainty into logistic regression models to explore the relative role of sensitivity and specificity of case definitions in a cohort study.

Nicholas Young (MVA, United Kingdom)

BACKGROUND:
The use of a robust clinical case definition is central to any epidemiological study, requiring a balance between sensitivity and specificity to produce statistically valid results. The aim of this study is to use statistical models incorporating uncertainty to explore the relative importance of sensitivity and specificity in defining cases in a cohort study of food-borne illness.

METHODS:
Using published data from an outbreak of Campylobacter this study used a statistical program to incorporate values of sensitivity and specificity into logistic regression algorithms, allowing estimation of the degree of uncertainty in exposure outcome associations. The effect of changing sensitivity and specificity on uncertainty, as estimated by the p-value for associations, was calculated.

RESULTS:
In the original study a clinical case definition of either diarrhoea or fever in those that ate at a particular venue after a specific date was used. Consumption of chicken salad was associated with an increased risk of infection (Relative Risk (RR) 3.59 (95% CI 1.34-9.41, p=0.002). Assuming 100% specificity of the case definition used in the outbreak study this modelling study is able to show that uncertainty for the association between chicken salad and illness would increase such that the p-value would be >0.01, >0.05 and >0.1 only when values of 52%, 48% and 42% were reached.

CONCLUSIONS:
This study uses statistical modelling to demonstrate the importance of specificity over sensitivity of the case definition in reducing uncertainty in a cohort study following a campylobacter outbreak.

PRESENTED BY:
Nicholas Young

Keywords: Sensitivity and Specificity Logistic Models Outbreaks Cohort studies
Escaride Reference Number: 2012477

Dengue Fever (DF), a High Mortality Outbreak Investigated in Samanabad Town Lahore, Pakistan – October-November, 2011

Shoahb Hassan (Health, Pakistan)

BACKGROUND:
DF, is emerging infectious mosquito-borne viral illness with high mortality due to complications while rapid transmission makes it leading public health concern. In August-November, 2011, Lahore, Pakistan faced DF epidemic with high morbidity and mortality. To reveal DF outbreak’s responsible factors and prevent future epidemics, we conducted a study in Samanabad town, Lahore, Oct Nov, 2011.

METHODS:
Of 37 deaths in the town, we enrolled 33 as cases to conduct case-control study. Case defined as a death attributed to DF during August-November, 2011 in Samanabad. To interview deceased’s (cases) family members and controls, identical structured questionnaire was used. Age and sex matched controls were selected from the neighborhood with ratio of 1:3.

RESULTS:
Most cases were male (67%) and median age 40 years (range 15-80 years). Case fatality rate was 3.45% with average length of hospital stay 2.5 days. Consecutive cases’ peaks were from weeks 37-42. Factors association for standing water (breeding sites) found in flower pots, bird feeders, and disposed cans had OR 3.6 (95% CI 1.34-9.98, p<0.05), OR 2.5 (95% CI 1.05-6.18, p<0.05) and OR 3.6 (95% CI 1.4-9.14, p<0.05) respectively. Using mosquito nets and repellants had protective association OR 0.15 (95% CI 0.04-0.5, p=0.05) and OR 0.2 (95% CI 0.08-0.52, p=0.05) respectively.

CONCLUSIONS:
Presence of mosquitoes breeding sites around house and lack of preventive measures were major associations found. With DF awareness campaigns already in place, to strengthen eradication of mosquito breeding sites, vector surveillance activities with entomologists as part of environmental approach to outbreak response was implemented and continued until outbreak’s end. Moreover DF prevention and control program establishment is under implementation to tackle this emerging issue.

PRESENTED BY:
Shoahb Hassan

Keywords: Mosquito-borne, Breeding, Flower Pots, Birds feeders
Escaride Reference Number: 2012764

Outbreak of Clostridium perfringens associated with beef mince

Thomas Ives (Health Protection Agency, United Kingdom), Russell Garton (Health Protection Agency, United Kingdom), Peter McKeown (Health Protection Agency, United Kingdom)

BACKGROUND:
On 7 June 2012, the Health Protection Agency (HPA) received reports of gastrointestinal illness at a residential care home in the Teesside area. Initial microbiological and descriptive epidemiology indicated that illness was caused by Clostridium perfringens. An analytic study was undertaken to investigate suspected food sources.

METHODS:
A retrospective cohort study was undertaken. Residents were interviewed to obtain food histories and kitchen staff interviewed to obtain food preparation details. Cases were defined as residents who reported gastrointestinal illness between 6 and 30 June. Data were entered using Epidata 3.1 and analysed using Stata v11.2.

RESULTS:
In total, 43 residents were included in the cohort. Gastrointestinal illness was reported by 15 (35%), of whom 5 were confirmed as having C. perfringens infection. Peak onset of illness was 7 June. Common symptoms were diarrhoea (100%), abdominal pain (20%) and vomiting (20%). Mean symptom duration was 2.8 days (range 1-7). In the univariate analysis mince juices (Risk Ratio (RR) =10.63, 95% Confidence Interval (CI) = 1.53-73.86, Exact p=0.003), mushy peas (RR=10.93, 95% CI=1.37-72.61, Exact p=0.005) and mashed potato (RR=3.4, 95% CI=1.37-72.26, Exact p=0.003) consumed on 6 June were significantly associated with illness. Stratification showed that once exposure to meat juices was adjusted for, mushy peas and mashed potato were no longer significantly associated with illness.

CONCLUSIONS:
This study provided strong evidence that illness was associated with eating mince juices initially cooked on 4 June and served in the form of mince & vegetable pie and/or gravy on 6 June. In combination with microbiological and environmental findings, these study results were used to provide an evidence base for public health actions.

PRESENTED BY:
Thomas Ives

Keywords: Clostridium perfringens Disease Outbreaks Cohort Studies
Escaride Reference Number: 2012766
tracking down the source of an ongoing outbreak of Legionnaire's disease, Fafe, Portugal 2011: close, but not there yet.

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BACKGROUND: An outbreak of Legionnaire’s disease has been ongoing in the municipality of Fafe in the north of Portugal since the first case developed symptoms on 26/11/2011. We initiated a case control study as part of an outbreak investigation to identify the source and prevent further cases.

METHODS: We defined a case as a Fafe resident with atypical pneumonia and a positive urinary antigen test, serology, or culture.

RESULTS: Between October 2011 and June 2012, 22 cases were notified (median age: 60 years, 21 females, 2 deaths), with a peak (n=15) in week 36 of 2011 and the 2 last cases in June. Cases clustered in Fafe town (95%). The 17 cases and 48 controls did not significantly differ in terms of exposure to potential sources. However, of 15 sources with an OR > 2.0, the PFGE for the 9 sources in the centre of Fafe (range: 43%-76%) were higher than those of the 6 sources in the periphery (range: 7.9%-12.6%).

CONCLUSIONS: Potential sources of Legionella infection in Fafe town centre would explain more cases than those in the periphery and should be considered for further environmental investigation and control measures. However, close proximity between these sources prevented the identification of a single one.

PRESENTED BY: B.C. de Jonge
Keywords: Legionnaires’, Disease Infectious Disease Outbreak Case-Control Studies ESCAIDE IDENTIFICATION NUMBER: 2012103

Hepatitis A outbreak in Lanchkhuti, Georgia June 2011

Archil Naneulashvili (National Center for Disease Control and Public Health, Georgia), Khatuna Zhelashvili (National Center for Disease Control and Public Health, Georgia), Rusudan Clikadze (National Center for Disease Control and Public Health, Georgia), Nino Menagashvili (Lanchkhuti Public Health Center, Georgia).

BACKGROUND: On Jun 21st 2011 Georgia’s National Centers for Disease Control (NCDC) learned of 10 patients with hepatitis symptoms occurring since Jun 16th in Lanchkhuti, Georgia. We investigate to verify an outbreak, detect the possible source and implement control measures.

METHODS: We conducted a case-control study. Suspect hepatitis A (HAV) case-patients were identified from surveillance reports. Controls were recruited from neighboring households of case-patients with at least one child under 14 years-old, and no history of HAV. We used a standardized questionnaire to assess three potential exposures: centrally piped water, individual well water, and food (prepared inside or outside home).

RESULTS: We interviewed 144 persons (94 cases, 50 controls). All case-patients met probable case definition (two were detected during control household interviews), eight had lab-confirmed HAV. Fifteen case-patients (28%) were 6-14 years-old, the remaining were 15+ years of age; 26 (48%) were female. Drinking water from centralized system was associated with disease for the first 30 reported cases (OR=3.2, 95%CI (1.1-9.6). Among subsequent cases, contact with persons probably infected with HAV was the only risk factor (OR=2.95% CI (1.6-4.77)). Central water supply was interrupted for reservoir repair in the period of probable contamination.

CONCLUSIONS: HAV outbreak was most likely due to contamination of centralized water system during recent repair. We advised to boil water before drinking and close street drinking water sources. Person-to-person transmission occurred for three months following the initial 30 cases. No water samples from time of initial exposure were available for analysis.

PRESENTED BY: Archil Naneulashvili
Keywords: Hepatitis, outbreak, water supply, Georgia ESCAIDE IDENTIFICATION NUMBER: 2012102

Outbreak of Meningococcal Meningitis – Harenabuluk District, Southeastern Ethiopia

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BACKGROUND: Ethiopia is one of the Sub-Saharan meningitis belt countries experienced the recent meningococcal meningitis outbreak in 2009. In March 2011, Harenabuluk District began detecting increasing numbers of meningococcal meningitis cases in Makagebele locality, which is not considered as traditional meningitis belt areas of Ethiopia. We investigated the risk factors for meningitis infection in this locality.

METHODS: We conducted an unmatched case-control study. A case was an individual who resided in Makagebele from 17 March to August 2011 and was treated for meningococcal meningitis. The controls were the neighbor of each case who did not suffer from meningitis. A structured questionnaire was used to collect information from cases and controls. Using univariable and multivariable unconditional logistic regression, we compared exposures for meningitis infection.

RESULTS: We investigated 49 cases and 49 controls. The univariate analysis identified 9 risk factors. In multivariable model, attendance at Koran teaching place (odds ratio [OR] = 6.1, 95% confidence interval [CI] = 2.5-15.2), having no ventilation (OR = 6.2, 95% CI: 2.7-16.6), living in one house with more than four peoples (OR=3.9, 95% CI: 1.6-9.1), having kitchen in the living room (OR=5.2, 95% CI: 2.3-12.3) were associated.

CONCLUSIONS: These findings are in agreement with the major risk factors responsible for meningococcal meningitis outbreak repeatedly occurs outside of African meningitis belt. In this condition, the epidemiology of meningococcal disease varies geographically and in time and the risk of acquiring the disease varies regionally, as well as with living conditions and behavior. Therefore, community health education is recommended.

PRESENTED BY: Gala Estela Yembo
Keywords: Meningitis Meningococcal South eastern Ethiopia 2011 ESCAIDE IDENTIFICATION NUMBER: 2012103
Public Health Response to an outbreak of Legionnaires’ disease (LD) in Edinburgh, Scotland, UK
Simone Thorn (NRS Lothian, Public Health Department, United Kingdom), Richard Othman (NRS Lothian, Public Health Department, United Kingdom), Faiz Lahore (NHS Lothian, United Kingdom), Alison McCallum (NRS Lothian, Public Health Department, United Kingdom), Darran McComish (NRS Lothian, United Kingdom), Dorothy Affleck (NRS Lothian, United Kingdom), Martin Dorobhy (Health Protection Scotland, United Kingdom)

BACKGROUND: On 15 May one case of Legionnaires’ was reported. Further notification led to four confirmed and four suspected cases by 19 June. An incident management team (IMT) was convened, consulting in the areas where cases lived or had visited were shut closed, and clinicians and public alerted. The Scottish Government established their resilience room on 20 June. A helpline was in place on 2 June and leaflets distributed from 7 June.

METHODS: Initial investigation included comprehensive assessment of cases including in depth diaries and dates of onset of illness, enhanced surveillance, environmental investigation, demographic and wind analysis. Immediate action was taken to sample and disinfect potential sources, implement active case finding, alert primary care, reassure the public and inform public health agencies across the UK.

RESULTS: There have been 54 confirmed and 46 suspected cases. An additional 644 urine samples and 637 symptom samples have tested negative. Case mapping suggests all were resident or had links to SW Edinburgh. Legionella pneumophila serogroup 1. Epidemiological and meteorological evidence suggest a common outdoor source over South-west Edinburgh over the duration 17 May to 6 June. Clustering of onset dates indicate a point source which has now stopped. Those affected were 12-85 years, 73% male, likely to smoke and have underlying illnesses. There were three deaths, 71 patients hospitalised with 19 admitted to critical care.

CONCLUSIONS: This outbreak is the largest in Scotland. It comprised a well demarcated cluster of cases in a densely populated area. Rapid multiagency action and early case finding and action on contingency plans appears to have mitigated the effects of the exposure. Ongoing work will assess the burden of disease and impact on the community.

PRESENTED BY: Richard Othman
Keywords: Legionella, outbreak, cooling towers, Edinburgh
ESCAIDE REFERENCE NUMBER: 20121046

Public Health issues in mass gathering events
Knowledge of H1N1 and respiratory symptoms among returning Haj pilgrims, Kadunstate, North western Nigeria
Aisha Ahmed Akebakar (Ahmadu Bello University, Nigeria), Rabo Sabiela (Ahmadu Bello University Zaria, Nigeria), Patrick M Nyagu (CDC Nigeria, Nigeria)

BACKGROUND: Mass gatherings present health risks to travellers. Outbreaks of meningitis, cholera and influenza have been reported. Annual Haj pilgrimage to Mecca in Saudi Arabia is a fundamental religious site in Islam that is observed by Muslims throughout the world. It’s currently the largest annual pilgrimage in the world and is the fifth pillar of Islam. Nigeria is one of the countries with an estimated 60-000-050 pilgrims annually attending the event. The aim of the study was to assess knowledge of H1N1 and respiratory symptoms amongst pilgrims.

METHODS: We conducted a descriptive cross-sectional study. We interviewed 565 returning pilgrims in Kaduna state. Pilgrims were interviewed on knowledge of H1N1 and respiratory symptoms they had on return to Nigeria.

RESULTS: Mean age of pilgrims was 42.7 years (25-64) age range 19-85 years, 284 (50.6%) were males. 318 (56%) were aware of H1N1, the main source of information was the pre Haj lecture in 216 (86%) other source of information was mass media in 25(10%). Out of 318, 71 (24%) were aware H1N1 is spread by air droplets, coughing or contact with a case. 152 (47%) correctly knew how to prevent oneself from becoming infected. On return 300 (53.3%) had respiratory symptoms. Symptoms include cough (12056.6%), sore throat (60.10%) and catarrh 150 (23.3%).

CONCLUSIONS: The prevalence of respiratory symptoms in returning pilgrims was high. Haj lectures present a good opportunity for health education messages for pilgrims as part of their travel advisory.

PRESENTED BY: Aisha Ahmed Akebakar
Keywords: Mass gatherings, pilgrimages, H1N1, respiratory diseases
ESCAIDE REFERENCE NUMBER: 2012748

Public Health issues in mass gathering events
Knowledge of H1N1 and respiratory symptoms among returning Haj pilgrims, Kadunstate, North western Nigeria
Aisha Ahmed Akebakar (Ahmadu Bello University, Nigeria), Rabo Sabiela (Ahmadu Bello University Zaria, Nigeria), Patrick M Nyagu (CDC Nigeria, Nigeria)

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PRESENTED BY: Aisha Ahmed Akebakar
Keywords: Mass gatherings, pilgrimages, H1N1, respiratory diseases
ESCAIDE REFERENCE NUMBER: 2012748
Vector Borne Diseases

Lyme borreliosis in Latvia: epidemiological analysis of cases reported in 2007-2011
Irina Lucenko (Centre for Disease Prevention and Control, Latvia), Anite Bormane (Centre for Disease Prevention and Control, Latvia), Juris Parmelevics (Centre for Disease Prevention and Control, Latvia), Ludmila Velkeva (Riga Stradiun University, Latvia), Girts Brigs (Riga Stradiun University, Latvia), Angelina Krizmo (Riga Stradiun University, Latvia)

BACKGROUND: Lyme borreliosis (LB) dominates between tick-borne diseases in Latvia since 2001. The annual incidence rate during past 5 years ranged from 25.5 to 38.8 per 100,000. Two tick species transient LB in Latvia – Ixodes ricinus, present in all territory of Latvia, less in its eastern part, and Ixodes persulcatus, dominating in country's eastern part.

RESULTS: Reports of the epidemiological investigation for notified individual cases of LB were analysed for 2007-2011. Calculation of incidence rates by territories, age and gender groups, calculation of the relative risk and odds ratio were performed, as well as seasonality, places of tick attachment to human bodies, duration of tick attachment and tick removal practices were analysed. MS Excel and SPSS software was used for statistical analysis.

RESULTS: Totally, 3530 cases of LB were reported during the study period. Incidence rates have varied by territories, age groups and gender. Male/female ratio was 54, mean age 47.5 years. Enzyma migrants cases comprise 82.8% of all cases. Disease onset for most of patients (64.4%) was between July and September. 69.7% of patients reported tick bite. There are differences in anatomical places of tick attachment between children and adults, as well between Latvian regions. In 88.2% of patients, the duration of tick attachment was less than 24 hours. Differences were found in tick removal pracites by age and employment groups.

CONCLUSIONS: The incidence rate of LB was significantly higher in females than in males, the majority of cases were among persons of medium age and elderly. LB has high public health importance in Latvia; therefore it is necessary to sustain physicians and public awareness at high level, with special attention on prevention and post-exposure measures.

PRESENTED BY:
Irina Lucenko (Centre for Disease Prevention and Control, Latvia)
Keywords: Lyme borreliosis Latvia, Ixodes tick epidemiology public health
ESCAIDE REFERENCE NUMBER: 2012765

Assessment of laboratory capacities for preparedness and response to Crimean-Congo haemorrhagic fever in Europe
Maria Dolores Fernandez-Garcia (ECDC-Instituto de Salud Carlos III, Spain), Leticia Frances (I. Spain), Anahel Negrau (Instituto de Salud Carlos III, Spain), Oliver Dereure Marteau (Robert Koch Institute, Germany), Antonio Terriza (Instituto de Salud Carlos III, Spain), Harve Zeller (ECDC, Sweden), EMN members (European Network for Diagnostics of Imported Viral Diseases-ECDC, Sweden)

BACKGROUND: Crimean-Congo haemorrhagic fever (CCHF) is a highly contagious disease caused by a bunyavirus (BUN) virus which may have a high fatality rate. CCHF has re-emerged the last decade in South-Eastern Europe and there is a need for further geographic distribution in Western Europe. Here we aimed to assess laboratory preparedness and response (P&R) capacities for CCHF in Europe.

METHODS: A structured questionnaire was sent to European expert and reference laboratories in February 2012. Information was requested on case definition, P&R plans, training, diagnostic tests used and biosafety issues.

RESULTS: Overall, 26/32 countries responded, including seven of the 11 countries with endemic regions. Majority (83%) use a generic case definition and a P&R plan for viral hemorrhagic fever, instead of specific ones for CCHF. Regarding human resources, 21/26 had trained laboratory personnel for sample management, but further training was deemed desirable by 7 of them (65%). All countries that reported having diagnostic capacities (20/26) based it on a large diversity of molecular and serological diagnostic methods. Among countries doing viral isolation (10/20), five countries, including three endemic, declared not working under recommended BSL4. Inactivation of CCHF suspected specimens was done in BSL3 (50%), followed by BSL4 or BSL2 (55% each). Only 2 out of 6 countries doing referral of samples had material transfer agreements for class 4 pathogens.

CONCLUSIONS: The survey revealed a need in Europe for a standardized P&R plan and case definition specific for CCHF. Because biosafety practices, diagnostic tests and personnel training differ widely across countries, standardized protocols, methods and programs should be encouraged. Although overall diagnostic capacities are suitable, strengthening biosafety measures is recommended particularly in endemic regions.

PRESENTED BY:
Maria Dolores Fernandez-Garcia
Keywords: Crimean-Congo hemorrhagic fever, preparedness, response, biosafety
ESCAIDE REFERENCE NUMBER: 2012926

Monitoring of Ixodes ricinus activity and its infection rates with Borrelia burgdorferi s.l in Bavaria
Christiane Klir (National Reference Centre for Borrelia, Bavarian Health and Food Safety Authority, Germany), Johannes Brenauer (National Reference Centre for Borrelia, Bavarian Health and Food Safety Authority, Germany), Mohle Tissier (National Reference Centre for Borrelia, Bavarian Health and Food Safety Authority, Germany), Andreas Sing (National Reference Centre for Borrelia, Bavarian Health and Food Safety Authority, Germany), Volker Frange (National Reference Centre for Borrelia, Bavarian Health and Food Safety Authority, Germany)

BACKGROUND: Ixodes ricinus (IR) is the most abundant tick species causing vectorborne infectious diseases such as TBE and Lyme borreliosis (LB) in Germany. This study focused on collecting data affecting questing tick activity (TA), such as abiotic (temperature, humidity) and biotic (landuse) factors and to assess regional variations of Borrelia burgdorferi s.l (BBsI) prevalence in Bavaria.

METHODS: Questing IT ticks were collected by standardized flagging at 22 sites of various landuse in Bavaria. Abiotic and biotic variables were recorded. IR were screened for the prevalence of BbsI.

RESULTS: In 2010 and 201157 (39 larvae, 465 nymphs, 302 adults) were collected. TA occurred at temperatures from 6°C to 33°C and humidity of 29% to 93%. In 2011 mean tick activity (TA) was significantly higher (8 ticks/100sqm) than in 2010 (4 ticks/100sqm). Depending on landuse, overall diagnostic capacities are suitable, strengthening biosafety and a P&R plan for viral hemorrhagic fevers, instead of specific ones. EMN members (European Network for Diagnostics of Imported Viral Diseases-ECDC, Sweden)

CONCLUSIONS: This study proved an evident broad tolerance of questing IR ticks towards temperature and humidity. Landuse (anthropic effect) rather than abiotic factors seems to be driving force affecting TA. These data on TA and BbsI prevalence will serve as baseline for future longitudinal surveillance on TA and tickborne diseases.

PRESENTED BY:
Christiane Klir
Keywords: Lyme borreliosis Ixodes ricinus Borrelia burgdorferi s.l Bavaria surveillance
ESCAIDE REFERENCE NUMBER: 2012952

Burden of disease
Infectious diseases in the 65+ population, Norway, 1993-2011: need for a shift in public health priorities?
Anneke Steens (Norwegian Institute of Public Health, Norway), Hanne Marie Erlendsen (Norwegian Institute of Public Health, Norway), Hans Blystad (Norwegian Institute of Public Health, Norway)

BACKGROUND: Due to the aging population, the burden for the health care system might increase and require changed public health priorities. As infections occur more frequent and are often more severe at older age, we facilitate defining priorities by describing the incidence and trends of infectious diseases (ID) among the 65+ population in Norway.

METHODS: We included all eligible cases of the 58 IDs notifiable to the national notification system between 1993 (time since established case definitions) and 2011. We calculated current incidences of IDs by averaging annual incidences over the last 5 years (2007-2011), to get stable estimates for ranking. Trends were determined by the change in incidence from 1993 onwards. We used incidence rate ratios (IRR) to compare results of those aged 65+ with those aged 20-64 years.

RESULTS: Pneumococcal invasive disease was the most common ID among 65+ (incidence 58/100,000), followed by pertussis (54/100,000) and campylobacteriosis (30/100,000). For most ID the incidence did not change overtime, though, the incidence of MRSA infections increased from 1/100,000 to 4/100,000 from 1993 (first year of notification) to 2011. Overall, less cases were notified among 65+ compared to 20-64 year olds (IRR=0.7). The IR of the each of the invasive bacterial diseases and antibiotic resistant infections were above 1.5 (i.e. more common in 65+ than in 20-64 year olds), while the IR of each food and water-borne disease, blood-borne disease / STI and (non-invasive) vaccine preventable disease were below 1, with the exception of tetanus.

CONCLUSIONS: Our results indicate that a greater impact on the incidence of infectious diseases in 65+ would be ensured by focusing public health efforts on preventing invasive bacterial disease and antibiotic resistant infections.

PRESENTED BY:
Anneke Steens
Keywords: Public Health Surveillance Population Surveillance Disease notification Communicable disease control Community, Acquired Infections
ESCAIDE REFERENCE NUMBER: 2012725

In the context of the European Union's emerging infectious diseases strategy, ESCAIDE and the European Centre for Disease Prevention and Control (ECDC) are holding a conference focusing on infectious diseases in the 65+ population, Norway, 1993-2011: need for a shift in public health priorities? The conference aims to address the burden of infectious diseases in the older population and to discuss the need for a shift in public health priorities. Experts from Norway and abroad will share their findings and insights.
Systematic review of disability weights: How do Europeans value conditions related to infectious diseases?

Joanne Haagsma (Erasmus MC, The Netherlands), Susanne Polliner (Erasmus MC, The Netherlands), Alessandra Cencini (ICID, Sweden), Edvardus Cabilis (ICID, Sweden), Aye Hawa (National Institute for Public Health and the Environment, The Netherlands)

BACKGROUND: The disability adjusted life year (DALY) is widely used to assess the public health impact of different health problems. The disability weight is an essential factor for establishing DALY. Disability weights reflect the impact of a disease and have a value that ranges from 0 to 1. This value is based on preferences obtained from a panel of judges. For the Burden of Communicable Disease (BComD) study a toolkit was developed for calculation of DALYs of selected pathogens, using the Global Burden of Disease (GBD) disability weights. However, disability weights for many health outcomes are not available from the GBD set. Moreover, GBD disability weights might not fully reflect European preferences. Objective: To systematically review all studies that developed disability weights and to critically assess the methodological design choices (health state description, panel composition and valuation method). Furthermore, disability weights of eight specific diseases were compared.

METHODS: Disability weights studies in international peer-reviewed journals were identified. Electronic database search included Pubmed and EMBASE. Studies were collated by design and methods, and evaluation of results. RESULTS: Twenty-two studies met the inclusion criteria of our review. Nine studies were performed in Europe. There is considerable variation in methods, though most studies used a panel of medical experts that provided the values. Comparison of disability weights showed that values differ significantly across studies. For many health outcomes associated with infectious disease, disability weights are not available from any of the existing studies.

CONCLUSIONS: In terms of comparability of the resulting YLD, the global use of the same set of disability weights has advantages, though methodological constraints, infrastructural differences and practical limitations should be taken into account.

PRESENTED BY: Isioburu Koonungu
Keywords: Disability, rotavirus, childhood, RT-PCR, Burkin Faso
ESCAIDE REFERENCE NUMBER: 20120572

Comparing the impact on population health of two simultaneous outbreaks of emerging infectious diseases in the Netherlands, 2009, using disability adjusted life years.

Russel John Brooke (University Medical Center, The Netherlands), Alex van Loon (National Institute for Public Health and the Environment, Bilthoven, The Netherlands), Ge Donker (Netherlands Institute of Health Services Research, Utrecht, The Netherlands), Bente van der Heijden (National Institute for Public Health and the Environment, Bilthoven, the Netherlands), Magreet van Rijnsoever (National Institute for Public Health and the Environment, Bilthoven, The Netherlands)

BACKGROUND: In 2009 the Netherlands experienced a large outbreak of Q fever and the novel 2009 pandemic influenza-A(H1N1). While many studies have estimated the impact on population health of the influenza pandemic, it is not clear what the impact of a similar but more localized outbreak was in comparison. We used disability-adjusted life years (DALYs) as a measure for estimating the burden of Q fever and influenza in 2009 in the Netherlands.

METHODS: We age-stratified data for Q fever and influenza into four groups. Each group is based on the Dutch National Institute for Public Health and the Environment (NIVEL) and Netherlands Institute for Health Services Research (NIVEL) respectively. Outcome trees were constructed including chronic Q fever and post infectious fatigue syndrome as sequelae for Q fever and sepis, otitis media as sequelae for influenza. Number of life years lived with disability and life years lost computed by health outcome, stratified by age and sex.

RESULTS: In total, 285 fecal specimens were collected. Rotavirus antigen was detected in 50% (85/188) of the patients. Ninety-five percent of the cases were children under 2 years. Rotavirus-associated diarrhea occurred mostly during the cold dry period from December to February. Moreover, comparison of symptoms between patients with and without rotavirus antigen detection showed that fever (75 vs. 50%, P<0.001), vomiting (70% vs. 67%, P<0.001) and dehydration (42% vs. 18%, P<0.001) were more common in rotavirus infections. The most prevalent genotypes were G4P[8] (15%), G1P[6] (10%), G3P[9] (14%) and mixed G4P[8] (1%).

CONCLUSIONS: This study shows that rotavirus causes severe diarrhea in children under 2 years in Burkina Faso. Dehydration, which can easily be life threatening in this age group, was found to be more common in rotavirus-associated diarrhea. Rotavirus genotypes known to cause severe disease have been detected in this study. All these finding underscore the importance of the planned rotavirus vaccine introduction.

PRESENTED BY: Isidore Koonungu
Keywords: Diarrhea, rotavirus, children, RT-PCR, Burkin Faso
ESCAIDE REFERENCE NUMBER: 20121059

Assessment of the characteristics of neonatal tetanus reported to the surveillance system Akwa Ibom State, Nigeria between 2008-2011

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BACKGROUND: Neonatal tetanus (NT) is a public health problem targeted for elimination. NT has high morbidity and mortality in our environment. The strategies for the elimination are high coverage with tetanus toxoid among pregnant women and in high-risk areas among all women of child-bearing age as well as improved access to clean delivery services. We conducted the study to determine clinical pattern, the promptness of surveillance and predisposing factors for NT.

METHODS: Secondary data of suspected NT cases from 2008-2011 reported and verified by the surveillance system were analysed. We adopted case verifying investigation forms. Data was analysed with Epi-info software.

RESULTS: Total of 70 cases were reported, 58.6% were females, female: male ratio 0.5. Case fatality rate (CFR) 44.4%, median age at onset of symptoms=7 days and mean days between symptoms and death=1.77 days. Major symptoms include stopped crying/sucking in the first 48hours=72.9% (CI 60.9%-83.8%), neck stiffness=78.6% (CI 62.9-87.5%), convulsion 62% (CI 52.1%-72.4%), other complications=37.5% (CI 25.3%-49.5%). Mean days between reporting and verification of cases v=1.73, SD=4.1 with 53.6% of cases reported by NFT falciparum. Factors predisposing to NNT include: poor antenatal clinic (ANC) 61.4%, p=0.0. Cutting cords with unsterilized blade 68.6%, p=0.01, first born 62.15, p=0.03, unskilled attendant at birth, p=0.07, unhygienic methods of treating cords 82.9%, p=0.06, death is associated with poor ANC, p=0.01, no treatment option p=0.002.

CONCLUSIONS: Poor and unhygienic treatment of the cord, poor ANC, low immunization, contribute to the NNT. Active case search, health education on the need for improving immunization status of women and skilled manpower at birth are cardinal to NTN elimination.

PRESENTED BY: William Mechukwu
Keywords: Neonatal Tetanus, Surveillance, Akwa-Ibom State, Nigeria
ESCAIDE REFERENCE NUMBER: 20121079
Plan for surveillance and control of the effects of heat waves. Has the impact of extreme temperatures on mortality in the city of Madrid decreased? 

Dante Roger Ceniza Lévano (Instituto de Salud Carlos III de Madrid, Spain), Fernanda Simão (National Center for Epidemiology, Carlos III Health Institute, Spain), Aurelio Tobias Garces (Institute of Environmental Assessment and Water (IDAEW), Spain), Julio Diaz (National School of Public Health (ISCIII), Spain)

BACKGROUND: Numerous studies in Europe have shown an increase in the number of deaths attributed to excessive temperature during the summer of 2003. In Madrid, there was an estimated excess mortality of 12%. As a result, since 2004, in several countries including Spain, plans were implemented for surveillance and control of the effects of heat waves (PVCEDC) to minimize the impact of high temperatures on health. The objective was to assess whether implementation of PVCEDC has reduced the impact of mortality attributable to heat in the city of Madrid.

METHODS: Ecological design study of time series for the period 1990-2009. Daily mortality (C0-96) was provided by the National Institute of Statistics. The daily maximum temperature from the Madrid Retiro observatory provided by the Meteorological Agency, was used. Previous studies identified a threshold temperature for Mortality of 36.6 °C. The excess mortality attributed to extreme heat was quantified with two methods. First, univariate ARIMA models were used to determine the expected daily mortality and excess mortality was calculated as the difference between observed and expected mortality. Also, a multivariate ARIMA model with the maximum daily temperature and external variable was used to determine the impact of temperatures above 36.6 °C on the total daily mortality.

RESULTS: A decrease in excess mortality attributable to heat before and after implementation of PVCEDC in Madrid, was not detected. As a result, we investigated whether the implementation of this program has reduced the impact of mortality attributable to heat in the city of Madrid.

CONCLUSIONS: The results of this study suggest that it cannot be concluded that the PVCEDC implementation has resulted in a decrease in mortality attributable to high temperatures in Madrid.

PRESENTED BY: Dante Roger Ceniza Lévano
Keywords: Extreme temperature, extreme heat, death, surveillance, death
ESCAIDE REFERENCE NUMBER: 2012656

Developing nosocomial surveillance reports as needed by stakeholders

Oliver Kacelnik (Norwegian Institute of Public Health, Norway), Katrine Borgen (FHI, Norway), Christina Linares Gil (National Institute of Public Health, Spain), Julio Diaz (National School of Public Health (ISCIII), Spain)

BACKGROUND: Since 2004 numerous reports of enteropathogenic Escherichia coli have been required to report severe pediatric enterovirus infection with complication since July 2010. We reviewed the epidemiology of the cases recorded.

METHODS: To increase the use of this surveillance data among stakeholders, we routinely collected epidemiological, clinical and laboratory information from every reported case through interviewing of patients, next-of-kin, attending physicians and reviewing hospital charts and laboratory records. We traced their contacts to see if there was any associated outbreak. A clinical case was defined as children >1 month and <2 years old, who presented with clinical conditions including meningitis, encephalitis and myocarditis, with clinical specimen positive for enterovirus (other than poliovirus) by culture or PCR.

RESULTS: A total of 35 cases were reported from July to June 2011. 74% occurring from June to September. Twenty cases (65%) were younger than 1 year, 8 cases (46%) between 1 and 5 years. 3 cases (18%) between 5 and 12 years. Male to female ratio was 1.6. Thirteen (42%) cases were locally acquired infection. Predominant symptoms included fever (37%), neurological symptoms (35%) and vesicles (26%). Comorbid conditions included meningitis (6%), encephalitis (27%), myocarditis (4%). Common strains included Coxsackie A6 and Coxsackie B5. Coxsackie B2 and Coxsackie B5. Coxsackie B5 infection was predominated in 11 year group (40%). All cases showed good past health except one with congenital heart disease. All required hospitalization with a median of stay of 8 days (2 to 40 days). The case fatality ratio was 8%. Five cases’ households were associated with hand-foot-mouth disease outbreaks.

CONCLUSIONS: Besides enterovirus, Coxsackie B and A also posed significant risk of causing severe enterovirus complications on children especially infants in Hong Kong. Clinicians should consider enterovirus infections in children presenting with compatible symptoms especially during summer seasons.

PRESENTED BY: Yvonne Wu Yau LUK
Keywords: Enterovirus, infection, pediatrics, complications
ESCAIDE REFERENCE NUMBER: 2012644
The importance of the participant’s viewpoint when designing surveillance

Agota Pulsus (Swedish Institute for Communicable Disease Control, Sweden), Annemarie Cornelis (Kempeningeziekenhuis, Belgium), Harmen Wortel (SL, Sweden), Sharon Winstanley-Benners (Swedish Institute for Communicable Disease Control, Sweden), Amanda Prytherch (Karolinska Institute, Sweden)

BACKGROUND: We often rely on the general public as informants when conducting surveillance of the impact of infectious diseases on society. Three such surveillance systems, based on participants themselves reporting when they fall ill, were implemented in Sweden during the influenza season 2011–2012: (1) Influenzakaka, which relied on media attention for recruitment and on weekly email reports; (2) Sukraaport, which recruted from a random sample of the population and depended on participant-initiated reports; and (3) SWED-E-I, which mimicked Sukraaport with added self-sampling for viruses. Approximately 2,500 individuals participated in each system. To improve the surveillance, we carried out a qualitative study of the participants’ experience of the respective system.

METHODS: Thirty-nine interviews were conducted with respondents from all three systems. Approximately 2,500 individuals participated in each system. To improve the surveillance, we carried out a qualitative study of the participants’ experience of the respective system.

RESULTS: Twenty-nine interviews preliminarily indicate that in general participants joined because it was a good cause originating from a reputable organization, and found reporting and self-sampling easy. Reminders to report, weekly email reports (Influenzakaka), and a refrigerator magnet (Sukraaport) were considered useful. Negative aspects were: the weekly newsletters not being read in detail (Influenzakaka); confusion as to what to report (Sukraaport); and disappointment with virus results not including all infectious disease agents (SWED-E-I).

CONCLUSIONS: The results show the importance of considering the viewpoint and experience of the participant when designing a surveillance system that relies on the general public. Many of the issues highlighted, positives and negatives, are crucial for participants’ motivation and the quality of the data collected, and thus for the success of these and other surveillance systems and prospective studies relying on the public.

PRESENTED BY: Petra Melikova

Keywords: Surveillance Qualitative Research Communicable Diseases Interviews as Topic ESCAIDE Reference Number: 2012/78

Assessment of Integrated Disease Surveillance and Response Strategy Implementation in Kaduna state, North western Nigeria–2010

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BACKGROUND: Widespread epidemics of yellow fever and cerebrospinal meningitis across the African sub region in the 90s was largely attributed to poor surveillance systems which were neither able to detect communicable diseases on time nor mount effective response. Effective communicable disease control relies on effective response systems which are dependent upon effective disease surveillance. Integrated Disease Surveillance and Response strategy was adopted by the AFRO members of the WHO to improve surveillance activities. This study was conducted to assess ISDR implementation in Kaduna state.

METHODS: A cross sectional descriptive study was carried out in Kaduna state and in selected Local Government Areas (LGAs) and health facilities using interviewer administered questionnaires of an adaptation of the World Health Organization Protocol for the Assessment of National Communicable Disease Surveillance and Response systems.

RESULTS: Out of 21 health facilities 8(38%) did not have any case definition for the priority diseases. There is no Epidemic Management Committee at state level. Data analysis was available in 4 (19%) of health facilities. A reporting system was available in 12 (57%) of health facilities. Thirteen percent of health facilities reported receiving feedback from the LGAs. There was no feedback from the state to the LGAs nor was there feedback from the national to the state level.

CONCLUSIONS: The implementation of ISDR in Kaduna state is poor. Feedback should be sent from higher levels to lower levels. Standard case definitions, should be made available and used in all health facilities. An Epidemic Management Committee should be set up at state level to make ISDR fully functional at all levels from the health facility to LGA to state level in Kaduna state.

PRESENTED BY: Aisha Ahmed Alabukar

Keywords: Surveillance, ISDR, epidemics, assessment ESCAIDE Reference Number: 2012/79

Successful investigation of a fatal Legionnaires’ disease case and the implementation of control measures potentially averted an outbreak

Joana Soares Ferreira (Northern Regional Health Administration, Portugal), Francisco Borges (Northern Regional Health Administration, Portugal), Fernanda Santos (Northern Regional Health Administration, Portugal), Andreia Pedro (Northern Regional Health Administration, Portugal)

BACKGROUND: In Portugal, notification of Legionnaires’ disease (LD) is mandatory since January 1999. The health authorities investigate any notified case and implement the needed prevention and control measures.

METHODS: In June of 2011 a confirmed case of LD was reported to the local health authority in a municipality in the North of Portugal. Epidemiological and environmental enquiries were performed and adequate control measures were implemented.

RESULTS: An 85-year-old woman institutionalized in a nursing home, with no known underlying medical risk factors, developed LD. She was hospitalized and died 14 days after symptom onset. She stayed in the institution during the incubation period, with only two short exits: one to visit her daughter’s house and another to vote in an election. The environmental investigation, including sampling of water systems for Legionella analysis, identified a Legionella pneumophila count of 153 CFU/l in water samples from the shower of the case’s room. Counts of 154 and 6 CFU/l in water samples from the shower of another room and from the wash hair unit of the hair salon located inside the institution, respectively, were also identified. These results showed that the water system was the most likely source of infection. Drainage, cleaning and biocide treatment were conducted to eliminate Legionella from that system and their effect were monitored by analyzing water samples collected, one week and five months after the first microbiological results, from various sites in the nursing home. No sample showed contamination with Legionella and no cases have been detected since then.

CONCLUSIONS: The timely investigation of one LD case and the implementation of appropriate control measures potentially averted the occurrence of a Legionella outbreak.

PRESENTED BY: Joana Soares Ferreira

Keywords: Legionnaires’ Disease, Legionnaires’ Disease Outbreaks, Disease Notification, Death ESCAIDE Reference Number: 2012/77

European Scientific Conference on Applied Infectious Disease Epidemiology 24-26 October 2012 Edinburgh, UK

European Scientific Conference on Applied Infectious Disease Epidemiology 24-26 October 2012 Edinburgh, UK
The use of diagnostic databases for arbovirus monitoring and surveillance; a feasibility study with a focus on dengue virus.

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BACKGROUND: For arboviruses, limited monitoring and surveillance (MOSS) is performed in a large part of the developing world. Travelers are potential sentinel for real-time monitoring of arbovirus exposure at travel destinations. However, the value of data on travel-related arbovirus disease for MOSS would strongly depend on the quality of the diagnostic requests concerning these travelers. The aim of this study is to evaluate the feasibility of using the information in diagnostic databases to monitor trends in arbovirus exposure in Dutch travelers, using dengue virus (DENV) as a model.

METHODS: All diagnostic requests for DENV were imported from the laboratory information systems of the three main arbovirus diagnostic laboratories in the Netherlands in the period 2000-2011 into an Excel database, along with a minimal dataset (sex, age, travel destination, vaccination history, symptoms). Data formats were reviewed and harmonized, and statistically analyzed for comparability of patient population, and trends of DENV IgM and IgG positive patients using multiple cut-offs in ‘R’. Trends in DENV reports per country according to the WHO DENV report system were used to verify outcomes.

RESULTS: The completeness of the minimal datasets vaccination history, travel history and clinical were low, stressing the need for re-evaluation of data logging methods. Significant differences in patient categories and completeness of data were observed between centres. However, trends in diagnostic results were generally comparable. Additionally, a general correlation could be observed between WHO DENV surveillance data and the number of DENV positive results to the top four travel destinations of Dutch travelers.

CONCLUSIONS: When taking these factors into account, data can potentially be used for trend monitoring as part of a DENV MOSS.

PRESENTED BY: Natalie Clifton

Keywords: Arbovirus, dengue, monitoring and surveillance, serodiagnosis

ESCAIDE REFERENCE NUMBER: 2012779

Better Feedback – Higher Compliance. How to improve reporting compliance for communicable diseases: results of a focus group consultation in Germany.

Andreas Gläßer (Robert Koch Institute, Germany), Simon Kirschner (Robert Koch Institute, Germany), Ivona Bresler (Robert Koch Institute, Germany)

BACKGROUND: Since 2001, Germany has a partially electronic reporting system for communicable diseases (RSCD). Cases are reported by medical practitioners, hospitals and laboratories via fax, mail or telephone to the local health authorities (LHA), where they are assessed and then electronically transmitted via the regional to the national level. After the pandemic 2009 and the EHEC outbreak 2011, an assessment is underway, to advise whether the German system can be improved by introducing an electronic reporting, in order to reduce delays and enhance data quality. Part of this process is the consultation of different groups of reporting people to better understand their expected benefit regarding a RSCD.

METHODS: Four focus groups were conducted, with 12-15 persons each, contributing experience from hospitals, private practitioners, laboratories and LHA. Participants were asked to express their expectations towards a modern reporting system and to identify factors that could influence motivation to participate.

RESULTS: For participants a timely feedback is essential, preferably at the time of reporting. They additionally want an e-mail subscription service or app, providing customized epidemiological information, including charts and maps. For reporting of special public health events, such as outbreaks, an early warning function should be available. Communication among LHA should be integrated in such a system. Syndromic surveillance was considered important, but should be based on data that has anyway been collected as part of routine medical procedures/anamnesis.

CONCLUSIONS: Compliance with legal obligations to report communicable diseases is limited, if the benefit for the reporting person is not obvious. For contributors to a reporting system a timely feedback is very important. The suggested functionalities will be considered in the revision of the German RSCD.

PRESENTED BY: Andreas Gläßer

Keywords: Disease Notification, Motivation, Communicable Diseases, Feedback, Compliance

ESCAIDE REFERENCE NUMBER: 2013803

Comparison of five influenza surveillance systems during the 2009 pandemic and their correlation with media attention


BACKGROUND: In addition to the routine surveillance of influenza-like illness (ILI) consultation rates reported by sentinel general practices (GPs), four other surveillance systems were used during the 2009/2010 influenza pandemic. We compared these five surveillance systems and their association with media attention to assess which ILI/influenza surveillance systems could be useful additions to the sentinel GP network.

METHODS: The trends in number of newspaper articles and television broadcasts over the period 11 May 2009 through 3 January 2010 were compared with the trends in ILI consultation rates reported by sentinel GPs, influenza-related web searches through Google Flu Trends, self-reported ILI through the web-based Great Influenza Survey, laboratory influenza virus detections, and notified hospital admissions for severe pandemic influenza in the Netherlands. Correlation coefficients with and without time lags were determined. Finally, correlations were determined between ILI consultation rates of the sentinel GPs and data from the four other surveillance systems.

RESULTS: The additional ILI/influenza surveillance systems showed similar trends and had strong correlations with the ILI consultation rates reported by sentinel GPs. The number of influenza virus detections was the only system that registered an early peak. Increases in the number of newspaper articles and television broadcasts did not precede increases in ILI/influenza rates in the five surveillance systems.

CONCLUSIONS: The sentinel GP network should remain the basis of influenza surveillance, because it integrates epidemiological and virological information and showed to be pandemic proof in 2009. Web-based, self-reported ILI could be a useful addition, especially if virological self-sampling would be added and a baseline threshold would be calculated.

PRESENTED BY: Marit de Lange

Keywords: Influenza, Human Pandemics Surveillance Newspapers Television

ESCAIDE REFERENCE NUMBER: 2012787

European Scientific Conference on Applied Infectious Disease Epidemiology
24-26 October 2012 Edinburgh, UK

A practical STA tool for lime series analysis

Gilles Desse (Epiconcept, France), Esther Kissling (Epiconcept, France), Isabelle Lavieille (ECDC, France), Françoise Luquero (Epiconcept, France), Chantal Quentin (ECDC, Sweden), Joanne Gomes Dias (ECDC, Sweden), Marta Valverde (Epiconcept, France), Bruno Ciarcia (ECDC, France)

BACKGROUND: ECDC long term strategies for surveillance include analysis of trends of communicable disease of public health importance for EU and EEA Member States to guide public health action. The European Surveillance System (TESSy) holds data on 49 communicable diseases reported by 30 countries. To simplify trend analysis using TESSy data, ECDC launched a project to create a STA tool facilitating TSA and providing rapid data exploration without the need for complex programming.

METHODS: We developed protocols for TESSy data, including analysis plans specifying hypotheses to be tested, variable types and formats. We organised TESSy steps as successive tabs in a STA dialogue box, created with STATA scripts. The tool was tested with five diseases (AIDS, campylobacteriosis, salmonellosis, tuberculosis and influenza) and used during a ECDC TSA training.

RESULTS: The STA tool enables data aggregation, data checking, data description, analysis of trends and seasonality, residual analysis, simple modelling and long-term forecasting. The tool incorporates generalised linear model regression, creates graphs and a log of the outputs. Variables created during analysis remain in the dataset for further analyses. An in-depth manual of the STA tool is under test and interpretation of outputs. Feedback from the workshop showed the STA tool enables a quick exploratory TSA even by non-STA users who could focus on interpretation of results.

CONCLUSIONS: The STA tool saves time when performing rapid exploratory TSA of epidemiological data, avoiding the need for complex programming which is still needed for sophisticated STA. Further testing and training will be performed to enhance simplicity before appropriate dissemination of the tool for a wider use.

PRESENTED BY: Gilles Desse

Keywords: Epidemiology, Data analysis, Surveillance, Statistical Models, Software tools

ESCAIDE REFERENCE NUMBER: 2012800

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BACKGROUND: In addition to the routine surveillance of influenza-like illness (ILI) consultation rates reported by sentinel general practices (GPs), four other surveillance systems were used during the 2009/2010 influenza pandemic. We compared these five surveillance systems and their association with media attention to assess which ILI/influenza surveillance systems could be useful additions to the sentinel GP network.

METHODS: The trends in number of newspaper articles and television broadcasts over the period 11 May 2009 through 3 January 2010 were compared with the trends in ILI consultation rates reported by sentinel GPs, influenza-related web searches through Google Flu Trends, self-reported ILI through the web-based Great Influenza Survey, laboratory influenza virus detections, and notified hospital admissions for severe pandemic influenza in the Netherlands. Correlation coefficients with and without time lags were determined. Finally, correlations were determined between ILI consultation rates of the sentinel GPs and data from the four other surveillance systems.

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PRESENTED BY: Marit de Lange

Keywords: Influenza, Human Pandemics Surveillance Newspapers Television

ESCAIDE REFERENCE NUMBER: 2012787

European Scientific Conference on Applied Infectious Disease Epidemiology
24-26 October 2012 Edinburgh, UK
Environmental Surveillance of Polioviruses in Greece as a supplementary tool in the AFP surveillance: A preliminary report

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BACKGROUND: SO included Environmental Poliovirus Surveillance (ENV) in the strategic plan of Global Polio Eradication Initiative to be used in Poliovirus surveillance, supplementing Acute Flaccid Paralysis (AFP) surveillance in polio-free countries. Detecting enteroviruses in environmental sewage samples contaminated by human faeces can trace poliovirus circulation. Under optimal conditions, the sensitivity of ENV can be better than that of the standard AFP surveillance. ENV offers an anonymous, non-invasive approach for monitoring poliovirus (PV) circulation in populations at risk.

METHODS: ENV of sewage samples for polioviruses/enteroviruses was adopted as a supplementary tool to AFP surveillance in selected areas of Greece, where high risk populations reside (immigrants, refugees, Roma). From January to June 2012, a total of 324 samples from sewage disposal systems were collected by Sab Sample method and tested for polioviruses/enteroviruses by the Hellenic National Polio Reference Laboratory with the use of “two-phase” concentration method (17 from Thessaly, 12 from Evros, 8 from Dodecanese islands, 4 from Central Macedonia and 1 from Aitolia). Enteroviral RNA was detected by RT-PCR. The isolation of polioviruses and enteroviruses, the RD and L20B cell lines were utilized. Enteroviral RNA was typed by the seronatotyping method and/or the VP-1a region sequencing followed by phylogenetic analysis.

RESULTS: Until June 2012, 25/324 (7.7%) specimens were processed and examined. No wild or vaccine-derived polio viruses were isolated. However, these procedures detected 121/324 (37.2%) specimens, tested in Thessaly, 3/42 (7%) in Evros and 2/28 (7%) in Dodecanese islands. Isolated NPEV serotypes were Cox51A21bEch08Ech09Ech103.

CONCLUSIONS: Environmental Surveillance can provide an alternative approach for monitoring PV and NPEV circulation in high risk areas and can be used as an early warning system, supplementing AFP surveillance.

Presented by: Alexendra Venieridou
Keywords: Environmental surveillance Poliovirus Non, Polioviruses Surveillance ESCAPE REFERENCE NUMBER: 2012/0337

Towards the measles elimination goal: an evaluation of the Italian enhanced measles surveillance system

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BACKGROUND: An efficient surveillance system is a key requirement to achieve WHO goal of eliminating measles in Europe by 2015. In Italy, measles cases are reported to the national mandatory notification system (SIM), in addition, an enhanced measles surveillance system (SMS) was introduced in 2009. No case definition is used in SIM; the European case definition is used in SMS. An evaluation of SMS was performed to assess sensitivity, timeliness and completeness.

METHODS: The evaluation was performed on 2009 data, a non-epidemic year. Cases reported to SIM and to SIM were matched. Data quality was evaluated by measuring completeness of information on a minimum set of six variables. Timeliness was based on calculating the interval between date of onset of symptoms and date of reporting to the national level. The number of mea3
tus hospitals in SMS were compared to those registered in the national discharge database (SDD).

RESULTS: In 2009, 356 suspected measles cases were reported to SMS and 572 to SIM; of these, 250 cases matched. Eight of 21 regions did not report cases to SMS. Most cases missing in SMS were from two regions. Seventy-eight SMS cases were hospitalized while 165 hospitalizations were recorded in SDD. The median reporting delay was 10 days. Information on the minimum set of variables was present for 75% of cases.

CONCLUSIONS: The assessment revealed a substantial degree of under-reporting to SMS. The discrepancy in the number of cases may be partially due to a lack of a case definition in SIM. Awareness of the SMS by physicians needs to be improved. A web-based electronic system for reporting cases to SIM will soon be implemented.

Presented by: Enrico Negrini
Keywords: Surveillance system measles Italy ESCAPE REFERENCE NUMBER: 2012/0328

Estimating Sexually Transmitted Gastrointestinal Infection in Toronto

Sylvia Oto (Toronto Public Health, Canada), Anne Arthur (Toronto Public Health, Toronto, Canada), EFSA Gaums (Toronto Public Health, Canada)

BACKGROUND: Sexual contact can be a significant risk for gastrointestinal illness (GI), especially among men who have sex with men. Recent changes in the epidemiology of some enteric illnesses in Toronto have underscored the need to understand the extent of sexual transmission. This study uses public health data to understand the proportion of patients known to have a sexually transmitted GI, and the added information available from other communicable disease reports.

METHODS: Notifications of reportable communicable diseases are received, investigated, and recorded in the mandatory communicable disease information system (PHIS) used in Ontario. GI reports for Toronto residents were considered if they: (a) occurred between January 1 2006 and December 31 2010, (b) had evidence of a GI that was known to be transmitted sexually, and (c) were 18 years old at time of illness. Outbreak-associated and travel-related cases were excluded. Cases were grouped into five mutually exclusive categories, which correspond hierarchically to the likelihood of sexual transmission. Data were analyzed using SAS v9.2 and PASw Statistics 18.

RESULTS: Overall, 4.4% of clients reported sexual contact. Gender differences were observed, with 6.7% of men and 0.3% of women reporting sexual contact (p<0.01). When the other categories were considered, an additional 14.5% of male cases and 4.8% of female cases are estimated to also be sexually transmitted. Of those who reported sexual contact, 53% also met the criteria for one of the other categories corresponding to sexual transmission.

CONCLUSIONS: Public health records that go beyond a case’s report of sexual contact for a GI can be useful to better estimate the frequency of sexually transmitted GI.

Presented by: Sylvia Oto
Keywords: Sexually Transmitted Disease, Gastrointestinal Diseases, Urban Health, Epidemiology ESCAPE REFERENCE NUMBER: 2012/0389

Evaluation of the national Shigella Surveillance in England to improve outbreak detection and management

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BACKGROUND: In September 2011, we investigated a nationwide outbreak of Shigella flexneri of serotype 3a among men who have sex with men (MSM). Between September and December 2011, we enhanced surveillance for S. flexneri nationally to follow up S. flexneri reports and ascertain risk factors, including MSM activity. Since retrospective analysis of laboratory data indicated that the outbreak had started in 2009, we evaluated the routine and enhanced system to assess their ability of outbreak detection and develop recommendations to strengthen outbreak identification and response.

METHODS: Using the national laboratory reporting database (labBase) and the national reference laboratory database for gastro-intestinal pathogens (GastroData Warehouse – GWDW), we evaluated the timeliness of laboratory reporting and estimated the sensitivity of each database. We estimated recurrence of sexual behaviour information in enhanced reports submitted between September to December 2011.

RESULTS: Between 2009 and 2011, the median duration between specimen collection and laboratory reporting to the Health Protection Agency was 13 (range 2-47) days. Between May 2011 and May 2012, the sensitivity of labBase and GWD was 85% and 92%, respectively. Information on sexual contact was available for 27 (55%) of the confirmed UK-acquired adult male cases and 19 of 21 who reported sexual intercourse a week prior to onset were MSM.

CONCLUSIONS: Laboratory reporting of S. flexneri was timely and sensitive. Enhanced surveillance proved successful at collecting information on sexual orientation. A review of the arrangements for analysis and dissemination of surveillance information is therefore recommended to ensure early detection and response in the future. We also recommend the inclusion of travel history and sexual health risk factors as part of routine surveillance arrangements.

Presented by: Marie-Borg
Keywords: Shigella Evaluation Surveillance MSM ESCAPE REFERENCE NUMBER: 2012/0397

European Scientific Conference on Applied Infectious Disease Epidemiology 24-26 October 2012 Edinburgh, UK
Impact of the introduction of varicella vaccine on varicella-related hospitalizations in Spain.

María José Segade (Instituto de Salud Carlos III, Spain), gobierno co-alianza (DGSC - ISC III, Spain). José M. Besoy (ISC III - National Center of Epidemiology, Spain); Victoria Martínez de Aranguren (Centro Nacional de Epidemiología, Instituto de Salud Carlos III, Spain)

BACKGROUND: Spain introduced varicella vaccine in 2005 with one dose at 10-15 years old (Scheme A) to prevent severe cases. Four out of 9 regions also vaccinated 5 months toddlers with one dose (Scheme B) to interrupt transmission. Scheme B also was also recommended by private pediatricians. We assessed the impact of vaccination on varicella-related hospitalizations.

METHODS: We analyzed hospitalizations recorded in the hospital discharges dataset during 1998-2010 at national level and in two regions using different schemes, Catalonia (50% of hospitalizations, scheme A) and Madrid (35%, scheme B). We stratified analyses for the pre (1998-2004) and post (2006-2010) vaccination periods. We estimated incidence rates (IR) by age groups and age-adjusted incidence rate ratios (IRR) using negative binomial regression.

RESULTS: We included 8,876 varicella-hospitalized cases in the first period and 6,128 in the second. National varicella-related hospitalization IR decreased significantly in all age groups: from 26.5/100,000 (95% CI: 24.3-30.1) to 22.1/100,000 (95% CI: 19.4-24.6) in 14 years, from 7.3/100,000 (95% CI: 6.8-8.0) to 5.5/100,000 (95% CI: 4.9-6.5) in 5.9 years, from 3.1/100,000 (95% CI: 2.9-3.2) to 1.1/100,000 (95% CI: 1.1-1.5) in 25.29 years, from 3.6/100,000 (95% CI: 3.3-3.9) to 2.2/100,000 (95% CI: 1.9-2.4) in 39.39 years (post-vaccination age-adjusted IRR: 0.9, 95% CI: 0.86-0.95). In Catalonia, IR decreased only in 39.39 years from 3.7/100,000 (95% CI: 3.4-4.4) to 2.1/100,000 (95% CI: 1.7-3.3). In Madrid, IR decreased in 4 years from 12.6/100,000 (95% CI: 11.4-13.4) to 4.9/100,000 (95% CI:2.9-2.7) and from 4.2/100,000 (95% CI: 5.4-8.7) to 1.7/100,000 (95% CI:2.7-2.7) in 30-39 years (IRR: 0.69, CI: 0.54-0.78).

CONCLUSIONS: Results of analysis suggest that vaccinating toddlers against varicella decreases overall varicella-related hospitalizations while vaccinating only adolescents had no impact. What observed at national level may reflect also the impact of vaccination recommended by the private sector. Further studies should examine the impact of vaccination on varicella incidence by age group and vaccination coverage.

PRESENTED BY:
María José Segade
Keywords: Varicella, varicella vaccine, hospitalizations
ESCAIDE REFERENCE NUMBER: 20121063

Public Health, microbiology, and molecular epidemiology

Regional Campylobacter outbreak investigation: combining epidemiology and microbiology

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BACKGROUND: The Municipal Health Service (MHS) was informed by a local laboratory about an increase of Campylobacter cases. The MHS started an investigation in order to assess the regional incidence and the possibility of a food related source, using both epidemiological and microbiological information.

METHODS: The MHS contacted regional laboratories about the number of Campylobacter isolates since 2011 and the National Institute of Public Health and the Environment to get the historical national trends. The MHS interviewed recent cases about their food habits. Eleven Campylobacter strains isolated from stools of the patients were subtyped to determine clonal relationship, using Amplification Fragment Length Polymorphism (AFLP).

RESULTS: An epidemiology of the two regional laboratories indicated that there was a slightly higher than expected number of cases in March 2012. National historical data showed a incident peak around January. Seven patients were interviewed and 4 out of 7 patients lived in the same city. There was no common specific food item identified. Isolates of 11 patients (including the 7 interviewed patients) were identified as Campylobacter jejuni. Three of these 11 isolates were highly genetically related compared to the highly diverse group of other C. jejuni strains in the database. Two of these patients bought their meat in the same supermarket. The Food and Consumer Product Safety Authority was informed. The number of new cases was monitored, but the number of cases did not increase further.

CONCLUSIONS: The analysis showed that there was an unexpected slight increase in campylobacteriosis cases. Subtyping of available isolates using AFLP showed 3 genetically related cases, suggesting an outbreak. Nevertheless, the findings showed no clear common epidemiological links between the patients.

PRESENTED BY:
Ewout Fonss
Keywords: Campylobacter jejuni Amplification Fragment Length Polymorphism AFLP
ESCAIDE REFERENCE NUMBER: 20121059

EU-LabCAT

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BACKGROUND: Given the necessity to integrate microbiological and epidemiological data for enhanced disease detection and control, ECDC, through a Health Protection Agency-won tender, aimed to develop a tool to assess sufficient microbiological capability and capacity by function and pathway. This contributes to a key ECDC public health microbiology (PHM) priority – to implement a system for monitoring laboratory capabilities for European surveillance of Infectious diseases and epidemic preparedness.

METHODS: The project defined: (a) generic elements of laboratory capacity; (b) specific elements of capability per disease; and (c) criteria for prioritisation of the 47 diseases and two special health issues listed under Commission Decision 2119/98.

RESULTS: An Excel-based tool was developed with drop-down menus to facilitate response to carefully weighted questions. The generic indicators probe capacity and capability in five main areas: Organisation and Planning; Laboratory-based Surveillance, Surveillance and Epidemiatic Preparedness; Quality Systems and Laboratory Biassativity, and Networks. For five diseases – Influenza, TB, Legionella, VTEC, MRSA – specific criteria were defined under common headings: Diagnostic Testing; Clonal Analysis and Typing; Quality; Networks and Surveillance; Cross-sector Collaboration. The prioritisation tool targeted: Intervention Potential; Burden of Disease; Threats to Public Health; Political Dimension, weighted by importance and immediacy of impact. An overview of Member States’ (MS) response is quantitatively displayed on a ‘dashboard’.

CONCLUSIONS: With MS experts (National Microbiology Focal Points, Coordinating Competent Bodies, and Advisory Forum members), ECDC are developing a monitoring and appraisal system to enable MS to self-assess reference laboratory performance. An ‘interactive demo’ and explanatory flow chart from data collection to public health action will allow integration of expertise from the ESCAIDE epidemiology and PHM community into this novel and responsive tool.

PRESENTED BY:
Colin Stewart Brown
Keywords: Microbiology, Epidemiology, Capacity Building, Emergency Preparedness
ESCAIDE REFERENCE NUMBER: 20121045

The etiology of community-acquired pneumonia in the Netherlands


BACKGROUND: Community-acquired pneumonia (CAP) is a common clinical disorder. In clinical practice, the diagnosis of CAP is usually established on clinical grounds, and only limited microbiological tests are performed. To gain more insight in the etiology of CAP in the Netherlands we performed a prospective observational study in the period from November 2009 to January 2010, using an extensive combination of microbiological techniques.

METHODS: Patients with CAP, aged 18 years attending the emergency department of a general hospital in Southern Netherlands, were invited to participate in the study. Blood, sputum, urine, and combined nose – and throat swabs samples were tested for common respiratory pathogens, including an extensive PCR panel and paired serology. Furthermore, clinical chemical blood levels were assessed, and data on clinical parameters, demographics, and potential risk factors were collected.

RESULTS: A total of 339 patients aged 18-96 years (median age 65 years) were included in the study. Despite the wide range of microbiological tests no pathogen could be detected for 40% (n=137) of these patients. Bacterial pathogens were detected for 62% (n=215) of the remaining 202 patients, 35% were detected for 20% (n=40). For 18% (n=37) of them both bacterial and viral pathogens were detected. Streptococcus pneumoniae was the most frequently detected pathogen (12%, n=25) followed by Coxiella burnetii (5%, n=8), and rhinovirus (5%; n=6). C. burnetii patients were relatively young and without important comorbidity compared to patients with CAP caused by S. pneumoniae or other pathogens.

CONCLUSIONS: Since our study coincided in time and place with a large G4 fever outbreak, the results cannot be extrapolated to the rest of the Netherlands. Nevertheless, this study enables us to compare patients with CAP caused by C. burnetii to patients with CAP caused by other respiratory pathogens.

PRESENTED BY:
Rianne van Gageldonk-Lafeber
Keywords: Pneumonia, etiology, Coxiella burnetii, Streptococcus pneumoniae
ESCAIDE REFERENCE NUMBER: 20121044

Keywords: Community-acquired pneumonia in the Netherlands

European Scientific Conference on Applied Infectious Disease Epidemiology 24-26 October 2012 Edinburgh, UK
Molecular evolution of human Norovirus: predicting the emergence of epidemic strains

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BACKGROUND: Human Noroviruses (NoV) are a major cause of acute gastroenteritis worldwide. Previously, two sites (A and B) within the P2 domain of the surface capsid protein (VP1) were shown to define strain-specific antibody-antigen interactions (in vitro), and mutations within these sites were correlated with the emergence of epidemic Genogroup II-4 (GI-4) strains. Here, we used modelling to predict protein surface areas derived from different amino acid substitutions at Sites A and B as predictors for changes that correlated with the emergence and/or switch of epidemic strains.

METHODS: Pseudovirus sequences were collected via screening of Sites A and B, using a panel of 562 GI-4 GI-4 clinical specimens from England (2000-2011) and 250 GI-4 sequences from Genbank. Protein modelling was applied to predict the effects of amino acid changes at these sites. Findings were compared to epidemiological data which reflect the number of NoV-positive laboratory reports in England & Wales.

RESULTS: Analysis of amino acids at Site A revealed that the majority (82.6%) belonged to one of three defined surface motif types (SMTs, 2 and 3). Three years (2002, 2006 and 2009) were associated with higher-than-average NoV activity in the UK and the analysis showed that this correlated with the emergence of the different major surface area motif types (SMTs) for Site A. In contrast, the diversity at Site B could not be defined using SMTs.

CONCLUSIONS: Here, we propose a model of antigenic evolution within two hotspots of the surface protein VP1. This could be applied as a powerful tool to monitor alterations of antigenic properties in order to foresee and prepare for new epidemic waves.

PRESENTED BY:

Epidemiology and Microbiology: Comrades in the Preservation of Measles Elimination Status in Canada

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BACKGROUND: Although endemic measles has been eliminated from Canada since 1978, imported cases continue to occur. Most cases produce little secondary spread; however some lead to large outbreaks. The combination of microbiological and epidemiological surveillance is imperative to demonstrating the maintenance of measles elimination status. A large outbreak of measles occurred in the Canadian province of Quebec in 2007 that threatened this status.

METHODS: National enhanced surveillance involves weekly confirmed-case reporting from all provinces and territories. However, microbiological information, including genotyping, required by the Pan American Health Organization to confirm the cessation of local transmission is not captured in the reports. Genotyping, using World Health Organization standardized methods, is performed at the National Microbiology Laboratory on all appropriate specimens submitted by provincial laboratories and was manually linked to epidemiological data to provide comprehensive surveillance information during the outbreak.

RESULTS: In 2011, 735 confirmed cases were reported to the Public Health Agency of Canada. Genotypes were determined for 147 cases and four genotypes were identified: D3, D4, DH and D9. The most frequently identified genotype, D4, was associated with a large outbreak that included 686 cases and lasted 27 weeks. The last case reported to be associated with local transmission occurred during the week of November 20, 2011.

CONCLUSIONS: A sensitive surveillance system is essential for a measles elimination program. This outbreak was a perfect illustration of the need for integration of laboratory and epidemiological information, as the current manually entered weekly national surveillance was inadequate in its ability to provide a complete picture of the outbreak. By augmenting regular enhanced surveillance with microbiological information, Canada was able to demonstrate that sustained chains of endemic measles transmission no longer exist.

PRESENTED BY:

Emergence of Escherichia coli encoding Shiga toxin 2f in human STEC infections

Ingrid Friesema (RIVM, The Netherlands); Kim van der Zwaluw (Centre for Infectious Disease Control, RIVM, The Netherlands); Tom Schuurman (Medical Microbiology, University Medical Center Groningen, The Netherlands); Wijnand Kooistra-Smid (Department of Research&Development, Laboratory for Infectious Diseases, The Netherlands); Yvonne van Duynhoven (National Institute for Public Health and the Environment, The Netherlands);

BACKGROUND: Shiga-toxin-producing E. coli (STEC) is an important pathogen worldwide, associated with human gastro-intestinal illness. Shiga toxins can be divided into two groups: Shiga toxin 1 (Stx1) and Shiga toxin 2 (Stx2). Within both groups, several variants can be distinguished. Variant stx2f is one of the latest described in the literature with piggycon as reservoir. Until now, the stx2f variant was rarely associated with human infections.

METHODS: All human STEC infections are notifiable in the Netherlands. The basic information gathered includes age, gender, symptoms and date of illness onset. Additionally, laboratories are requested to submit an isolate to the RIVM for serotyping and PCR testing of virulence genes. STEC O157 infections are registered since 1999. STEC non-O157 and testing for stx2f have been added for 2008.

RESULTS: Between 2008 and 2011, isolates of 362 cases were typed as STEC non-O157 of which 87 (24%) encoded stx2f. Most strains containing stx2f belonged to the serogroups O113:H6 (5%), O145:H6 (5%) and O153:H4 (5%). Compared to STEC O157 infections, cases with Stx2f positive isolate reported less frequently stomach ache, blood in stool, haemolytic uraemic syndrome and hospitalization. They also had less often blood in stool compared to cases with other STEC non-O157 infections. Almost all Stx2f positive cases (98%) occurred between July and December, compared to 23% for O113 and 64% for other non-O157 cases.

CONCLUSIONS: Human infections with STEC encoding Stx2f are more common than anticipated and constitute a quarter of all reported non-O157 infections in the Netherlands. However, disease following infection appears to be relatively mild compared to other STEC infections with a more pronounced seasonal occurrence.

PRESENTED BY:

Risk factors for endemic human campylobacteriosis of chicken, ruminant, pet, environmental and exotic origin: a combined case-control and genotype-based source attribution analysis

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BACKGROUND: Campylobacter colonizes the intestine of most warm-blooded animals, resulting in environmental contamination. Case-control studies trace back the origins of human infections to the exposure, which may not point to the original reservoirs because of cross-contamination. Human infections can be attributed to specific reservoirs using multocus sequence typing (MLST).

METHODS: We investigated risk factors for human campylobacteriosis caused by sequence types (STs) attributed to different reservoirs using a combined case-control and source attribution analysis. 737 endemic human Campylobacter jejuni/coli cases typed with MLST were included in a case-control study comprising 1059 frequency-matchecontrols. The asymmetric island model, a population-genetics algorithm for modelling Campylobacter evolution and transmission, attributed these cases to 4 animal reservoirs (chicken, cattle, sheep, pig) and to the environment (water, sand, wild-birds). Moreover, we investigated the contribution of pets (cats, dogs, and exotic STs (carried by travelers) to endemic campylobacteriosis.

RESULTS: Most cases (~87%) were attributed to chicken and cattle. Consuming chicken was a risk factor for chicken-attributed STs, whereas consuming beef and pork were protective. Animal contact, barbecuing in non-urban areas, tripe consumption, and never/seldom chicken consumption were risk factors for ruminant-attributed STs. Chicken – and ruminant-attributed infections were partially explained by food-borne transmission. Animal contact and environmental pathways were also important. Dog ownership was a risk factor for pet-attributed STs. Person-to-person contacts in post-holiday periods were risk factors for infection with exotic STs.

CONCLUSIONS: Risk factors for campylobacteriosis depend upon the attributed reservoirs. Combining epidemiological and source attribution data improved campylobacteriosis risk identification and characterization, generated hypotheses, and showed that genotype-based source attribution makes sense epidemiologically.

PRESENTED BY:

Ingrid Friesema

Keywords: Campylobacter, source attribution, case-control, MLST
ESCAIDE REFERENCE NUMBER: 2012789

**Keywords:** Molecular, characterisation, Epidemiology, Streptococcus pyogenes, ESCAIDE Reference Number: 2102/07/0

**PRESENTED BY:**

Marka Ordonez, Fernández-Garcia

Keywords: OXA-48, Klebsiella pneumoniae, carbapenems, multiresistance

ESCAIDE Reference Number: 2102/09/0

**PRESENTED BY:**

Emergence of Klebsiella pneumoniae producing OXA-48-like carbapenemases in Spain

**Authors:**

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**Background:**

Klebsiella pneumoniae is one of the most important and frequent causes of nosocomial infections worldwide, and the OXA-48-like carbapenemases (OXA-48-like) were first identified in Klebsiella pneumoniae isolates from Greece. These enzymes are highly spread in Spain, and their detection is likely to increase in the near future given the prevalent OXA-48-like carbapenemase-producing Klebsiella pneumoniae (OXA-48-KPN) isolates.

**Methods:**

In order to study the dissemination of OXA-48-KPN isolates in Spain and characterize the epidemiological and molecular basis of this dissemination, we selected 203 OXA-48-KPN isolates representing referrals from 76 hospitals located in 6 geographical areas in Spain between May 2009 and May 2012. Clonal groups were established by pulsed-field gel electrophoresis (PFGE) and multilocus sequence typing (MLST). Resistance genes were characterized by sequencing. Plasmids carrying blaOXA-48-like were studied by PFGE.

**Results:**

Isolates had different resistance patterns to carbapenems with minimal inhibitory concentrations (MICs) below and above breakpoints. All isolates but one additionally harboured the extended-spectrum β-lactamase CTx-M-15 gene. PFGE typing revealed six clusters that were identified as MLST types 11, 16, 392, 405, 437 and 663. The more prevalent C1 and C2 PFGE clusters contained 12 and 4 isolates from 6 and 3 hospitals, respectively. They belonged to ST types 405 and 663 (C1) and 16 (C2). In all ST types but one, the blaOXA-48-like gene was located in a plasmid that was self-conjugative and did not carry blaCTX-M-15 gene.

**Conclusions:**

We provide evidence that 3) there is an intra- and inter-hospital dissemination of genes by conjugative plasmid transfer as well as the spread of a multidrug-resistant OXA-48-KPN clone, 2) Sub-breakpoint MIC range OXA-48 producers could lead to an underestimation of isolates producing these enzymes, creating a risk for unrecognized spread, 3) Combination of OXA-48 with other resistance mechanisms like CTX-M-15 leads to broader resistance and leaves fewer therapeutic options. Adequate screening and detection methods are therefore required to prevent and control OXA-48-KPN spread.
Vaccine preventable diseases

Increase of mumps in young adults EU/EAA, 2007-2010

Ida Czumbel (ECDC, Sweden), Chrystel Quentin (ECDC, Sweden), Phillip Zucs (ECDC, Sweden)

BACKGROUND: Mumps is preventable by vaccination, but despite good vaccine availability and uptake, many cases are still occurring in Europe. The objective of this analysis was to investigate recent trends of mumps in Europe and to characterise the cases.

METHODS: Mumps notification data for 2007-2010 from 28 consistently reporting EU and EEA Member States were obtained from the European Surveillance System (TESSy) database hosted at ECDC. Data were included regardless of case classification. Population denominator data for calculation of notification rates were obtained from Eurostat. Case-based data from 17 Member States served to analyse the age and gender distribution. Time trends were analysed by Poisson regression, calculating incidence rate ratios (IRR) and 95% confidence intervals (CI) for each incremental year.

RESULTS: From 2007 to 2010, 28 EU/EAA Member States reported 38,948 cases of mumps. Notification rates were 4.1/100,000 in 2007, 2.7/100,000 in 2008, 3.1 in 2009 and 2.0 in 2010, representing a significantly decreasing trend (IRR=0.80, CI: 0.75-0.85). Increasing trends were found for Denmark (IRR=2.8, CI: 1.8-4.4) and the Netherlands (IRR=1.10, CI: 0.79-1.59). A total of 4,770 cases reported by 17 countries were analysed for gender and age characteristics. Over the studied period, the EU highest notification rates were notified in age groups 15-19 (14.9/100,000) and 20-24 (13.6/100,000). An increasing trend was noted in age group 25-29 years (IRR=1.16, CI: 1.02-1.32), while a decreasing trend was observed among children aged 5-9 years (IRR=0.88, CI: 0.86-0.91) and 10-14 years (IRR=0.78, CI: 0.69-0.89). Regarding gender, higher notification rates were reported in males (7.6/100,000) versus females (4.4/100,000), however no significant trends were reported for males or females.

CONCLUSIONS: The notification rate of mumps at EU level is decreasing, despite an increasing trend in young adults, probably due to a combination of lower immunization levels for mumps and waning immunity.

PRESENTED BY: Ida Czumbel

Keywords: Mumps, trend, notification rate, age group, gender

ESCAIDE REFERENCE NUMBER: 2012712

Recent increase of pertussis incidence after 15 years of low circulation in Spain

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BACKGROUND: In Spain, the routine three DTP doses before 6-7 months was initiated in 1973. A fourth dose at 15-18 months was introduced in 1996 and a fifth at age 4 years in 2011. Acellular vaccine replaced the whole cell in 2005. DPT5 coverage reached >90% since 1995. Pertussis incidence increased suddenly to 6.5/100,000 in 2011. We describe pertussis incidence since 1996 and identify the susceptible groups in the last period.

METHODS: Pertussis cases notified to the National Surveillance Network during 1998-2011 were analysed. We defined the periods 1998-2001, 2002-2005, 2006-2009 and 2010-2011, according to the epidemic waves. By age group, we calculated pertussis incidence rates (IR) and period incidence rate ratios (IRR) with Poisson regression, taking 1998-2001 as reference.

RESULTS: Overall pertussis IR increased from 1.26/100,000 in 1998-2001, to 4.95/100,000 in 2010-2011. In 2010-2011, specific age group IR were 51.9/100,000 in 1-4 years (24.6/100,000 in males and 27.3/100,000 in females) and 0.5/100,000 in 15-19 years. 20.5/100,000 in 1-4 years, 11.1/100,000 in 5-9 years, 10.2/100,000 in 11-14 years and 1.0/100,000 in 15-19 years. In 2010-2011, the IR increase started after 2003 from 1.59/100,000 to 10.1/100,000 in 1-4 years, 1.96/100,000 to 10.1/100,000 in 5-9 years, 2.06/100,000 to 18.0/100,000 in 10-14 years and 1.0/100,000 to 10.1/100,000 in 15-19 years. In 2010-2011, the IR increase affects all age-groups, ranging between 2.3/100,000 (95%CI: 2.0-2.5) in 10-14 years and 10.1/100,000 (95%CI: 8.9-12.0) in 15-19 years.

CONCLUSIONS: The recent increase affects pre-vaccinated infants, probably limited to an increasing trend in young adults, probably due to a combination of lower immunization levels due to waning immunity after years of low incidence. However other factors, including increase in diagnosis and reporting, may have contributed. Analysis of other sources of information, as hospitalizations and death, will help confirming these results.

PRESENTED BY: Vincenc Saura

Keywords: Pertussis, vaccination, waning immunity, incidence

ESCAIDE REFERENCE NUMBER: 2012710

Diphtheria and tetanus seroepidemiology among children and young adults in Tajikistan, 2010

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BACKGROUND: Tajikistan experienced a major diphtheria outbreak during the years 2000-2001 reported cases, which was controlled after nationwide immunization campaigns. During 2002-2010, only 52 diphtheria cases and 7 tetanus cases were reported, but the immunization coverage and the quality of surveillance is uncertain due to persistent economic difficulties. With this study, we aimed to determine the population immunity against diphtheria and tetanus in children and young adults in Tajikistan.

METHODS: Serum specimens from a nationwide sample of persons aged 1-24 years, selected through stratified cluster sampling, were tested for anti-diphtheria antibodies (VERO cell neutralization assay, n=2352) and anti-tetanus IgG (ELISA, n=2351). Specimens with antibody levels >0.1 IU/ml were considered seronegative. A brief questionnaire including demographic information and potential risk factors was completed for each participant.

RESULTS: Overall, 48.6% (95% CI, 45.7-51.5) of the surveyed population were seronegative for diphtheria of which 41.4% (95% CI, 38.6-44.3) had no detectable antibodies. 22.5% (95% CI, 20.1-24.9) were seropositive for tetanus. The highest percentage of seronegatives were observed among the 10-19-year-olds (17.3% for diphtheria -33% for tetanus, respectively). Risk factor analysis for diphtheria identified birth setting and maternal education as significantly associated with seropositivity among children aged 1-14 years.

CONCLUSIONS: The data show that population immunity for diphtheria is low and suboptimal for tetanus among children and young adults in Tajikistan. The findings highlight the need to improve routine immunization delivery in the country and support a proposal by the Tajikistan Ministry of Health for a nationwide one-time diphtheria-tetanus supplementary immunization campaign to rapidly close immunity gaps and prevent diphtheria outbreaks.

PRESENTED BY: Nina Khetihanuri

Keywords: Diphtheria, Tetanus, Serosurvey, Tajikistan, VPD

ESCAIDE REFERENCE NUMBER: 2012732
An outbreak of rubella among adolescents in Romania, September 2011 – March 2012

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BACKGROUND: Since September 2011, an increase of rubella cases was notified in Romania. Since the last rubella epidemic in 2005, the incidence increased to 20.6/100,000 in 2011 compared to the median 10.0-10.5/100,000 during 2005-2010. According to the childhood immunization schedule, two doses of the measles-mumps-rubella (MMR) vaccine routinely administered at the age of 12-15 months and 6-7 years since 2005. Additionally, girls aged 15-19 years were vaccinated with monovalent rubella vaccine between 2003-2008. We aimed at describing the notified rubella cases in order to inform public health actions.

METHODS: We described rubella cases notified to the national surveillance system between September 2011 and March 2012. Cases were identified and classified according to European Commission case definition. Data collected included age, sex and vaccination status. Vaccine effectiveness (VE) was calculated using the screening method, using the mean vaccination coverage in the MMR eligible population.

RESULTS: The increase of rubella cases was first detected in the North-west region and spread South-west, becoming nationwide in February 2012. Overall 2.457 cases were notified (incidence 100.5/100,000), 876/510/73 among females (incidence 94.6/100,000). From the 5,901 cases reported amongst age groups eligible for vaccination 275 (5%) were vaccinated. Of all cases, 1656 (24.8%) occurred in non-vaccinated age-groups, with the highest incidence among 15-19 years (528.7/100,000), followed by the 10-14 years (555.9/100,000). The VE among eligible age-groups was 92.3%.

CONCLUSIONS: Rubella cases occurred mainly in unvaccinated adolescents aged 15-19 years. To prevent further spread we recommended intervention measures (Or:4.6;IC95%:2.9-7.2;p<0.001) and adults ≥45 years (mean annual incidence 2007-2010: 9.5/100,000) in the Eastern states. We therefore used statutory health services data to estimate wide incidence and associated complications.

METHODS: We analysed all ambulatory physicians’ referral claims to the statutory health insurance of rubella patients in Germany among adolescents aged 10-19 years. The total number of cases notified in 2010 was 195,348, 3.5/100,000. The majority of cases were notified in the western than Eastern states, especially among 20-29 year-olds (19.2/100,000). Compared to children between 1-4 years the odds of being not vaccinated was 9.5-times lower (2007-2010: n=2,735 vs. n=288). The difference in data, the number of cases from routine surveillance in the Eastern states and data collected at the European Centre for Disease Prevention and Control (ECDC) were 3.8/100,000.

REFERENCES:


At what age do people get measles in Europe? Defining vaccination strategies towards elimination

Marta Busana (EDCD, Sweden), Lucio Pastore Olettema (EDCD, Sweden), Yank Demirag (EDCD, Sweden), Andrew J Arora Gaus (EDCD, Sweden), PL Lopalco (EDCD, Sweden)

BACKGROUND: This study aims to describe the age groups most affected by measles in Europe and their vaccination status in order to support policy-makers in defining vaccination strategies.

METHODS: The number of reported subjects with measles was determined using data collected at the European Centre for Disease Prevention and Control (ECDC) in 2010-2011. In all 29 countries submitting data a national mandatory notification system covering the general population was in place. A subject was defined vaccinated if they received at least one dose of measles vaccine. To test the association between being not vaccinated and age group a random effects logistic regression model for correlated data was fitted to account for spatial clustering as data come from national surveillance systems.

RESULTS: A total of 61,156 cases of measles were reported in 2010-2011. Eighty-two percent of cases were not vaccinated. The highest proportion of cases was reported among children between 1-4 years (20.8%), infants 1 year had the highest incidence rate (593 cases per 100,000 population year). Compared to children between 14 years the odds of a case not being vaccinated was higher among children <1 not targeted by vaccination programs (OR: 6.4; IC95%: 2.9-7.7; p<0.001) and adults ≥45 years (OR: 5.7; IC95%: 2.9-13.2; p<0.001).

CONCLUSIONS: National immunization programs should be strengthened as a relevant proportion of cases is not vaccinated and belongs to the target age groups. High coverage should lead to herd immunity effect that would protect infants too young to receive the vaccine and susceptible adults. To reduce the burden of the disease among infants and adults policy makers should consider introducing the first dose of vaccine at between 9 and 12 months as well as targeting some adult with catch up immunization programs.

PRESENTED BY:
Marta Busana

Keywords: Measles, Rubella, Measles Vaccine, Measles-Mumps-Rubella Vaccine, Immunization, Vaccination, Elimination

ESCAIDE REFERENCE NUMBER: 2012846

Evaluating the link between global measles activity and measles importation into Ontario

Kamran Khan (Research Centre, Li Ka Shing Knowledge Institute, St. Michael’s Hospital, Toronto, Canada), Rose Richirr (Research Centre, Li Ka Shing Knowledge Institute, St. Michael’s Hospital, Toronto, Canada), Amanda Sorensen (Research Centre, Li Ka Shing Knowledge Institute, St. Michael’s Hospital, Toronto, Canada), David Koskasowski (Research Centre, Li Ka Shing Knowledge Institute, St. Michael’s Hospital, Toronto, Canada), Wei Hu (Research Centre, Li Ka Shing Knowledge Institute, St. Michael’s Hospital, Toronto, Canada), Natasha Crowcroft (Public Health Ontario, Canada)

BACKGROUND: In recent years, measles activity has increased throughout industrialized and developing countries. The province of Ontario has also experienced a significant increase in measles activity, stemming from imported disease. Understanding how Ontario is connected with global areas of endemic and epidemic measles activity through international travel could offer valuable insights into the risks of measles importation.

METHODS: Using national and regional measles surveillance data from the World Health Organization (WHO), we visualized the global distribution, burden, and seasonality of measles in 2010. We then analyzed the worldwide flight itineraries of all international travellers entering Ontario in 2010 and compared the source countries of travellers with the corresponding incidence of measles activity. Finally, we compared the seasonality of measles activity in different world regions with the seasonal patterns of international travel to Ontario from those regions.

RESULTS: Countries with extremely high incidence rates of measles generally had low volumes of international travel to Ontario and countries with extremely high volumes of international travel to Ontario generally had low incidence rates of measles. Notable exceptions were France, Ireland and the Philippines. Seasonal peaks in measles activity in the WHO European region most closely aligned with seasonal peaks in international travel to Ontario.

CONCLUSIONS: Integrating knowledge on the global distribution, burden and seasonality of measles and the corresponding magnitude and seasonal pattern of international travel can offer valuable insights into the risks of measles importation. From the perspective of Ontario, France, Ireland and the Philippines appear to be the most important potential source countries for imported measles virus. Further integrating knowledge of measles immunity within Ontario could help target areas for enhanced measles surveillance and vaccination.

PRESENTED BY:
Natasha Crowcroft

Keywords: Measles, Travel, Disease Outbreaks, Public Health

ESCAIDE REFERENCE NUMBER: 2012849
**Epidemiology of increased pertussis in Northern Ireland in 2012**

Philip Veal (Public Health Agency, United Kingdom), Zaw Sha (Public Health Agency, United Kingdom), Brian Smyth (Public Health Agency, United Kingdom). Richard Smyth (Public Health Agency, United Kingdom)

**BACKGROUND:**

An increase in pertussis infections reported to our department was noted during the first five months of 2012. The epidemiology of reported pertussis infections since 2007 was reviewed to elicit changes and target public health action.

**METHODS:**

All pertussis notifications from clinicians and laboratory confirmed cases reported by laboratories between January and May 2012 were identified and analysed to describe the change in epidemiology over time. Data analysis included determining the trends in cases over time, demographic characteristics, vaccination profile of cases, laboratory testing methods, and outcome.

**RESULTS:**

More cases of pertussis were notified in the first five months of 2012 (n=141) than in the whole of the preceding five years. The incidence of laboratory confirmed cases increased from 0.8/100,000 in 2011 to 4.4/100,000 in the first five months of 2012 (p<0.001). Confirmed cases in 2012 were mostly less than 3 months (44%) and older than 15 years (24%). Confirmed cases in those older than 15 increased nine and a half fold in the first five months of 2012 (n=19) compared to the whole of 2011 (n=2). Between 2007 and 2012, 24.8% of confirmed cases had been fully vaccinated. PCR testing of nasopharyngeal specimens for pertussis was increasingly common: 289 tests were submitted in the first five months of 2012 compared to 59 in the whole of 2012. The positivity rate of PCR tests decreased over this period (13.6% to 12.5%).

**CONCLUSIONS:**

Pertussis infections have increased markedly in Northern Ireland in 2012 with the greatest increase in those older than 15 years. Increased PCR testing for pertussis did not result in a higher positivity rate. The increase in cases may be due to increased case ascertainment.

**Presented by:** Philip Veal

Keywords: Pertussis, whooping cough, epidemiology, Northern Ireland

ESCAIDE reference number: 2012099

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**Invasive Streptococcus pneumoniae in different age groups in Italy before and after PCV7 implementation: evolution of serotypes and antibiotic resistance**

Annalisa Pantosi (Istituto Superiore Di Sanita, Italy), Fabio D’Ambrosio (Istituto Superiore Di Sanita, Italy), Maria Del Grosso (Istituto Superiore Di Sanita, Italy), Loredana Ingrosso (Istituto Superiore Di Sanita, Italy), Maria Grazia Caporali (Istituto Superiore Di Sanita, Italy), Fortunato D’Ancona (Istituto Superiore Di Sanita, Italy)

**BACKGROUND:**

PCV7 has been available in Italy since 2001, however only in 2005 national recommendations for universal vaccination were issued and vaccination was subsequently implemented by the Regions with different modalities; in 2008 vaccine coverage was 55% on a national basis. Aim of this study was to describe changes in serotype distribution and antibiotic susceptibility of S. pneumoniae from IPD in the last decade.

**METHODS:**

S. pneumoniae isolates from IPD, collected through a national surveillance system, were serotyped and antibiotic susceptibility was determined by Etest (EUCAST breakpoints). Data were analyzed according to age groups (5 years, 5-64 years, 65+ years) and 1 to 3 time periods: prior, during and after PCV7 implementation (2001-2003, 2006-2008 and 2009-2012).

**RESULTS:**

In the periods considered 401, 592 and 313 invasive pneumococcal strains, representing approximately 30% of all reported IPD cases, were collected. The percentage of PCV7 serotypes (vaccine serotypes) decreased over the years not only in children (from 60% to 26%) but also in the other age groups (from 55% to 7% and from 48% to 3% in the groups 5-64 years and 65+ years, respectively). Penicillin resistance was rather low in children in 2001-2003 (6.8%), increased in 2006-2008 (24%) and decreased in 2009-2012 (17%). Erythromycin resistance slightly decreased over the 3 periods (47% to 45%). The same antibiotic resistance trends were observed in the other age groups.

**CONCLUSIONS:**

PCV7 use has largely impacted the epidemiology of S. pneumoniae in Italy, with a decrease in V5 in all age groups. The impact of PCV13, available in Italy since the end of 2010, requires future evaluations.

**Presented by:** Annalisa Pantosi

Keywords: Streptococcus pneumoniae, 7 valent pneumococcal vaccine, serotypes, antibiotic resistance, surveillance

ESCAIDE reference number: 2012018

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**Measles and Rubella elimination in a Federal country: provincially, timing locally, regionally, nationally, internationally and globally**

Gillian Com (Public Health Ontario, Canada), Shelley Delves (Public Health Ontario, Canada), Bowen Williams (Public Health Ontario, Canada), Jonathan Gubary (Public Health Ontario, Canada), Tony Maniuk (Public Health Ontario, Canada), Rinothia Crowninshield (Public Health Ontario, Canada)

**BACKGROUND:**

The Pan American Health Organization (PAHO) is currently documenting measles, rubella and congenital rubella syndrome (CRS) elimination; other regions are planning to do the same. In 2011 Canada reported the most cases of measles in the region of the Americas. We reviewed documentation of measles, rubella and CRS in Ontario, Canada’s largest province.

**METHODS:**

We reviewed suspect and confirmed cases reported between January 2006 and December 2014, against PAHO elimination criteria on reporting status, rate, adequate investigation, and genotyping.

**RESULTS:**

Of 87 confirmed cases of measles, 68% were classified as not import-related; 82% were associated with 4 outbreaks. No chains of transmission lasted more than one year. Only one non-importation related case occurred since 2009. 31% of all cases had unknown immunization status; of the remaining 60 cases, 65% were unimmunized, 15% had one dose, 20% two doses. One imported case of CRS and twelve confirmed rubella cases were reported; 5 imported, 3 non-imported and 4 unknown. Immunization status was known for only 1 rubella cases (15%), 2 were unimmunized. Ontario did not meet the PAHO quality indicator of at least 50% cases with complete data. The combined rate of suspect cases investigated was 0.5/100,000/year, less than half the target of 2/100,000. All measles outbreaks were genotyped. The proportion of the population aged 5-40 years that is vaccinated is unknown.

**CONCLUSIONS:**

While no sustained endemic transmission of measles or rubella in Ontario is occurring, further effort is required to meet all PAHO elimination criteria including improved quality of measles and rubella surveillance, a vaccine registry and assessment of population immunity. Elimination is more complex to achieve in a federation, requiring policy will at multiple levels.

**Presented by:** Natasha Crowcroft

Keywords: Measles rubella congenital rubella syndrome elimination, Immunization

ESCAIDE reference number: 2012046

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**Knowledge, behaviours and attitudes regarding human papillomavirus (HPV) infection and its relationship to cervical cancer and prevention methods in females in South-West Greece**

Eleni Jelastopulu (Department of Public Health, School of Medicine, University of Patras, Greece), Panagiotis Pita (Department of Public Health, School of Medicine, University of Patras, Greece), George Michod (Department of Obstetrics and Gynecology, University Hospital of Patras, Greece), Konstantina Polaitou (Department of Pharmaceutical Marketing, School of Pharmacy, University of Patras, Greece)

**BACKGROUND:**

Cervical cancer is one of the most frequent type of cancer in women with an estimated 534,000 new cases and 259,000 deaths in 2008 for the entire Europe. The risk of developing cervical cancer is mainly related to the Human papillomavirus (HPV) infection. The purpose of this study was to assess the knowledge, behaviours and attitudes regarding cervical cancer, Pap-test testing, HPV infection and vaccination among females in South-West Greece.

**METHODS:**

A cross-sectional study was conducted in January 2012 in women, who were invited to participate in the new established national screening programme for cervical cancer. A 15-items questionnaire about cervical cancer, HPV infection and vaccination was administered to all participating women to assess their attitudes and knowledge.

**RESULTS:**

A total of 277 women were interviewed, mean age 39 years old. All of them believe that cervical cancer is preventable, however, a high percentage (82%) is concerned about it. Knowledge of HPV, of its relation with cervical cancer and of the transmission mode is high (36.8%, 73.3% and 71.1%, respectively). However, only 21% are aware that vaccination can prevent HPV, whereas 39% stated Pap-smear testing as HPV prevention. Furthermore, 99.9% are not vaccinated, although 76.8% stated that vaccination should be mandatory. About 70% of the study population screen every year for cervical cancer. Finally, 93% agreed that uptake of cervical screening is needed even when being vaccinated.

**CONCLUSIONS:**

Knowledge levels about HPV and its relation to cervical cancer seem to be good. However, a great majority is not aware that vaccination can prevent cervical cancer. The results indicate the need and importance of giving more adequate information and educational efforts for HPV vaccination.
Clusterings of multiple HPV types amongst women from three diverse risk populations in the Netherlands; population – or type – specific?


BACKGROUND: In 2009, HPV-vaccination was introduced in the Netherlands targeting high-risk HPV types (HPV16/18). However, privacy of data is an issue for determining vaccination trends. The aim of this study was to explore whether patterns of multiple HPV infections in studies with varying background risk are indicative of competition between HPV types.

METHODS: We included women from three studies in the Netherlands; Nijmegen, CSI and STD clinic. All women provided a vaginal self-sample, which were tested by SPF10/liPA on 25 type-specific HPV DNA infections. We calculated matched odds-ratios (mOr) and their 95% confidence intervals (CI) using conditional logistic regression.

RESULTS: Of the 3874 women, 26% were infected with multiple HPV types. The number of infections within a woman ranged from 0-4 in the Nijmegen study, 0-8 in CSI and 0-9 in the STD clinic. None of the studies conformed to a Poisson distribution. Moreover, pooled ORs were above 1 indicating that multiple infections occurred more often than expected by chance. Pairwise ORs were calculated for each HPV type combination, and were compared to the pooled OR.

CONCLUSIONS: Although we found that multiple infections occurred more often together then expected by chance (ORs for pairwise interactions exceeded 1), this should not be considered as an indication for competition between HPV types. Further studies are needed to investigate the mechanisms behind these findings.

PRESENTED BY: Madelief Bakker
Keywords: epidemiologic monitoring, HPV vaccination
ESCAIDE REFERENCE NUMBER: 20129988

Mumps outbreak in the Netherlands: Determinants of university students’ intention on vaccine uptake

Monnique Danielz (Radboud University Medical Centre, The Netherlands), Helma Ruijs (Radboud University Medical Centre, The Netherlands), Corné Swaen (National Institute for Public Health and the Environment - RIVM, The Netherlands), Letitia Houtman (Radboud University Medical Centre, The Netherlands), Merelien Hulscher (Radboud University Medical Centre, The Netherlands)

BACKGROUND: Since December 2009 a mumps outbreak has been going on among university students in the Netherlands, the majority of whom was vaccinated as a child. As a possible means to stop the outbreak a booster MMR vaccination for all students is being considered. This study aimed at describing illness characteristics and identifying risk factors for rotavirus infections among adults aged 18 years or older.

METHODS: From February 2005 to June 2009, we prospectively compared cases (laboratory confirmed rotavirus infection) with controls from the Danish Civil Registry matched on age, gender and municipality of residence. We collected information on illness characteristics (cases) and potential exposures using postal questionnaire (all subjects). We calculated matched odds-ratios (mOr) and their 95% confidence intervals (CI) using conditional logistic regression.

RESULTS: A total of 687 university students completed the questionnaire. 60.4% indicated that they were willing to accept a booster MMR vaccination. A majority of students appear to be willing to accept vaccination. If a booster MMR vaccination for all students is being considered. This study should consider the willingness of students to accept this vaccination and the factors influencing their intention to do so.

CONCLUSIONS: A majority of students appear to be willing to accept vaccination. If a booster MMR vaccination for all students is being considered. This study should consider the willingness of students to accept this vaccination and the factors influencing their intention to do so.

PRESENTED BY: Monnique Danielz
Keywords: Rotavirus Infection Adults Epidemiology Gastrointestinal symptoms Matched case, control study Denmark
ESCAIDE REFERENCE NUMBER: 20121063

Zoonoses
Long-term health status of patients with lower respiratory tract infections is not influenced by Q fever
Sandre von Dam (GGZ Hart voor Brabant, The Netherlands), Joanne Houtzwaep (Radboud University Medical Centre, The Netherlands), Jeanette Peters (Department of Medical Psychology and Department of Long Diseases, Radboud University Nijmegen Med, The Netherlands), Reinier Alkemaars (Academic Collaborative Centre AMPHI, Department of Primary and Community Care, Radboud University, The Netherlands). Aphrodit Olde Loohuis (General practitioner in the village of Venlo in the province of Noord-Brabant, The Netherlands), Anne van der Welden (Radboud University Nijmegen Medical Centre, The Netherlands)

BACKGROUND: More than 4000 people were diagnosed with Q-fever in the Netherlands from 2007 till 2011. Studies show that patients with Q-fever may develop long-term impaired health status, including more fatigue and impaired quality of life (QoL) compared to healthy people. In this study we determined the 12-months’ health status of patients with a lower respiratory tract infection (LRTI), and compared health status of patients who tested positive for Q-fever with patients who tested negative for Q-fever.

METHODS: The study was done in a prospective design. 14 GPpractices in the epicenter of the Q-fever outbreak region registered patients with LRTI in 2009. Health status was measured with the ‘Nijmegen Clinical Screening Instrument’ (NCSI) 12 months after onset of illness.

RESULTS: 82 patients of 167 returned the questionnaire (49%). One year after a LRTI 12-64% of the patients appeared to have severe impaired health status on different subdomains of the NCSI. Most severely affected subdomains of the Q fever positive group were general QoL (49%) and fatigue (64%). Most severely affected subdomains of the Q-fever negative group were fatigue (64%) and subjective symptoms (14%). Even after correction for confounding, health status of patients one year after initial LRTI did not significantly differ between Q fever positive and Q-fever negative patients for all, except the subjective symptom subdomains (p =0.015). The Q-fever negative group scored worse than the Q-fever positive group.

CONCLUSIONS: A large proportion of LRTI patients showed to have severe impaired health status one year after initial illness. Having LRTI due to Q-fever does not influence this outcome, only for ‘subjective symptoms’.

PRESENTED BY: Sandre von Dam
Keywords: Q fever, Health Status, Quality of Life, Respiratory Tract Infections
ESCAIDE REFERENCE NUMBER: 20124043

A case-control study of risk factors for rotavirus infections in adults, Denmark, 2005-2009

Frederique Dorleans (Stavros Serum Institute, Denmark), Gerhardt Folkersen (Stavros Serum Institute, Denmark), Blenda Böttiger (Stavros Serum Institute, Denmark), Michael Holmer (Stavros Serum Institute, Denmark), Sofie Milgrom (Stavros Serum Institute, Denmark), Anna Nickel (Stavros Serum Institute, Denmark), Sten Efthelberg (Stavros Serum Institute, Denmark)

BACKGROUND: Rotavirus infection causes substantial hospitalizations in industrialized countries in children, and can be prevented with vaccines. Less is known about the epidemiology of rotavirus infections in adults. We aimed at describing illness characteristics and identifying risk factors for rotavirus infections among adults aged 18 years or older.

METHODS: From February 2005 to June 2009, we prospectively compared cases (laboratory confirmed rotavirus infection) with controls from the Danish Civil Registry matched on age, gender and municipality of residence. We collected information on illness characteristics (cases) and potential exposures using postal questionnaire (all subjects). We calculated matched odds-ratios (mOr) and their 95% confidence intervals (CI) using conditional logistic regression.

RESULTS: A total of 687 university students completed the questionnaire. 60.4% indicated that they were willing to accept a booster MMR vaccination. A majority of students appear to be willing to accept vaccination. If a booster MMR vaccination for all students is being considered. This study should consider the willingness of students to accept this vaccination and the factors influencing their intention to do so.

CONCLUSIONS: A majority of students appear to be willing to accept vaccination. If a booster MMR vaccination for all students is being considered. This study should consider the willingness of students to accept this vaccination and the factors influencing their intention to do so.

PRESENTED BY: Frederique Dorleans
Keywords: Rotavirus Infection Adults Epidemiology Gastrointestinal symptoms Matched case, control study Denmark
ESCAIDE REFERENCE NUMBER: 20121038
Goat farm re-implicated as source of urban Q fever outbreak in Ajara, Regional Government of Georgia

Sida Korishy, Yvonne van Duynhoven, Willem Vennema, Piet Vellema, Andrey Tabgan, Janne Linde, Nona Ephadze, Marika Gakharia, Barbara Schimmer, Yvonne van Duijvenvoorde, Emri Sasi, Stefan Kullberg, Anders Wallensten

BACKGROUND: In spring 2008, a goat farm experiencing clinical Q fever abortions (“Farm A”) was identified as the probable source of a human outbreak (89 notifications) in a nearby city. One year later, another human outbreak (55 notifications) occurred in the city, despite there being no prior veterinary notifications from local farms. Our study aimed to identify the most likely source of this outbreak.

METHODS: We defined Q fever cases as residents of the Municipal Health Service most likely source of this outbreak.

RESULTS: Prior to 2002 no cases were registered in Ajara and prior to 2006, no laboratory testing was done. In 2006-2008, about 85% of reported cases (90% were reported as laboratory “confirmed” by ELISA). In 2010, 30 of 45 cases (66.7%) were laboratory confirmed. In 5 cases fourfold increases in antibody titers was demonstrated. 10 of 30 cases were considered confirmed after testing single serum samples by Igm ElISA. More cases to determine symptoms, introduction of syndromic case definition and timely collection and testing of paired sera.

CONCLUSIONS: The incidence of leptospirosis is very high in Georgia. Notification is based on positive serology in patients with fever of unknown origin.

PRESENTED BY: johan Lindh Keywords: Q fever, outbreaks, geographic information systems ESCAIDE REFERENCE NUMBER: 201271

Increase in cases of human Leptospirosis in Ajara, Region, Georgia, 2010

Nino Ephadze (Public Health Center of Adjara Region), SC/FEL TP, Armenia; Marika Gakharia (SC/FEL TP, Armenia), Edmond Mars (SC/FEL TP, Armenia), Thomas Rasch (SC/FEL TP, Armenia)

BACKGROUND: In Georgia, fourfold increase in leptospirosis incidence was observed in 2010 compared to 2009-2009 (5.6 per 100,000 people versus 0.43, and 0.36 respectively). Incidence is highest in Ajara region (370,000 population). In 2010 Ajara reported fivefold difference in incidence (2.7 per 100,000) compared to national rates and case fatality of 1.6%. We reviewed surveillance data to find explanations.

METHODS: We reviewed records from the period 2006-2010 and evaluated the factors of the surveillance system using CDC guidelines and WHO recommendations.

RESULTS: Prior to 2002 no cases were registered in Ajara and prior to 2006, no laboratory testing was done. In 2006-2008, about 80% of reported cases were laboratory “confirmed” by ELISA. In 2010, 30 of 45 cases (66.7%) were laboratory confirmed. In 5 cases fourfold increases in antibody titers was demonstrated. 10 of 30 cases were confirmed after testing single serum samples by Igm ELISA. More cases to determine symptoms, introduction of syndromic case definition and timely collection and testing of paired sera.

CONCLUSIONS: More people were tested for leptospirosis in 2010 than in previous years combined. Increase in laboratory confirmation may explain increases in cases. Over-reporting is likely as not all cases are laboratory confirmed or tested using paired sera. We recommend review of cases to determine symptoms, introduction of syndromic case definition and timely collection and testing of paired sera.

PRESENTED BY: Nona Ephadze Keywords: Leptospirosis, incidence, confirmation, ELISA, case definition ESCAIDE REFERENCE NUMBER: 201271

Evaluation of risks factors for humans in response to the first finding of Echinococcus multilocularis in the Swedish fox population

Johan Lindh (Swedish Institute for Communicable Disease Control, Sweden), Marika Hjartstrom (Swedish Institute for Communicable Disease Control, Sweden), Silvia Botero (Swedish Institute for Communicable Disease Control, Sweden), Antonia Barregard (Swedish Institute for Communicable Disease Control, Sweden), Anders Wallensten (Sahlgrenska Academy, Sweden)

BACKGROUND: The fox tapeworm, Echinococcus multilocularis (EM), may cause the disease alveolar echinococcosis. Even spread in many countries of the Northern Hemisphere, EM was not detected by the Swedish surveillance program until 2010. A risk assessment of humans was performed. As many Swedes engage in berry and mushroom picking and have the right to roam, on private lands, these activities required special attention.

METHODS: A literature study was conducted to find out what evidence there was concerning risk factors that applied to the Swedish setting using the search words “risk factors” paired with either “alveolar echinococcosis” or “EM”. Risk factors were weighted with respect to Swedish conditions and only articles from peer-reviewed journals were included in the survey.

RESULTS: Risk factors identified in the literature that applied to Sweden were: owning a dog or cat, eating raw strawberries, being a farmer and/or a hunter. Among these risk factors, owning a dog that was hunting wild animals and being a farmer and/or a hunter were considered the highest risks. No evidence indicated that picking and/or eating wild berries or mushrooms constituted a significant risk factor.

CONCLUSIONS: From 2007-2009 a large human Q fever outbreak occurred in the Netherlands. ‘ This study focuses on the seroprevalence (both residents of the small dairy sheep farm sector and the larger non-dairy sheep farm sector) and risk factors for Q fever in the non-dairy sheep farm residents.

METHODS: Owners of professional non-dairy and dairy sheep farms were asked to fill out a farm-directed questionnaire. All farm residents included in the study, filled out an individual questionnaire. Participants were tested for Coxiella burnetii antibodies (IgG and IgM) phase I, phase II. Risk factors for the non-dairy sheep farm residents were identified by univariate, multivariate and multilevel analyses.

RESULTS: In dairy sheep and non-dairy sheep farm residents, the Q fever seroprevalence was 66.7% and 51.3%, respectively. Cattle contact at present or past, a high goat density in the vicinity, sheep supply from two Northern provinces, more often cleaning the stables, a farm started before 1990, the presence of the breed Blessum and an age between 40 and 49 years were risk factors for infection. Protective factors were sheep giving birth in paddock and air entry stable through door.

CONCLUSIONS: Q fever seroprevalence and risk factors in sheep farmers and family members in the Netherlands


BACKGROUND: From 2007-2009 a large human Q fever outbreak occurred in the Netherlands. This study focuses on the seroprevalence (both residents of the small dairy sheep farm sector and the larger non-dairy sheep farm sector) and risk factors for Q fever in the non-dairy sheep farm residents.

METHODS: Owners of professional non-dairy and dairy sheep farms were asked to fill out a farm-directed questionnaire. All farm residents included in the study, filled out an individual questionnaire. Participants were tested for Coxiella burnetii antibodies (IgG and IgM) phase I, phase II. Risk factors for the non-dairy sheep farm residents were identified by univariate, multivariate and multilevel analyses.

RESULTS: In dairy sheep and non-dairy sheep farm residents, the Q fever seroprevalence was 66.7% and 51.3%, respectively. Cattle contact at present or past, a high goat density in the vicinity, sheep supply from two Northern provinces, more often cleaning the stables, a farm started before 1990, the presence of the breed Blessum and an age between 40 and 49 years were risk factors for infection. Protective factors were sheep giving birth in paddock and air entry stable through door.

CONCLUSIONS: Coxiella burnetii infection was found to be an actual occupational hazard for sheep farm residents. In non-dairy sheep farm residents, most risk factors for Q fever point to current or past goat and cattle exposure. Molecular typing of human, cattle, goat and sheep Coxiella burnetii strains might further elucidate the role of those animals in the infection of the residents at non-dairy sheep farms.

PRESENTED BY: Merel de Lange Keywords: Q fever, Coxiella burnetii, Seroprevalence, Occupational Epidemiology ESCAIDE REFERENCE NUMBER: 2012811

Q fever seroprevalence and risk factors in sheep farmers and family members in the Netherlands

ESCAIDE Reference Number: 201271
Retrospective analyses of the rabies vaccination efficacy in the Italian Alps
Uttrera Guberti (INPA, Italy), Leibano Bonfenti (IZS Venezia, Italy), Lauro Gugliarano (IZS Venezia, Italy), Federico Oniferi (IZS Venezia, Italy), Monica Lorenzetto (IZS Venezia, Italy), Stefano Meronghi (IZS Venezia, Italy)

BACKGROUND: Fox rabies re-emerged in northeastern Italy in October 2008. The infection spread westward, within the infected area of about 30,000 km². To halt the spread and eradicate the infection, seven oral rabies vaccination (ORV) campaigns were implemented. Vaccine baits were distributed with helicopters; baits density was planned according to the estimated fox population density. Following each ORV campaign, active surveillance was implemented to evaluate the efficacy of vaccination. The aim of the study is to verify which variables affect the proportion of immune foxes and if the post vaccination surveillance could be modified to reduce the number of shot fox.

METHODS: The automatic bait dispensers georeferenced each delivered bait and then maps of different bait densities have been produced. Vaccinated area was then divided in three sub-areas: “sufficient”, “optimal” and “overabundant” according to the difference between the planned and distributed baits. Shot foxes were tested for rabies antigen and antibodies. A logistic regression tested the influence of each one of the ORV campaign, the score of the provenience area and their interaction, on the fox immunity. Finally, to reduce the number of shot fox, a bootstrap, random selection of 1000 subsets of samples extracted from the original data base, have been tested to verify the efficacy of vaccination.

RESULTS: The average seroprevalence was 62.8% ranging from 43.2% (2011, 2nd campaign, Italy, 3 vaccination, 3rd campaign, Italy, 3 vaccination, 3rd campaign) to 83.9% (2010, 4th campaign, Italy, 3 vaccination). Antibodies were detected in 84% of foxes. The average seroprevalence was 62.8% ranging from 43.2% (2011, 2nd campaign, Italy, 3 vaccination, 3rd campaign, Italy, 3 vaccination, 3rd campaign) to 83.9% (2010, 4th campaign, Italy, 3 vaccination).

CONCLUSIONS: The study is to verify which variables affect the proportion of immune foxes and if the post vaccination surveillance could be modified to reduce the number of shot fox.

PRESENTED BY:
Vittorio Guberti (ISPRA, Italy), Lebana Bonfanti (IZS Venezie, Italy), Stefano Meronghi (IZS Venezie, Italy)

Anthrax knowledge, attitude and practice among populations in rural Georgia, 2012
Archil Navaelashvili (National Center for Disease Control and Public Health, Georgia), Giorgi Bagaladielde (Central Public Health Reference Laboratory, Georgia)

BACKGROUND: Georgia’s National Centers for Disease Control (NCDC) registered increases in human cutaneous anthrax cases twice the level of 2010 in 2011 and three times the level from January-June, 2011 by July, 2012. We investigated the knowledge of symptoms and risk factors among rural populations to help improve prevention and control.

METHODS: In May and July 2012, we conducted a cross-sectional household survey, cluster design among villages in two regions with high rates of anthrax. Clusters of 12 households were selected among villages, proportional to population size, with the goal of estimating prevalence of 50%, precision of ± 5%. We designed a questionnaire to assess knowledge of anthrax sources, transmission routes, clinical symptoms, and exposure to animals.

RESULTS: We collected 936 questionnaires. Interviewees claimed knowledge of anthrax as a human disease (98%). Eighty percent of persons could correctly list sources of disease; 22% listed transmission routes; 45% knew symptoms, and 12% knew possible outcomes. The following factors were associated better knowledge concerning anthrax: persons over 30 years of age vs. younger persons (Prevalence Rate Ratio=1.8, 95% CI 1.2–2.6); non-Azerbaijan ethnic groups vs. ethnic Azerbaijanis (PRR=2.0, 95% CI 1.6–2.7) education over 12 years vs. less education (PRR=1.6, 95% CI 1.3–2.0); animal raising vs. not (PRR=1.5, 95% CI 1.3–2.0); medical workers vs. others (PRR=1.5, 95% CI 1.3–2.0); animal raising vs. not (PRR=1.5, 95% CI 1.3–2.0); participation in animal care vs. not (PRR=1.5, 95% CI 1.3–2.0).

CONCLUSIONS: Knowledge of anthrax in the study population is low. We recommended development and implementation of health education messages, based on data from this survey. Based on increasing level of anthrax, the messages should be particularly targeted within high risk geographic areas and population groups.

PRESENTED BY:
Archil Navaelashvili

Keywords: Cutaneous anthrax, cluster survey, KAP survey, Georgia

ESCAIDE reference number: 2012009
ESCAIDE Special Plenary Session:

Public Health Event of 2012

ESCAIDE Special Plenary Session

Prioritising health events for ECDC epidemic intelligence activities at the European Union level for the London 2012 Olympics mass gathering.

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BACKGROUND:
Mass gathering events can present public health risks for visitors and the local population. Adjusting epidemic intelligence (EI) protocols that screen for such risks assists threat detection during these events. The European Centre for Disease Prevention and Control (ECDC) employed a qualitative methodology to prioritise health risks for ECDC's enhanced EI activities for the London 2012 Olympics (London2012).

METHODS:
A list of potential health threats was compiled from 49 notifiable diseases in the European Union (EU) and public health events monitored during the summers of 2005-2011 at ECDC and in the United Kingdom (UK). Epidemiological information, including geographical and seasonal distribution, was obtained for each threat and shared with expert groups at ECDC. Their assessment of each threat's relative likelihood of occurrence and public health impact was compiled using a Delphi approach. A qualitative risk matrix and inclusion and exclusion criteria were applied to results to produce a list of priorities for EI activities by ECDC between 25 July and 15 August 2012 for London2012.

RESULTS:
Seventy-six potential health threats were compiled; all are included in ECDC's standard EI activities. Expert review generated 27 priorities for ECDC's enhanced EI activities for the London 2012 Olympics (London2012).

CONCLUSIONS:
ECDC's standard EI activities for the London 2012 Olympics (London2012) were applied to results to produce a list of priorities for EI activities by ECDC between 25 July and 15 August 2012 for London2012.

PRESENTED BY:

Keywords: Mass Gatherings Surveillance Preparedness European Union

ESCAIDE REFERENCE NUMBER: 2012644

European football tournament (EURO2012) in Poland: A championship free of serious public health events. Results and assessment of the event-based surveillance.


BACKGROUND:
A potentially increased risk for infectious disease transmission and spread exists during mass gathering events and requires additional surveillance activities. For the European Football Championship (EURO2012), held in Poland and Ukraine between 8 June and 1 July 2012, an event-based surveillance system was implemented in Poland. We present its results and an assessment of its usefulness.

METHODS:
For the purpose of the described surveillance, an ‘event’ was defined as a situation that may constitute a threat or may indicate the possibility of a threat to public health, including eleven scenarios provided as example for reporting agencies. Local health departments used a simple free-text form to report any health event. No zero reporting was required. Daily we monitored all incoming reports and compared them with notifications from enhanced routine surveillance, food-borne outbreaks reports, notifications sent to the Polish International Health Regulations focal point and with information from domestic and international media sources.

RESULTS:
One event was notified through the event-based surveillance: a gastrointestinal tuberculosis episode in a non-Polish citizen already under treatment. Additionally, routine surveillance captured three public health events not connected to the tournament that could have had an impact on it: a measles outbreak in Roma community in the host city of Wroclaw, a gastrointestinal disease outbreak in police camp near Warsaw, a case of meningitis in a non-Polish national whose family visited Warsaw during EURO2012.

CONCLUSIONS:
The event-based surveillance did not identify any relevant health event not reported to routine systems. But it did allow monitoring of health threats on a daily basis ensuring that no relevant events would be missed. Introduction of event-based surveillance should always be considered when planning mass gathering surveillance.

PRESENTED BY:

Keywords: Public health surveillance, Poland, mass gathering

ESCAIDE REFERENCE NUMBER: 2012704
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