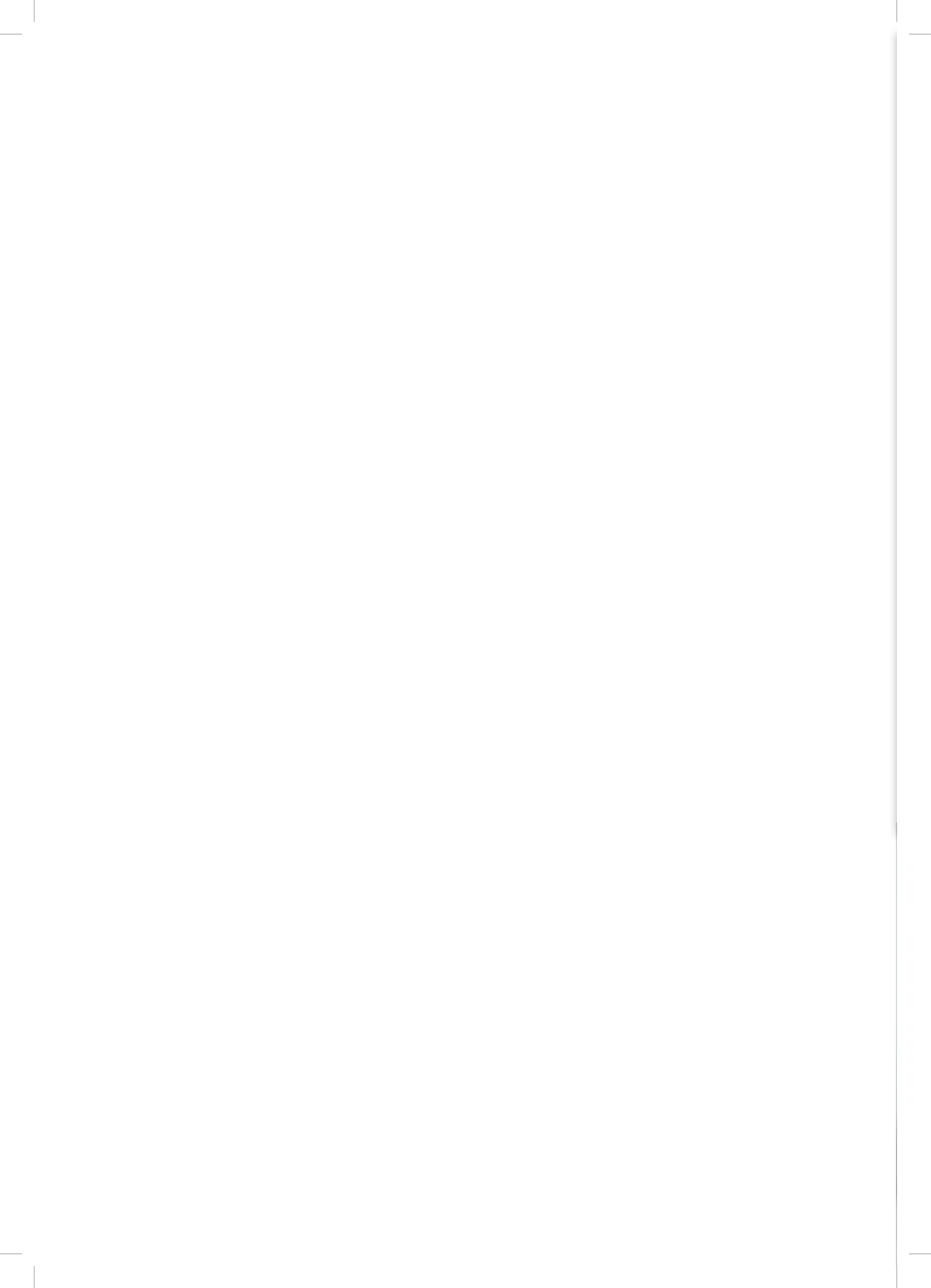


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ESCAIDE

European Scientific Conference on
Applied Infectious Disease Epidemiology

Stockholm, 26–28 October 2009

Plenary Session Speaker

Abstracts



Reference: Plenary Session A

Ageing and infectious diseases

The times of our lives: a history of longevity

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ABSTRACT

The massive increase in life expectancy that took place in the industrialized world between 1800 and 1950 is among the most remarkable facts in human biology. No one living in 18th century Europe could have foreseen the amazing plasticity of human life spans, or the potential for such rapid change. I shall begin this talk by considering why life span doubled in Britain and other industrializing countries after 1800. I shall investigate the underlying population processes, and identify the key interventions that changed mortality rates attributable due to infectious diseases. Longevity in low- and middle-income countries did not improve until well in the 20th century, showing some similarities, but also some important differences, from earlier events in Europe. Having reviewed the history and geography, I shall discuss the interplay between aging, fertility, demographic change and the global distribution of infectious diseases today. The growth in life expectancy must eventually stop, but it is debatable whether centenarians will become the norm or remain exceptional during the 21st century.

Reference: Plenary Session A

Ageing and infectious diseases

The impact of current demographic change on the dynamics and control of childhood infectious diseases (measles as an example)

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ABSTRACT

During the last 30 years European populations have experienced a variety of changes, e.g. the generalised spread of low fertility, the "postponement" of life events, and the increasing role of international immigration. In this talk we discuss the impact of demographic change on the dynamics and control of childhood infectious disease (CID) from a modelling perspective. We first clarify the circumstances under which demographic change might actually have an impact on CID dynamics. Then we review those, among current demographic changes, which we believe to be mostly important for the dynamics and control of CID, i.e. fertility decline and immigration, and their impact on population and household distributions. Next, we investigate the relation between population change and social contact patterns by a model of infection where contacts occur in three distinct arenas, i.e. the school (or work), the household, and "other" population contacts. We assume that school contacts are essentially unaffected by demographic change, owing to the common EU policy to keep fixed the average class size, so that most demographic change will be reflected in changes in household and other population contacts. We illustrate, under a variety of equilibrium or transient conditions, the effects of fertility decline on the corresponding contact matrices. By adding available estimates of arena-specific transmission rates we are able to compute basic reproduction numbers and therefore to figure out a relationship between degrees of fertility change and disease control conditions. Overall we suggest that for highly transmissible disease the impact of demographic change on transmission may be smaller than predicted in the literature (Manfredi-Williams 2005, Gao-Hethcote 2006), but a better understanding of transmission per arenas is certainly a need.

Plenary Session Speaker Abstracts

Reference: Plenary Session B

H1N1 pandemic: Will vaccines solve the problem, and how will we know?

Overview of the current situation regarding H1N1 with particular emphasis on vaccine strategies and prioritization

Professor Angus Nicoll
ECDC

ABSTRACT

To be published during session.

Reference: Plenary Session B

H1N1 pandemic: Will vaccines solve the problem, and how will we know?

Assessing the effectiveness of H1N1 vaccine in Europe

Dr Alan Moren
I-MOVE

ABSTRACT

To be published during session.

Plenary Session Speaker Abstracts

Reference: Plenary Session B

H1N1 pandemic: Will vaccines solve the problem, and how will we know?

Modelling the potential benefits of vaccine use

Mr Tommi Asikainen
ECDC

ABSTRACT

To be published during session.

Reference: Plenary Session B

H1N1 pandemic: Will vaccines solve the problem, and how will we know?

H1N1 Vaccine uptake: Challenges for risk communication

Professor Karl Ekdahl
ECDC

ABSTRACT

To be published during session.

Reference: Plenary Session C

What has genotyping to offer epidemiologists

Integrating strain typing and epidemiology in international networks: focus on diphtheria and invasive group A streptococcal infections

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ABSTRACT

Two distinct bacterial diseases, namely diphtheria and invasive group A streptococcal infections (iGAS) will be described to illustrate the relevance and importance of epidemiological strain typing amongst international networks. Both diseases have the potential to cause significant morbidity and mortality on a global scale. The main typing method for diphtheria is ribotyping, which has proved to be invaluable for the molecular epidemiology of the 1990s epidemic in Europe; the largest outbreak since the advent of mass immunization. Cases are still being reported and the epidemic strain 'Sankt Petersburg' continues to circulate in the European Region. The situation is still being closely monitored by the international diphtheria networks DIPNET (European Diphtheria Surveillance Network) and the WHO/ELWGD (European Laboratory Working Group on Diphtheria). iGAS infections re-emerged globally in the 1980s and high incidence still persists. The 'global typing scheme' is based upon the *emm* gene which encodes the organism's key virulence factor the M protein, more than 200 *emm* types are currently described. GAS epidemiology varies with time in the long term and the short term where temporal variation of *emm* predominance is encountered, hence global diversity. An official network does not exist but in 2002, the European Commission funded research on iGAS infections (strep-EURO), with participation from 12 EU Members states. This '*ad hoc*' network investigated the epidemiology of these infections for the first time on a Pan-European scale and contributed significantly to epidemiology, raised awareness and provided data for future vaccine formulations and public health guidelines. There are many unanswered questions on the epidemiology and population biology for both diphtheria and iGAS; this highlights their global importance which seriously needs to be re-addressed.

Reference: Plenary Session C

What has genotyping to offer epidemiologists

Next generation molecular epidemiology of RNA viruses

Dr Oliver Pybus

University of Oxford, United Kingdom

ABSTRACT

Molecular epidemiology is changing rapidly, due to the increasing abundance of pathogen genome sequences, acceleration in computer processing power, and the development of sophisticated inference methods based on phylogenetics and population genetics. As a result, the range of epidemiological questions that can be answered using genetic data has grown enormously. This is especially true for RNA viruses, which evolve so quickly that their evolutionary and ecological dynamics occur on similar timescales and are therefore coupled. I will illustrate the range of empirical questions open to current and next-generation methods of evolutionary analysis, with reference to the hepatitis C virus and other human RNA viruses. I will also consider whether the explosion in sequence data is outpacing our ability to develop methods that fully exploit its potential.

Reference: Plenary Session C

What has genotyping to offer epidemiologists

Insights into norovirus epidemiology through molecular epidemiological studies

Dr Marion Koopmans

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ABSTRACT

Noroviruses have become recognized as important causes of gastroenteritis worldwide, with prevalences and clinical impact in the same range as those observed for rotaviruses. The repertoire of noroviruses recognized is expanding, with newly found related viruses in different animal species. Direct zoonotic transmission appears to be rare, but genetic mixing of animal and human viruses seems plausible with the finding that common human strains replicate in pigs and cattle. Despite this diversity, a limited number of strains cause the majority of outbreaks globally, although in developing countries the diversity of viruses involved is broader. A major finding was the evolutionary mechanism behind the success of the GII.4 strains that are dominant in outbreak based surveillance data. GII.4 viruses evolve rapidly through mutations, leading to emergence of new antigenic variants at 1-2 year intervals since 2002. The increased transmissibility of the recent strains resulted in increased numbers of outbreaks in health care settings, where immuno-suppressed individuals are at risk of getting chronic diarrhoea following infection. Long term shedders are now recognized, and noroviruses evolve within these patients, who therefore may be a reservoir for onward transmission and possibly new drift variants. Molecular typing using highly variable genes is used to identify sources of outbreaks, including the elusive diffuse (international) food-borne outbreaks. Although a minority of all outbreaks is associated with this mode of transmission, high risk foods are often contaminated with multiple norovirus genotypes, thus increasing risk of co-infection and thereby setting the stage for recombination and generation of new strains. From a virological perspective, there is an urgent need for control efforts, given the fast evolutionary changes of these viruses that may have unpredictable effects.

Reference: Plenary Session D

New methods for analyzing outbreaks

Different approaches to the investigation of foodborne outbreaks used in Denmark

Dr Steen Ethelberg

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ABSTRACT

Depending on their nature, continuous source foodborne outbreaks may require quite different approaches and their investigation may sometimes be challenging. In Denmark a large outbreak with *Salmonella* Typhimurium which occurred in 2008 prompted the use of methods not otherwise commonly applied. The purpose of this presentation is to discuss different examples of non-standard approaches to outbreak investigations that have been tried out in a Danish context in recent years and which may be helpful in other countries also. One such method involves the use of credit-card information to obtain shopping lists from supermarkets. Affected individuals or families that predominantly use their credit-cards when buying foods are asked to find details of when and where they shopped through their home-banking systems. Supermarket may then agree to search their central computers for all items bought by the patients prior to onset of illness. Such lists can then be compared and used for hypothesis-generation. Another use of credit-card information has been for restaurant outbreaks where people eating at restaurants have been located via their credit-card payments. A second method that have been widely used for salmonella outbreaks is comparative typing of isolates from humans with isolates obtained from food and animal surveillance programmes. In this way it has sometimes been possible to create a link to a food or slaughterhouse source or occasionally even identify individual farms as the source of outbreaks. Other methods used in recent outbreak investigations include risk ranking of food production facilities and structured sampling of foods from patients' homes followed by microbiological analysis.

Reference: Plenary Session D

New methods for analyzing outbreaks

Description and analysis of outbreaks using GIS

Dr Karin Nygård

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ABSTRACT

The description of "place" is part of the basic early assessment of an outbreak, and provides important information for hypotheses generation. In waterborne outbreaks, analysis of the spatial characteristics are often crucial in pinpointing the source, and similar for outbreaks with an environmental reservoir, such as legionnaires disease or for vectorborne and zoonotic infections. Also for outbreaks linked to traded products, a good description and analysis of place of infection can be used as supportive evidence identifying the source, an investigative step that is often not fully appreciated. New geographical software and establishment of electronic food traceability systems may improve analysis of the geographical component in foodborne outbreak investigations, including descriptive as well as analytical epidemiology. This will be exemplified by a presentation of two different outbreaks - one outbreak of legionnaires disease and one foodborne outbreak with EHEC - both with several possible sources, and where traditional epidemiological and microbiological investigation was supplemented by spatial analysis supporting the identification of the source. Some practical problems and limitations, and some potential future possibilities utilizing the increased availability of geographical software tools, electronic traceability data and credit card information will be discussed.

Reference: Plenary Session D

New methods for analyzing outbreaks

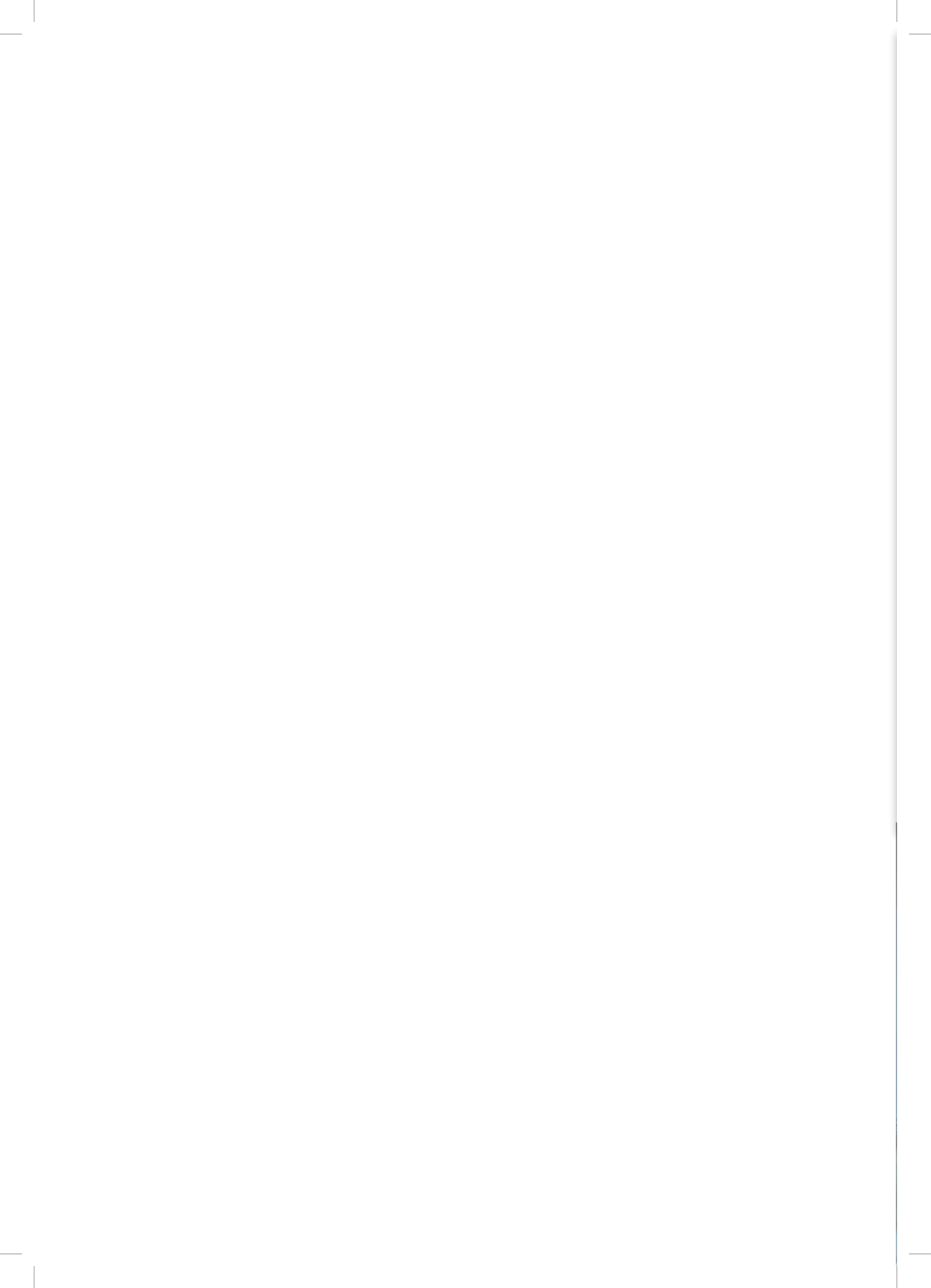
Epidemiological issues in outbreaks of infectious disease

Dr Noel McCarthy

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ABSTRACT

The application of robust epidemiological approaches to the unexpected is both a challenge and a joy for field epidemiologists. Ideal study designs are not often possible when studying such unplanned incidents. Against these difficulties infectious disease epidemiology has the advantage of both strong causal associations awaiting identification, and the unique aspect of infectious disease arising from characterisation of the infectious agent. This session will focus on identifying the important epidemiological issues in outbreaks and how we can best exploit our understanding of infectious agents when investigating their role in causing disease and outbreaks including the opportunity to perform analytical studies restricted to cases.





ESCAIDE

European Scientific Conference on
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Stockholm, 26–28 October 2009

Parallel Session

Abstracts



20090247

Session: 01 .1

Track: Influenza 1

Transmission of Influenza A (H1N1) following a point exposure to a confirmed case

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BACKGROUND

On 08/05/09 a 12 year old was confirmed with influenza A(H1N1)v. A risk assessment showed he was present at a party with 97 other guests on 02/05/09, while symptomatic. The index case probably acquired the infection at school where there was a confirmed outbreak. The Health Protection Agency undertook an investigation of this incident to determine the secondary attack rates (SAR) and risk of onward transmission following a point exposure to a confirmed case.

METHODS

A list of all the attendees at the party was obtained and a retrospective questionnaire administered by telephone. A single viral swab was obtained from symptomatic individuals. Cases were defined as individuals attending the party, with symptoms of Influenza like illness, and a positive swab for influenza A(H1N1)v.

RESULTS

Questionnaire results were obtained from 81 guests. Excluding the index case, 3 confirmed cases were identified among party attendees giving a SAR of 3% (3/97). Two of these cases were also household contacts of the confirmed case. Excluding these two cases gives a SAR of 1% (1/97). The survey showed that the index case spent most of the party in room "A". The questionnaires identified only 13 other attendees who spent over 10 minutes in room "A". Among these were two of the three secondary cases. Considering Room "A" as the exposure setting, the SAR was 15% (2/13) or 7% (1/13) excluding the household contact.

CONCLUSION

This report describes the transmission of influenza A(H1N1)v in a short time period with the case confined to a single room during the party. The attack rates found were lower than expected. We were unable to determine associated risk factors due to the small number of confirmed cases.

PRESENTER: KINROSS

20090232

Session: 01 .2

Track: Influenza 1

First outbreak of influenza A(H1N1)v without travel history in a school in the Toulouse district, France, June 2009

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BACKGROUND

In June 2009, the first confirmed outbreak of influenza A(H1N1)v infection without history of travel occurred in France among sixth-grade students in the same class of a secondary school in the suburb of Toulouse, South-Western France. An investigation was conducted to describe the outbreak and to identify the source of transmission.

METHODS

A retrospective cohort study was conducted, through face-to-face standardised questionnaire, among the 30 students and 8 staff members of the class. Nasal and throat swabs were taken from all people. A possible case was a person with high fever (>38°C) or asthenia or myalgia and at least one acute respiratory symptom (cough or dyspnoea). A confirmed case was a person confirmed by real-time PCR specific for influenza A(H1N1)v virus. Active case finding was performed among contacts (close relatives and social contacts) of all class cases. The outbreak was described by time and person, and exposure factors were analysed.

RESULTS

20 cases (15 confirmed, of whom 3 asymptomatic) were identified between 10 and 14 June: the attack rate was 60% among students and 25% among staff. In reference to a positive real-time PCR taken as the gold standard, the sensitivity of the definition of a possible case was 47% and the specificity was 78% among our study population. No chain of transmission was identified.

CONCLUSION

The investigation highlighted some features of the influenza A(H1N1)v infection that were not well-known at that time: substantial proportion of asymptomatic cases, low sensitivity of the possible case definition among children. This outbreak without identified travel history was an important event in France to adjust the surveillance of influenza A(H1N1)v from focussing mainly on imported cases to a widening community surveillance.

PRESENTER: GUINARD

20090148

Session: 01 .3

Track: Influenza 1

Epidemiology and control of the new influenza A(H1N1)v epidemic in The Netherlands: the first 115 cases

Dutch Influenza A(H1N1)v Investigation Team
RIVM, ErasmusMC, GGD

BACKGROUND

On 11 June 2009 the World Health Organization declared the outbreak of new influenza A(H1N1)v virus to be pandemic. In The Netherlands, containment consisted initially of isolation and oseltamivir treatment of confirmed cases, and testing and providing oseltamivir to their contacts.

METHODS

On April 29 A(H1N1)v infections were made notifiable, with enhanced surveillance for clusters. We report only laboratory confirmed cases. We estimated the generation interval as the average number of days between the symptom onset in the source and secondary case, respectively. We applied the estimated average generation interval as a moving average window to the epidemiological curve. We estimated the effective reproductive number (R_e) as the average ratio between the number of indigenous cases in one window to the total number cases in the previous window.

RESULTS

Up to June 24th, 115 confirmed cases were reported, of whom 46% were indigenous. There were no deaths. Two cases have been admitted to hospital. Of 50 indigenous cases with information, 6 (12%) were asymptomatic at sampling. Of 111 cases for whom the seasonal influenza vaccination status 2008/2009 was known, 17 (15%) were vaccinated. The expected coverage based on population seasonal influenza vaccine coverage monitoring is 10%. The generation interval for the three largest clusters was 3 days (SD 1.4, N=36 cases). The estimated R_e was 0.5 between May 30th and June 16th.

CONCLUSION

Transmission of the A(H1N1)v has remained relatively limited in The Netherlands, consistent with our estimated R_e of below 1. The severity of disease is similar to elsewhere. The 2008/2009 seasonal influenza vaccine appears not to be effective against the current pandemic strain. Continued surveillance is of key-importance to inform control strategies for the pandemic.

PRESENTER: HAHNÉ

20090208

Session: 01 .4

Track: Influenza 1

Risk factors for infection with novel influenza virus A(H1N1) in a teenager's party cohort, Germany, June 2009

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BACKGROUND

In June 2009, eight teenagers with acute respiratory illness were diagnosed with novel influenza virus A(H1N1) (NIV) infection after a welcome party for two female returnees from Argentina, who were considered source cases (= SC). They were already (SC-a) or became symptomatic (SC-b) during the party. We performed a retrospective cohort study among party guests except SC to identify risk factors for NIV infection.

METHODS

Guests were asked for different types of contacts with SC. We defined the outcome as NIV infection diagnosed by polymerase chain reaction 1-14 June 2009. We compared duration of talking to the SC at ≤ 1 m distance (0 minutes, 1-14 minutes, 15-60 minutes, $>1-4$ hours, >4 hours) and the amount of hugging or kissing the SC (0x, 1-2x, 3-5x, >5 x) in persons with and without NIV infection using the Wilcoxon rank-sum test.

RESULTS

Overall, 25 (96%) of 26 guests participated in the study (age-range 15-19 years). We identified six cases (attack rate 24%). The attack rate in females was 39% (5/13) and in males 8% (1/12) ($p=0.08$). All participants reported talking to and hugging or kissing SC. Seventeen stayed overnight, including all infected. Infected persons had talked significantly longer to SC-b than non-infected ($p=0.004$) and had hugged or kissed her more often ($p=0.03$). No infections were observed in persons having talked to SC-b <15 minutes. We found no significant difference for talking to ($p=0.35$) and hugging or kissing ($p=0.62$) SC-a. Therefore, we considered SC-b the only source of infection for the other guests.

CONCLUSION

In this cohort, talking with the source case for <15 minutes did not result in NIV infection. This suggests that prolonged conversation may be necessary to transmit novel influenza A(H1N1).

PRESENTER: HERMES

20090133

Session: 01 .5

Track: Influenza 1

Assessment of strategies based on the use of a pandemic inactivated vaccine in mitigating influenza A/H1N1 spread: a modeling study

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BACKGROUND

Substantial work is currently under way to develop a pandemic vaccine for influenza A/H1N1 virus. Delays in its production as well as restrictions in the global manufacturing capacity dictate careful planning of strategies concerning distribution policies. Aim of the study was to assess the impact of different vaccination strategies on mitigating influenza A/H1N1 pandemic.

METHODS

A stochastic simulation model was employed on epidemiological data from A/H1N1 epidemic in Mexico in a community generated to match the age distribution, household size and number/size of schools of the Greek population (Sypsa et al, Eurosurveillance, 2009). The vaccine efficacy in reducing infection-confirmed illness was assumed 80% (Basta et al, Am J Epidemiol, 2008). Vaccination scenarios included distribution of the vaccine either uniformly throughout the population or to children 4-17 years old or/and to high-risk individuals (>64 years, clinical risk groups, health care professionals).

RESULTS

In the absence of intervention, 34.5% of the population is expected to experience symptomatic illness. Coverage of 80% of high-risk individuals results in an illness attack rate (AR) of 23.9% (reduction: 30.7%; 0.5 cases prevented/vaccinee). When 80% of children are vaccinated, the AR is estimated 19.5% (reduction: 43.5%; 1.2 cases prevented/vaccinee). Combining these two strategies results in an AR of 11.7% (reduction: 66.1%; 0.7 cases prevented/vaccinee). More massive strategies covering 50% or 70% of the population would result in AR of 9.0% and 4.5%, respectively (reduction: 73.9% and 87.0%; 0.5 and 0.4 cases prevented/vaccinee).

CONCLUSION

The use of vaccination as the sole measure for containing influenza A/H1N1 would be effective only when offered to a large proportion of the population. In a limited-resource setting, vaccination of children 4-17 years old is the most efficient use of vaccine.

PRESENTER: SYPSA

20090042

Session: 02 .1

Track: Outbreaks 1

New Influenza A(H1N1) Virus Outbreak in a School, South-East London, April-May 2009

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BACKGROUND

On 29/4/2009, a potential case of new influenza A(H1N1) virus infection returning from the US was detected in a South-East London school. As this child, and subsequently further pupils and staff members were virologically confirmed as cases, school closure and mass prophylaxis were implemented. We describe this outbreak, including transmission outside the school, to gain better understanding of the clinical presentation and transmission of new influenza A(H1N1), and to contribute to the management of school outbreaks.

METHODS

An observational descriptive study, using pre-existing data, including social networks, was conducted. The study population included pupils and staff members attending the school 15/4-15/5/2009, and their close contacts. A confirmed case was symptomatic and tested positive for new influenza A(H1N1); an A(H1N1)-negative case was symptomatic and laboratory-negative.

RESULTS

Ninety-one cases were identified: 33 confirmed, 57 A(H1N1)-negative, and 1 with laboratory results pending. The epidemic curve and investigation of close contacts suggests a person-to-person transmission in the school, and subsequently outside the school, including cases in two other schools. Attack rate (AR) in pupils was 2%. One year group (aged 11-12) was especially affected (AR 15%). AR in family contacts was 17%. The predominant symptoms were fever (97%), respiratory symptoms (91%), and sore throat (79%), with no considerable difference in the clinical presentation between confirmed and A(H1N1)-negative cases. Thirteen cases attended school while symptomatic. Due to different data sources for confirmed and A(H1N1)-negative cases, there are limitations, especially in the reporting of contacts.

CONCLUSION

Confined and limited spread at the school was achieved through closure and mass prophylaxis. However, transmission continued through household contacts to other schools. Further work on the impact of school closure in reducing transmission is needed.

PRESENTER: CALATAYUD

20090165

Session: 02 .2

Track: Outbreaks 1

Outbreak of Salmonella Typhimurium DT 191a associated with reptile feeder mice in England and Wales

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Health Protection Agency, UK

BACKGROUND

As of December 2008, there had been 57 cases of tetracycline-resistant Salmonella Typhimurium DT191a in England and Wales, triggering the launch of an investigation to identify the source. This was a previously undefined phage type; hence there were no cases identified in the preceding years. There was an average of around 3 cases per week, with a mean age of 15 and a median of nine years old.

METHODS

Trawling suggested a strong link with reptile ownership. A case control study was conducted, with a focus on reptiles but also including patient food histories. Controls were cases of Salmonella Enteritidis.

RESULTS

A total of 14 of 21 cases interviewed (66%) indicated exposure to reptiles in the 3 days before onset, none of the controls had exposure to reptiles. Statistical analysis revealed that those with exposure to reptiles were nearly 17 times more likely to be ill than those who had no contact with reptiles, with snakes the most common pet owned by the cases. There have now been 175 cases of this salmonella. Of these, 100 cases have been contacted and 74 reported contact with a reptile.

CONCLUSION

Many of the cases had owned their pets for years without problems, leading us to investigate their care and management. Eighty-six percent of cases fed their pets on frozen mice, so in co-ordination with Reptile and Exotic Pet Trade Association and the Veterinary Laboratory Agency, frozen feeder-mice specimens representative of the major distributors in England Scotland and Wales were submitted for analysis. Salmonella of the same phage type was detected in 3 lines of produce. A tracing exercise identified a single import company as the source of these positive isolates.

PRESENTER: HUTTON

20090229

Session: 02 .3

Track: Outbreaks 1

Previous insufficient vaccination coverage led to countrywide mumps outbreak in the former Yugoslav Republic of Macedonia (MKD)

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BACKGROUND

A countrywide mumps outbreak occurred in the former Yugoslav Republic of Macedonia with 10,588 cases reported between December 2007-February 2009. 52% of cases were 15-19 years old. Considering measles-mumps-rubella vaccine supply shortage in 1991-1994, reliability of national vaccination coverage (two-dose schedule at 13 months and 6-7 years) in this age group was questioned. In March 2009, a collaborative MoH-WHO-ECDC team evaluated mumps vaccine effectiveness (VE).

METHODS

We conducted a retrospective cohort study among students born 1990-1994 in two high schools (A and B) with high attack rates (ARs). Data on sex, age and mumps occurrence were collected using supervised self-administered questionnaires. Medical officers collected vaccination status from local vaccination register books. VE was calculated using the risk ratio between vaccinated and non-vaccinated students.

RESULTS

A total of 1630 students responded (school A: 838, school B: 792). Among 1532 susceptible students, ARs were 24% in school A and 13% in school B. In students from school A, 1% were unvaccinated (AR=33%), 38.3% vaccinated with one dose (AR=34.8%), 60.5% with two doses (AR=17.6%); in students from school B, 2% were unvaccinated (AR=40%), 51.6% vaccinated with one dose (AR=14.3%), 46.4% with two doses (AR=10.4%). Two-dose VE was 47% [CI95% -36-79%] in school A and 74% [CI95% 8-91%] in school B VE did not change significantly by time since last vaccination or season of vaccination.

CONCLUSION

The low 2-dose coverage with MMR vaccine in this age group due to vaccine shortages in 1991-1994 most likely caused outbreak due to the accumulation of susceptibles. The low number of unvaccinated students impaired VE precision and therefore its interpretation. Catch-up mumps vaccination activities in unaffected areas were recommended for birth cohorts 1990-1994.

PRESENTER: JANIEC

20090246

Session: 02 .4

Track: Outbreaks 1

A textbook case of autochthonous malaria, France, 2007

The incident investigation group

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BACKGROUND

A case of severe *Plasmodium falciparum* malaria was diagnosed in 2007 in Paris, France, in a ten-weeks-old child (Case A) with no history of travel.

METHODS

An investigation sought to identify the source, aided by biological tests.

RESULTS

Mother-to-child transmission was suspected. Her mother, however, had not travelled to Africa since 1995. Delivery had been uneventful. Because of medical follow-up for an unrelated health risk, sequential samples for Case A and her mother were available and antibody and PCR-negative. Case A had visited an airport to welcome relatives returning from an endemic zone six weeks before the date of symptoms onset (DSO). Although incubation times would have been long, airport or luggage malaria was possible. She had also been admitted to hospital two weeks before DSO for suspected meningitis. Investigators found that another case of *P. falciparum* malaria (Case B) returning from Gabon had been admitted in the same hospital that same day. This raised the possibility of hospital-acquired malaria. Case A, however, had not shared a room with Case B, had not been attended to and had not undergone procedures concurrently. Unexpectedly, successive genetic analyses on several polymorphisms found that strains from Case A and Case B could not be differentiated (probability of the strains being different estimated at 1/830 000), thus pointing to a likely hospital-acquired origin. A thorough investigation was undertaken which concluded to the absence of suspect procedure.

CONCLUSION

This textbook case of cryptic malaria illustrates various possible modes of autochthonous *Plasmodium* spp. transmission, the difficulty of investigating such cases and the limits of genetic testing. Explanatory hypotheses, including the role of foetal haemoglobin, and existing literature will be discussed.

PRESENTER: TARANTOLA

20090146

Session: 02 .5

Track: Outbreaks 1

An outbreak of Hepatitis A in Roma populations living in three prefectures in Greece

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BACKGROUND

HAV is the first causative agent for acute hepatitis with a worldwide distribution. It is primarily transmitted by person-to-person contact through faecal contamination, but common source epidemics from contaminated food and water may also occur.

METHODS

An outbreak of hepatitis A virus (HAV) infection occurred among Roma populations living in three prefectures of north eastern Greece. Investigations were carried out to characterize the pathogen, to identify the source of infection and the route of transmission. Serum samples were analysed for HAV using RT-PCR technique. A questionnaire was completed in order to collect clinical and epidemiological information.

RESULTS

A total of 124 cases (67 men and 57 women; age 2-55 years) were diagnosed with hepatitis A, between 2nd of July and 30th of November, 2007. The epidemic curve by week of onset showed various peaks between 2nd of July and 30th of November in three prefectures. The overall attack rate in the 5 months considered was 34.2/100000 inhabitants for all three prefectures, with wide variations between prefectures, ranging from 25.4/100000 in Evros, 38.8 cases/100000 in Rodopi and 42.2 cases/100000 in Xanthi prefecture with the highest attack rate in the region. Overall, 54 % of the patients were male and their median age was about 9 years (range 2-55). A phylogenetic tree was constructed showing that all the positive samples had more than 99.8% identity thus suggesting a common source. The outbreak affected mainly Roma children under 10 years old.

CONCLUSION

The epidemiological investigation suggested that person-to-person transmission was most probably the principal mode of virus dissemination.

PRESENTER: VANTARAKIS

20090040

Session: 03 .1

Track: Health care associated infections 1

Prevalence of infections in French Nursing Homes: A cross-sectional nationwide survey (PRIAM survey)

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BACKGROUND

Hardly any data on the occurrence of infection in French Nursing Homes have been published; yet 443765 elderly people were institutionalized in 2006. We aimed to assess the prevalence of infections and to ascertain their potential risk factors among residents of these facilities.

METHODS

We performed a multicenter, observational (cross-sectional) survey conducted over 5 one-month surveillance periods between 2006 and 2007 France-wide. Data were collected prospectively predominantly online. Cases of infections (community and long-term care acquired) were classified as "Confirmed" if they met the specific criteria for the geriatric settings as listed by McGeer and as "Likely" if they fulfilled the criteria for infection as listed by the working team of ORIG. We estimated prevalence rates of infections for the whole sample and by survey period. We constructed multiple regression models to investigate the association between infections and risk factors.

RESULTS

At baseline, 44 870 residents in 577 volunteer facilities, were enrolled. Women predominated over men (75.7 vs 24.3%). The mean age was 86. Overall prevalence rate of infections was 11.2 per 100 residents (CI 95% 10.9-11.5). Upper and lower respiratory tract infections were the most common (41%), followed by symptomatic urinary tract infections (24%). The multivariate analysis assessed that infections were significantly associated with dependency (Adjusted OR (ORa) 1.3 [95% CI 1.2-1.4]), urinary catheterization (ORa 3.4 [95% CI 3.0-4.0]), pressure ulcers (ORa 2.6 [95% CI 2.3-2.9]) and the surveillance period (January-February versus June (ORa, 1.7 [95% CI 1.5-1.9])).

CONCLUSION

The true prevalence of infections might be substantially underestimated in elderly people living in Nursing Homes in France. However, the infectious risk seems to be important in these facilities. Infection control programmes for prevention of infections should be implemented.

PRESENTER: CHAMI

20090187

Session: 03 .2

Track: health care associated infections 1

Diabetes mellitus and nosocomial surgical site infection in older patients in Spain

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BACKGROUND

Diabetes mellitus (DM) is a well-known risk factor for developing infectious diseases. Surgical site infections (SSI) add extra morbidity and mortality to hospitalized patients, and are one of the most frequent nosocomial infections (NI). The objective of this study was to estimate the association between DM and SSI.

METHODS

Data from older patients (more than 64 years old) included in a prevalence study of NI carried out in Spain in 2008 were used: we selected the age category with the highest DM prevalence. SSI was classified based on CDC criteria, in superficial incisional, deep incisional and organ/space. DM was defined according to the following criteria: medical diagnosis of DM, blood glucose levels ≥ 145 mg/dl (in patients without intravenous (IV) fluids), or ≥ 200 mg/dl (in patients with IV fluids). A descriptive analysis, a bivariate analysis to estimate the association between diabetes and surgical site infection, and a multivariate analysis to control for surgical confounding variables were conducted (odds ratio (OR) and its respective confidence interval (CI) 95% were calculated).

RESULTS

A total of 4669 patients were included in the analysis. The mean age was 76 years old and similar distribution by gender was observed. Diabetes mellitus prevalence was 28.8% (95% CI 27.5-30.1) and SSI prevalence was 7.1% (95% CI 6.3-7.8). Diabetes mellitus was associated to SSI (OR 1.7; 95% CI 1.2-2.4). After adjusting for surgery duration, degree of contamination, surgical prophylaxis, and surgical risk class, DM was associated to superficial SSI (OR 1.5; 95% CI 1.1-2.2).

CONCLUSION

An association between DM and SSI was found. Diabetes mellitus increases the risk for superficial SSI in older patients. Preventive measures are needed to avoid SSI in diabetic patients who undergo surgical procedures.

PRESENTER: GONZÁLEZ

20090210

Session: 03 .3

Track: Health care associated infections 1

A new procedure specific risk index for stratifying surgical site infection following hip surgery in Scotland: A replacement for the NNIS risk index?

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BACKGROUND

Surgical site infection (SSI) is a common post-surgical complication. Surveillance of SSI forms an important component of SSI prevention and control activities. The Scottish mandatory SSI incidence surveillance programme currently stratifies data using the National Nosocomial Infections Surveillance System (NNIS) risk index to allow inter- and intra-hospital comparison. The NNIS risk index was developed in an American setting and often does not adequately stratify Scottish or European SSI data. The aim of this study was to determine the risk factors independently associated with SSI after hip arthroplasty surgery and to develop a procedure specific risk index that is better stratifies Scottish and European SSI data.

METHODS

The incidence rate of SSI and a rate ratio for each risk factor were calculated. A multivariable Poisson regression model was developed to identify risk factors for surgical site infection after hip arthroplasty surgery. A new risk index for development of SSI after hip arthroplasty surgery was developed using the results from this model.

RESULTS

A total of 30132 procedures carried out between 2002 and 2008 were included in the analysis. The study identified 531 SSI. The following risk factors were associated with SSI at the univariate level ($p < 0.05$); age, ASA score, diagnosis, revision surgery, category of procedure, length of pre-operative stay, length of surgery, grade of surgeon, wound class and thrombolytic therapy. The independent risk factors and the new risk index for hip arthroplasty SSI will be described.

CONCLUSION

Provision of adequately stratified SSI rates is essential for robust inter- and intra-hospital comparisons. This new procedure specific risk index will provide a better measure of adjustment for intrinsic and extrinsic risk factors that may confound these comparisons.

PRESENTER: CAIRNS

20090129

Session: 03 .4

Track: Health care associated infections 1

Impact of hospital acquired infections on mortality, length of hospitalization and healthcare costs: an estimation for all acute hospitals in Belgium

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BACKGROUND

Hospital acquired infections (HAI) are the most common complications affecting hospitalized patients, but their impact on patient's mortality and on the healthcare payer budget of a whole country is not known. The objective of this study was to estimate the annual burden of HAI in Belgium, in terms of number of deaths, number of hospitalization days and the associated costs attributable to HAI.

METHODS

First, a national prevalence study of HAI (based on CDC definitions) was organized in Belgian acute hospitals. Second, the number of patients infected was estimated based on prevalence and the HAI duration. Third, a matched cohort study was designed to compare infected and non infected patients on mortality, LOS and costs. Matching factors were the hospital, the APR-DRG (a classification of stays which includes the diagnosis at admission and the surgical interventions), the ward and a comorbidity score.

RESULTS

First, the prevalence of patients infected was 6.2%, based on 17 343 patients enrolled from 63 acute hospitals. Second, the yearly number of patients infected per year was estimated at 125 500. Third, the group of infected patients had a mortality rate 2.1% higher (in absolute percentage) and stayed 6.7 days longer in the hospital than the group of patients not infected. Lower respiratory tract infections and bloodstream infections caused the largest burden. In total, over one year in Belgium, HAI cause 2625 deaths, 720 000 hospitalization days and cost 384 million euros.

CONCLUSION

Infection control measures have been reported to reduce the incidence of HAI with about 30%. The yearly burden of HAI on patient's mortality and on healthcare payer budget is high and justifies continued attention for cost-effective preventive measures.

PRESENTER: VRIJENS

20090185

Session: 03 .5

Track: Health care associated infections 1

Impact of Bloodstream Infections with Extended-Spectrum-Beta-Lactamase-Producing *Klebsiella pneumoniae* in Hungarian hospitals

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BACKGROUND

ESBL-producing Enterobacteriaceae pose an increasing problem in hospital environments and have become one of the most important causes of nosocomial infections worldwide. *Klebsiella pneumoniae* has been the most common ESBL-producing pathogen in Hungary, comprising 75% of all ESBL-producing Enterobacteriaceae. Our aim was to investigate outcomes of bloodstream infections (BSI) caused by ESBL-producing *K.pneumoniae* in comparison with BSIs caused by non-ESBL-producing *K.pneumoniae*.

METHODS

Hospital-wide BSI surveillance is one module of the Hungarian National Nosocomial Surveillance System. CDC BSI definition has been used for case finding. Statistical analysis of BSIs caused by ESBL-producing *K.pneumoniae* and by non-ESBL-producing *K.pneumoniae* was performed on data obtained in our surveillance system between January 2005 and December 2008. We performed a retrospective cohort study of randomly selected 100 ESBL positive patients and 100 ESBL negative patients. Studied outcomes were crude mortality, mortality due to infection and delay in appropriate therapy (DAT).

RESULTS

36% of patients with ESBL-producing *K.pneumoniae* died versus 23% of ESBL negative patients (OR: 2.5; 95% CI: 1.0-5.4; $p=0.02$). Eighteen % of death in cases versus 9% of controls could be attributed to infection (OR: 5.0; 95% CI: 1.5-16.2; $p=0.006$). Delay in the introduction of appropriate antibiotic therapy was observed in 44% of cases versus 19% of controls (OR: 3.4; 95% CI: 1.6-7.3; $p=0.001$).

CONCLUSION

ESBL production was associated with severe outcomes including significant higher overall and infection-related mortality and delay in appropriate therapy. Beside infection control measures early identification and antibiotic resistance profiling of the infecting pathogen is salient in the management of BSIs caused by ESBL-producing *K.pneumoniae*.

PRESENTER: SZILÁGYI

20090131

Session: 04 .1

Track: Surveillance 1

Syndromic Surveillance based on Routine Emergency Medical Care Data - Experiences from the European Project SIDARTHa

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BACKGROUND

The European Commission co-funded project SIDARTHa (Grant Agreement 2007208) aims at improving timeliness and cost-effectiveness of public health threat detection by providing a first systematic basis for syndromic surveillance in Europe. A real-time GIS-based surveillance system is developed and implemented that automatically analyses routinely collected pre-hospital emergency medical dispatch data and data from ambulance services patient records and in-hospital emergency departments for deviations from the long-term average/expected demand patterns. The system addresses public health authorities and emergency professionals at the local level.

METHODS

During phase I (June 2008-June 2009), the project consortium representing 13 European countries identified syndromes detectable by emergency data. During phase II (July 2009-December 2010), the surveillance system is implemented and tested in Tyrol/Austria, Capital Region/Denmark, County of Goeppingen/Germany and Cantabria/Spain. By analysing historic emergency data (series between 2-10 years) detection algorithms including average spatial-/temporal demand baselines and alerting thresholds (weighted moving average, time series modelling, spatial scan statistics) were tested/evaluated by comparison to real outbreaks and simulated events.

RESULTS

Key syndromes detectable using routine European emergency care data are influenza-like-illness, gastroenteritis, heat/cold-related-illness, intoxication, respiratory distress (infectious disease/environment-related) and undefined diseases. 77% of routinely collected emergency medical data from the different sources (dispatch, ambulance, hospital) are electronically available within 24 hours ($n=30$ emergency institutions from eleven European countries). Data variables utilised comprise next to date/time, location, age and gender also chief complaints/emergency physician diagnoses or standardised diagnosis coding (ICD) for each case.

CONCLUSION

Emergency medical care data can be utilised to generate relevant syndromes and is available for real-time analysis and reporting across Europe. After comprehensive evaluation by future users during phase II SIDARTHa provides an evidence base for earlier health threat detection in Europe.

PRESENTER: ZIEMANN

20090152

Session: 04 .2

Track: Surveillance 1

Successful expansion of influenza surveillance to 53 countries of the WHO Euro region

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BACKGROUND

Influenza surveillance is of great importance especially in the current Pandemic H1N1 2009. Historically, influenza activity has been monitored by 30 EU and EFTA countries via the EISS. We aimed to expand the influenza surveillance to 23 non-EU/EFTA countries, including Russia, so that it covered the whole WHO European Region.

METHODS

Data entry was made available via a web-based system for 20 new countries; passwords to enter data and technical assistance were provided. Weekly virological and/or epidemiological data were entered for the 2008-2009 influenza season.

RESULTS

Surveillance data have been entered for 12 of the 20 non-EU/EFTA countries. A regional bulletin was published jointly by WHO and ECDC as of February 2009. The population covered by influenza surveillance systems has greatly improved and increased from about 500 to 790 million, in particular by including the Russian Federation covering seven regions. Influenza activity followed a general west to east spread. In Western Europe influenza peaked around week 5, while in the Russian Federation it peaked in week 8-12. Influenza A(H3N2) was the dominant virus type circulating in Europe. However, some countries had a co-circulation of influenza B and in the Russian Federation, in the Far East region, influenza A(H1N1) was the dominant type. The number of specimens tested for influenza in the new countries was 43,255, of which 5408 (12.5%) tested positive for influenza, and 468 viruses were antigenically and/or genetically characterized.

CONCLUSION

The coverage of the geographic region has expanded extensively and surveillance data can be found on www.euroflu.org. Expansion of influenza surveillance allows WHO to better follow the circulation of influenza viruses in Europe and contributes to the Pandemic H1N1 2009 response.

PRESENTER: MEERHOFF

20090224

Session: 04 .3

Track: Surveillance 1

Analysis of timeliness of infectious disease notifications in The Netherlands

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BACKGROUND

Timely notification of infectious diseases is essential for an effective response. Reporting delay between date of onset of disease or diagnosis, and date of reporting to the MHS is used as a quantitative measure for timeliness of notifications. To minimize delay, in The Netherlands, physicians are advised to authorize, by a covenant, laboratories to notify directly to the MHS.

METHODS

Reporting data for shigellosis, typhoid fever, measles, meningococcal disease, hepatitis A virus and Escherichia coli O157 infections, over the period June 2003 until December 2008, were retrieved from the Dutch national notification system. Median reporting delays between date of onset of disease and notification date to the MHS, were compared with the disease specific average incubation periods. Reporting delays between date of laboratory diagnosis and notification date were analyzed. The association of the presence of covenants at each MHS with reporting delay for hepatitis B over 2008 was investigated.

RESULTS

The percentage of infectious diseases reported within one incubation period varied widely between 0,4% (shigellosis) and 90,1% (hepatitis A). More than 80% of shigellosis and E.coli O157 infections, 29,7% of typhoid fever, 13,3% of meningococcosis and 13,4% of measles were not reported within two incubation periods. A substantial percentage of infectious diseases were reported > 3 days after laboratory diagnosis, varying between 12% (meningococcosis) and 42% (shigellosis). Covenants reduced notification time significantly.

CONCLUSION

Many infectious diseases analyzed in The Netherlands are not reported within two incubation periods, and many are reported more than 3 days after laboratory confirmation. This results in considerable delay of response measures by the MHS. Improvement of timeliness of notifications is essential, for instance by covenants between laboratories and MHS.

PRESENTER: REIJN

20090207

Session: 04 .4

Track: Surveillance 1

Exhaustivity of the surveillance system for respiratory tuberculosis in Balearic Islands, Spain, 2005-2007: a capture-recapture study

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BACKGROUND

In Balearic Islands, data sources of Tuberculosis (TB) surveillance system include: the Mandatory Notifiable Diseases (MND) system, and the Hospital Basic Data Set (HBDS). We aim to assess the exhaustivity of the TB surveillance system by comparing with another data source: the Electronic Medical Records from Primary Health Care (eSIAP).

METHODS

We conducted a capture-recapture study (C-R) on respiratory TB cases between 2005-2007 in Balearic Islands. TB cases from three databases: MND, HBDS and e.SIAP were included. To assess the dependence between sources, we firstly applied C-R on two by two sources. We used the log-linear regression to determine the likelihood ratio and the Bayesian Information Criterion to select the model that better fits our data sources. We obtained the estimated total number (N) of respiratory TB cases with a confidence interval (C.I.) 95%, and data sources exhaustivity.

RESULTS

We included 681 cases. Of these, 360 (52.9%) appeared in one database, 200 (29.4%) in two databases and 121 (17.7%) in all three. The two-by-two analysis (MND with HBDS and MND with e.SIAP) estimated a lower N. Moreover, the odds ratio of these combinations shows dependency. Using the three databases, the log-linear model estimates a N of 1044 cases (CI 95%: 893 - 1195). The number of cases not recorded by any of sources (X) is 363. The exhaustivity with only two sources is 54.8 %, adding the third source reaches 65.2%.

CONCLUSION

Low exhaustivity cannot be attributed to the limitations of the C-R, neither to the recent computerization of primary health centres. We recommend the reinforcement of TB cases notification in the Hospitals and Primary Care and the characterization of non notified cases.

PRESENTER: GIMÉNEZ-DURÁN

20090257

Session: 04 .5

Track: Surveillance 1

Exhaustivity of the surveillance system for non-respiratory forms of tuberculosis (TB) in Balearic Islands, Spain, 2005-2007: does it have differences with respiratory TB surveillance?

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BACKGROUND

In Balearic Islands, the surveillance system for tuberculosis (TB) had two data sources: the Mandatory Notifiable Diseases (MND) system, and the Hospital Basic Data Set (HBDS). We've incorporated recently the Electronic Medical Records from Primary Health Care (eSIAP) and we aim to assess the exhaustivity of the TB surveillance system by comparing with previous years.

METHODS

We conducted a capture-recapture study (C-R) on non-respiratory forms of TB, between 2005-2007. We included TB cases from three databases: MND, HBDS and e.SIAP. To assess the dependence between sources, we firstly applied C-R on two by two sources. We used the log-linear regression to determine the model that better fits our data sources. We obtained the estimated total number (N) of cases with a confidence interval (C.I.) 95%, and data sources exhaustivity.

RESULTS

We included 240 cases. Of these, 182 (75.8%) appeared in one database, 54 (22.5%) in two databases and 4 (1.7%) in all three. In the two-by-two analysis, HBDS with eSIAP estimated a lower N than other combinations. Moreover, the odds ratio of that combination shows dependency. Using the three databases, the log-linear model estimates a N of 450 cases (CI 95%: 361 - 540), and the number of cases not recorded by any of sources (X) is 210. The exhaustivity with only two sources is 52.7%, adding the third source reaches 53.3%.

CONCLUSION

Exhaustivity does not increase with the addition of eSIAP. It seems that non-respiratory forms of TB were an only hospital matter. We need the reinforcement of TB cases notification in the Hospitals and transmit more patients' information to Primary Health Care, using the electronic data transmission system.

PRESENTER: GIMÉNEZ-DURÁN

20090046

Session: 05 .1

Track: Vaccine preventable diseases 1

Can the existing virological data collection system serve for surveillance of severe acute respiratory influenza? England, 2008-2009

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BACKGROUND

While seasonal influenza is generally self-limiting, for the elderly it constitutes a potentially serious health risk. In England, there is no specific surveillance of severe influenza. We ran a pilot surveillance scheme for severe seasonal influenza, based on virologically confirmed cases during the 2008-09 season in England. The aim of this pilot scheme was to detect and investigate severe virologically confirmed influenza cases, and to investigate the feasibility of establishing a routine surveillance system based on hospital-referred specimens.

METHODS

Positive influenza specimens sent to the national reference laboratory for typing were used as surveillance starting point. Additional clinical information was collected by telephone from hospitals and GPs. Severe cases were defined as those resulting in hospitalisation and/or death following specimen collection during this season. All individuals ≥ 65 years were systematically followed up. The vaccine effectiveness was calculated using the screening method based on vaccination coverage estimates of the 2008/09 season.

RESULTS

Of 87 elderly individuals identified from samples referred by 19 hospital laboratories, 57 met the case definition of which 12 died. The cause of death was available for 6 of the deceased; three of these were pneumonia-related. The age range was 65-95 years with a median of 76, the gender distribution was equal. Thirty cases were vaccinated with the current flu vaccine. The adjusted vaccine effectiveness for elderly severe influenza cases was 50.3% (95%CI: 11.8-71.7%).

CONCLUSION

The present system does not serve for detection of severe influenza cases. It lacks sensitivity and with three calls per case it constitutes a labour-intensive and non-timely process. Nevertheless, from the data collected the 2008/09 vaccine effectiveness against severe influenza among individuals aged 65 years and over could be estimated.

PRESENTER: HALM

20090109

Session: 05 .2

Track: Vaccine preventable diseases 1

Standard hepatitis B vaccination scheme less effective in elderly and men; three dose revaccination scheme after non response most effective

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BACKGROUND

Hepatitis B infection is a major health problem. Hepatitis B vaccination is the most effective prevention measure. Hepatitis B vaccine is safe and supposed to be highly effective (protective antiHBs ≥ 10 IU/L) with only minor non response (antiHBs < 10 IU/L) in healthy subjects.

METHODS

We assessed non response among 11,777 healthy adult employees (86% health care related, 98% Dutch origin, 75% women). We assessed effect of 1 versus 3 revaccinations among 245 non responders. We vaccinated according to the standard three dose schedule with hepatitis B recombinant vaccine. We used optimal vaccination conditions. Serology was assessed 4-6 weeks after the last vaccination with a quantitative antiHBs assay. Predictors for non response after vaccination and revaccination were assessed using multivariate regression.

RESULTS

On the protective efficacy of a standard vaccination scheme, age and sex were strong predictors ($p < 0.0001$). Women performed better than men (OR=2.4; 95%CI:2.0-2.9). Non response increased in woman from 1.2% in 16-20 year-olds to 9.5% in 50-55 year-olds and in men from 2.4% in 16-20 year-olds to 36% in men above 60. Independent predictors for non response after revaccination were fewer revaccinations, i.e. one revaccination compared to three (41%(14/35) vs. 25%(53/211); $p=0.02$), antiHBs before revaccination of 0 IU/L vs. 1-9 IU/L (46% vs. 12%, $p < 0.001$) and being woman (31% vs. 22%; $p=0.05$). Age was only a significant predictor in individuals with only one revaccination (interaction-term): aged non-responders perform worse after only one revaccination.

CONCLUSION

Non response in healthy subjects was higher in males and each year of age rates increased reaching as high as 36%. The three revaccinations scheme resulted best in obtaining protection among non responders. Non response is markedly high in contrast with suggested protective efficacy.

PRESENTER: HOEBE

20090270

Session: 05 .3

Track: Vaccine preventable diseases 1

A long-lasting measles epidemic in Maroua, Cameroon 2008-2009: the need to rethink vaccination strategies

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BACKGROUND

From January to October 2008, 99 measles cases were notified in Maroua (population 245,000). Despite reinforcement of routine vaccination activities in 2008 and two interventions conducted in October 2008 and January 2009 in response to the epidemic, cases continued to be reported. The aim of this study was to investigate the causes of the epidemic in order to guide vaccination strategies.

METHODS

We performed first a stratified household-based survey using cluster sampling to determine measles vaccination coverage. Three strata were defined considering the incidence of measles. After informed oral consent, measles vaccination history for all children 9 months to 15 years was collected. Second, a case-control study was carried out to measure vaccine effectiveness (VE). Cases (WHO case definition) were obtained from health centre registries. Controls were selected among respondents to the vaccination coverage survey.

RESULTS

A total of 3,025 children were included in the vaccination coverage survey. The overall vaccine coverage through the routine vaccination was 75.5% (95%CI: 71.6-79.4%). The vaccine coverage was indirectly proportionate to the measles incidence; with coverage lower than 80% in the high-incidence strata. After the vaccination campaign in January 2009, approximately 6% of all children remained non-vaccinated, 21% received one dose, 38% two doses and 18% three doses. The overall VE was above 90%. The main reasons for non-vaccination were lack of information and refusals both in routine vaccination and campaigns.

CONCLUSION

These results confirm that insufficient vaccination coverage was the main determinant of this epidemic. Although the different interventions provided a second and sometimes third opportunity for children to be vaccinated, future strategies need to be revised to ensure that interventions reach those children never vaccinated.

PRESENTER: LUQUERO

20090121

Session: 05 .4

Track: Vaccine preventable diseases 1

Determinants for HPV vaccine uptake in The Netherlands

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BACKGROUND

In March 2009, a catch-up vaccination campaign with bivalent HPV-vaccine was implemented in The Netherlands for girls born between 1993 and 1996. National coverage (49.9%) was lower than expected (70%) and important regional differences could be observed. In order to provide recommendations to the national immunisation programme, we studied determinants for HPV vaccination uptake.

METHODS

Vaccination coverage as well as demographic data and implementation measures taken by local health services were collected at different levels of aggregation (individual to regional level). Descriptive analyzes were performed by allocating to all girls of a given geographic area the value of that area. A multilevel analysis using a hierarchical logistic regression model was carried out.

RESULTS

Individual data on 384,869 individuals showed higher uptake among girls whose parents were born in The Netherlands and girls previously vaccinated against MMR. Postcode areas with lower socio-economic status and cities with high scores of religious parties at last elections (2006) were associated with lower uptake. Finally, higher vaccination coverage was associated with regional implementation aspects including communication information meetings for pupils at school, communication with gynaecologists, minimal use of local media and shorter distance between girls' home and place of vaccination.

CONCLUSION

On the short term, i.e. for the vaccination campaign of 12-year olds starting in September 2009, improving information to schools and practitioners might be beneficial. Peculiarities of the infection prevented as well as the target audience have to be considered in order to adapt the message to religious and ethnic communities. Furthermore, lower uptake in areas with lower socio-economic status needs attention since participation to cervical screening is also lower in these areas.

PRESENTER: RONDY

20090117

Session: 05 .5

Track: Vaccine preventable diseases 1

Increased incidence of pertussis in Slovenia despite high vaccination coverage

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BACKGROUND

Vaccination against pertussis was introduced in Slovenia in 1959. Since 1990, a 4-dose schedule is used and vaccination coverage is >90%. Surveillance data until 2006 showed an increase in reported incidence (6.5 times higher in 2006 compared to 2005), with highest incidence among children 8-12 years old. Therefore, a booster at eight years of age will be introduced into the national vaccination schedule in late 2009. We analyzed surveillance data until 2007 to support this decision.

METHODS

Pertussis is a mandatory reportable disease, a clinical case definition is used and laboratory confirmation actively encouraged. We analyzed reported cases of pertussis from 2006-2007 by demographics, vaccination status and time since last vaccination. We compared these data with those from 1996-2005 and calculated incidence ratios (IR).

RESULTS

The reported incidence of pertussis in 2006 and 2007 was 27.2/100,000 (IR 7.8) and 35.1/100,000 (IR 10.0), respectively, compared to the average annual incidence of 3.5/100,000 during 1996-2005. In 2006-2007, overall 1258 cases were reported, compared to 707 cases in 1996-2005 (range 23-182). In 2006 and 2007, the highest incidence was among 9-12 year-olds: 312.4/100,000 and 431.9/100,000 respectively. A marked shift in age distribution of reported cases was observed. During 1996-2005, the 9-12 year age group represented 26% of the cases, while in 2006-2007 this proportion rose to 46%. In 2006-2007, only 13% of cases were not vaccinated. For 87% of fully vaccinated cases time since last vaccination was 5 years or more.

CONCLUSION

Slovenian pertussis surveillance data indicate that waning immunity probably played a role in increased reported incidence and age shift. These results confirm that a booster at 8 years is necessary to reduce incidence.

PRESENTER: UČAKAR

20090158

Session: 06 .1

Track: HIV

Potential impact of routine testing of patients with HIV indicator disease in preventing late HIV diagnosis

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BACKGROUND

Routine testing of individuals with HIV indicator diseases has been suggested as an intervention to prevent late HIV diagnosis. We aimed at evaluating the proportion of individuals with late HIV diagnosis who could have been diagnosed earlier if tested at the time of an indicator disease

METHODS

We studied individuals with a HIV infection newly diagnosed in 2004-2007, in 10 public counselling and testing sites in Latium Region, Italy, who completed a questionnaire on socio-demographic characteristics, risk behaviours, HIV-testing history and clinical history and had a CD4 count determination available within 3 months from HIV diagnosis. We considered the following HIV indicator diseases: viral hepatitis infection (HBV or HCV), STD, seborrhoeic dermatitis occurred within 8 years before HIV diagnosis. Delayed diagnosis was defined as CD4 count below 350 cells/ mmc at HIV diagnosis.

RESULTS

Among the 614 patients included in our analysis the prevalence of delayed diagnosis was 41.5% (255/614), and 24.9% (153/614) had a more advanced stage of disease (CD4<200/mmc). Forty-two/255 (16.5%) patients reported a HIV indicator disease a mean of 12 months before HIV diagnosis, not followed by a negative HIV test. Distribution of reported indicator diseases were: 9 viral hepatitis (7 HBV); 34 STDs (12 syphilis, 6 gonorrhoea, 4 genital herpes, 12 genital condylomatosis) and 9 seborrhoeic dermatitis; 10 patients reported more than one diagnosis.

CONCLUSION

In this population 16 % of delayed HIV diagnosis could be have been anticipated by HIV testing at the time of an HIV indicator disease. Further interventions for active offer of HIV testing are needed in order to favor timely diagnosis of HIV infection.

PRESENTER: GIRARDI

20090060

Session: 06 .2

Track: HIV

HIV seroconversion following immigration in Germany - Analysis of reported HIV/AIDS cases among immigrants from Sub-Saharan Africa in Germany 2001-2008

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BACKGROUND

Migrants from Sub-Saharan Africa (SSA) represent an important proportion of newly diagnosed HIV/AIDS in Germany. We aimed to calculate the proportion of seroconverters following immigration in Germany and to describe distribution of transmission categories (TC) in order to target prevention strategies accordingly.

METHODS

We described HIV/AIDS cases originating from SSA reported as newly diagnosed in Germany between 2001 and 2008 by age, sex and TC. We defined seroconverters as newly diagnosed cases and previously documented last negative HIV-test in Germany, and probable time of infection (TI) as the difference between date of last negative and first positive HIV-test. We compared cases using t-test and chi square test.

RESULTS

Between 2001 and 2008, of 18,109 newly diagnosed HIV cases, 1,988 (11%) were from SSA. Median age was 31 years (range 0-77) and 60% were female. In 74 (4%) TC were reported: 21(1%) were men who have sex with men, 47 (2%) resulted from mother-child transmission. We identified 276/1988 (14%) seroconverters of whom 77 (28%) had a TI less than one year. Newly diagnosed cases with information on last negative HIV-test did not differ from others regarding age ($p=0.06$), sex ($p=0.32$), and origin ($p=0.95$).

CONCLUSION

Seroconversion in migrants from SSA with documented date of last negative HIV-test is an indicator of the minimum number of infections in migrants occurring within Germany. The real proportion is probably higher since for most migrants information on their HIV-status at the time of migration is not available. Seroconversion within the first year after negative test indicates high risk behaviour. Prevention strategies need to include immigrants also after a negative HIV-test.

PRESENTER: KAMGA WAMBO

20090112

Session: 06 .3

Track: HIV

Knowledge about HIV-transmission in migrants from Sub Sahara Africa: Results from a German survey 2008-2009

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BACKGROUND

The risk "origin from high prevalence countries for HIV" (HPC) was reported in about 10% of newly notified HIV infections in Germany (298 persons in 2008), exceeding the proportion of HPC-migrants among the German population (~0.2%). Most HIV-risk taking models identify knowledge about disease-transmission as a main determinant in risk-reduction. To assess possibilities for prevention, we conducted a survey of knowledge about HIV-transmission among Sub-Saharan Africa born migrants (SSA).

METHODS

Adult SSA participants were recruited in seven German cities from May 2008 until February 2009 via convenience sampling by community based African-led organisations. Self-administered validated questionnaires in four languages containing different statements on HIV-transmission were answered anonymously. Knowledge was assessed by a point score (range 0-19), analysed univariately and by multivariable logistic regression.

RESULTS

Of 769 respondents, 512 were born in SSA, median knowledge score among SSA- migrants was 11; age between 25 and 35 years (aOR 4.1; 95% CI 1.7-9.5) and "having lived in Germany" for 11 to 20 years (aOR 4.1; 95% CI 2.0-8.4) increased chances of reaching scores >10. Of 512 SSA-migrants, 208 (40.4 %) judged their knowledge as sufficient. Preferred sources of information were television (38%), newspaper (38%) and flyers (37%). Confidentiality of HIV test-results was doubted in 26 % of participants.

CONCLUSION

Knowledge deficits about HIV-transmission among SSA-migrants exist and are perceived as such. Therefore, future interventions should specifically target SSA-migrants and aim at increasing knowledge as means of risk-reduction. Public health structures were not preferred sources of information. Use of preferred sources of information and programmes tailored to SSA-migrants might improve knowledge, involving members of the African community could reduce distrust towards German health authorities. Regular surveys should assess effect of interventions.

PRESENTER: MALL

20090067

Session: 07 .1

Track: Influenza 2

Thermal image scanning for mass screening of incoming travellers at airports

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BACKGROUND

Infrared thermal image scanners (ITIS) seem an attractive option for the mass screening of travellers for influenza, but there are no published data on their performance in airports. This study compared ITIS with a measure of core temperature in both symptomatic and asymptomatic airline travellers.

METHODS

Cutaneous temperature was measured using an ITIS in 1275 airline passengers arriving from Australia to Christchurch, New Zealand, who had agreed to have tympanic temperature measured and throat and nose swabs taken. The ability of ITIS measurements to predict tympanic temperatures of 37.5°C and 37.8°C, and influenza infection, was assessed using Receiver Operating Characteristic (ROC) curves, calculations of sensitivity and specificity and estimates of positive predictive value (PPV).

RESULTS

None of the 30 influenza-positive travellers had a measured tympanic temperature of 37.8°C or greater, and three had no influenza symptoms. ITIS predicting tympanic temperature of 37.8°C had an area under the ROC curve of 86%; a sensitivity of 86% gave a specificity of 71%; and the PPV in a population of travellers of whom 20% were symptomatic was estimated at 1.3%. For influenza infection these figures were 66%; 87% and 39%; and 2.35%. In a population of 100,000 travellers with a prevalence of symptoms of 20%, the use of ITIS set at a sensitivity of 87% could be expected to identify approximately 61,000 travellers who would require further testing, of whom 1,401 would have influenza infection, while 215 influenza infected passengers would remain undetected.

CONCLUSION

ITIS is fairly good at detecting fever but not very good at detecting influenza infection. Authorities need to consider the costs and benefits carefully before implementing this technology as a border control intervention.

PRESENTER: PRIEST

20090223

Session: 07 .2

Track: Influenza 2

Influenza - an underestimated cause of fever in Swedish returned travellers

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BACKGROUND

Fever is common in returning travellers seeking medical advice and aetiology remains unknown in a number of cases. International travel, reemerging diseases, and the possibility of outbreaks from returned travellers points at the importance of identifying which diseases they bring back. The aim of this multicenter study was to describe the epidemiology of travel related fever among Swedish patients in order to provide better data for communicable disease preparedness, to evaluate clinical diagnostics and to improve microbiological diagnostics and pre-travel counselling. This subanalysis describes the aetiology of cases with fever in regard to influenza.

METHODS

Five Swedish hospitals with departments of infectious diseases included prospectively 514 adult febrile travellers returning from malaria endemic areas between March 2005 and March 2008. Clinical and epidemiological information as well as sera were collected from all cases. Paired sera available from 380 patients were blindly analyzed for influenza A and B.

RESULTS

The clinical diagnosis determined by the doctor treating the patient yielded 162/514 (32%) cases of fever of unknown origin and 11/514 cases (2.1%) of influenza. With serological testing the number of influenza cases more than tripled to 36 (altogether 7% of total). A large proportion of these persons (21/36, 58%) had recently returned from Africa.

CONCLUSION

We conclude that undiagnosed influenza can be an overlooked but significant cause of travel related fever also in the absence of a pandemic. Immunization against influenza is an important part of the pre-travel counselling, in particular of risk-patients. In patients with post-travel fever, influenza should be considered and adequate diagnostics performed. This is also a way to improve the understanding of the epidemiology of influenza at a global level.

PRESENTER: LESKO

20090219

Session: 07 .3

Track: Influenza 2

Understanding the dynamics of seasonal influenza in Italy: an analysis of disease incidence and population susceptibility

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BACKGROUND

We analyze the dynamics of influenza in Italy during the last epidemic seasons, from 2000-2001 to 2008-2009, in order to investigate the factors that determine the differences in subsequent epidemics and regulate transmission. The analysis is based on data from the surveillance system, combined with serological information: weekly case notifications have been collected each year from November till April and data are available from clinical trials performed in a sample of patients tested at the beginning of each season for protection against the strains used for vaccination.

METHODS

We used an SEIR age-structured model to simulate the dynamics of the infection, coupled with a statistical model that takes into account the sampling process in case notification and seroprotection tests. Through a likelihood-based approach, we perform parameter inference, comparing the observed number of cases and the tested level of immunity (for the years of good concordance between vaccine and circulating strains) with the corresponding values predicted by the model.

RESULTS

Our analysis provides an estimate of key epidemiological parameters. The estimated reporting rates vary between 15 and 25% and the effective reproductive ratios range between 1.1 and 1.8. Moreover, it turns out that the higher incidence in children cannot be explained solely on the basis of higher immunity among adults, but require higher transmissibility among children.

CONCLUSION

Our results support the idea that children and adolescents have higher transmission rates compared to other age groups. The analysis yields also estimates of the level of immunity in the population that, compared with laboratory results, may give an insight into the mechanism of cross-protection between the circulating and vaccine strains, in the seasons when they differ.

PRESENTER: LUNELLI

20090066

Session: 07 .4

Track: Influenza 2

Active case finding for human infection in an H5N1 epizootic area - the first human H5N1 case in Lao PDR, 2007

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BACKGROUND

H5N1 influenza cases have occurred in countries neighboring Lao since 2003. H5N1 human and poultry surveillance were initiated in 2004. In January 2007, Thailand's Nongkhai Province, bordering Lao, reported an H5N1 poultry outbreak. In early February, 2007 an H5N1 poultry outbreak was detected in Vientiane. Immediate response was launched for early detection of human cases and prevention of transmission.

METHODS

Two hundred volunteers and health staff conducted door-to-door active case finding from February 3-7 in villages within the two districts with poultry outbreaks and in two adjacent districts. Villages closest to poultry die-offs were prioritized for active case finding. Case definition was fever \geq 38, cough, dyspnea and exposure to poultry within two weeks.

RESULTS

We visited 198 (32.4%) of 611 villages within 4 districts. From 14,167 houses, we found 228 people who had fever within the past 2 weeks. Among these, three (1.3%) met criteria as suspect cases. Two were admitted to a Laotian hospital and one to a Thai hospital. Patients hospitalized in Lao had nasopharyngeal swabs negative for H5N1. The case hospitalized in Thailand tested positive for H5N1 at both Lao and Thai laboratories, and later died. Close contacts among Thai and Lao health care workers were monitored for 1 week; none met suspect case criteria.

CONCLUSION

Door-to-door active case finding is labor-intensive. In this poultry outbreak setting active case finding in one-third of nearby villages rapidly detected a human case of H5N1, perhaps minimizing risk of transmission to close contacts. Complete door-to-door screening in the outbreak area would require significantly more staff. If H5N1 persists among poultry in Southeast Asia, active case finding strategies should be further evaluated, including a focus on cost effectiveness and sustainability.

PRESENTER: OUNAPHOM

20090047

Session: 07 .5

Track: Influenza 2

Can we measure influenza vaccine effectiveness using a simple method? Comparing two study designs using data from the Spanish Influenza Sentinel Surveillance System, 2008-2009

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BACKGROUND

Annual vaccination is the main intervention to prevent influenza and its complications in elderly. To identify a simple method to measure influenza vaccine effectiveness (IVE) in elderly, we compared two study designs: case-control and screening method (SM).

METHODS

The Spanish Influenza Sentinel Surveillance System (SISSS) was the data source for both designs. Participating GPs swabbed all influenza like illness (ILI) elderly patients. Cases were ILI laboratory-confirmed. We used two control groups: ILI patients laboratory-negative (ILI-) and patients not presenting ILI since the beginning of the season, matched by age-group and swabbing week (RESP-). We collected vaccination status and confounding factors (chronic conditions, previous influenza/pneumococcal vaccinations, smoking, functional status, hospitalisations). For the SM, we compared the proportion of vaccinated cases to the SISSS population vaccine coverage (VC). We estimated odds ratios (OR) using non-conditional and conditional regression and computed $IVE = (1-OR) * 100$.

RESULTS

One hundred-sixty-four GPs enrolled ILI patients: 44 cases, 58 ILI-, 88 RESP- controls. The VC was 91.7% among ILI-, 80.7% among RESP- controls, 65.3% in the SISSS-catchment population. Using ILI- controls, the IVE adjusted for all confounding factors was 79% (95% confidence interval (CI): -26; 96). Using RESP- controls, the adjusted IVE was 63% (95%CI: -32; 90). The SM IVE was 18.7% (95%CI: -49.8; 55.9).

CONCLUSION

Our results suggest a protective effect of the 2008-9 vaccine against laboratory-confirmed influenza in elderly. The VC differs in the various groups: we could not identify the control group better representing the cases' source population. The limited sample size resulted in imprecise IVE for both methods. Based on available surveillance data, the SM uses less resources but cannot control for confounders. In 2009-10 we will recruit more GPs to increase the sample size.

PRESENTER: SAVULESCU

20090125

Session: 08 .1

Track: Food-and water-borne diseases

Consumption of Fresh fruit juice: How a healthy food practice caused a national outbreak of Salmonella Panama gastro-enteritis

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BACKGROUND

In spring 2008, within two weeks, twice the average annual number of laboratory-confirmed cases of Salmonella Panama (15) was reported in The Netherlands. This prompted a national outbreak investigation to identify the responsible common source.

METHODS

A case was defined as a person diagnosed with S. Panama who resided in The Netherlands during the seven days before onset of illness, since January 2008. First cases identified through the national laboratory-based surveillance were interviewed using a trawling questionnaire exploring relevant food and non-food exposures. We conducted a case-control study to test the hypothesis that cases were more likely than controls to have consumed fresh (unpasteurised) fruit juices. We matched two controls per case by district of residence and age. The outbreak strain was tested for acidic resistance and survival in fresh juices identified by cases.

RESULTS

In total, 33 cases were reported. The case-control study (23 cases / 24 controls) identified consumption of fresh juices containing orange juice and purchased from retailer X as the only risk factor for illness (matched odd ratio: 7.4, 95%confidence interval: 1.5-37.2). Though the bacterium could not be isolated from fruit juice, the outbreak strain was able to survive in fruit juice from X. The outbreak-strain showed acid resistance and adaptive properties that would allow it to cause infection through fresh orange juice.

CONCLUSION

Potential for outbreaks associated with fresh fruit juice should not be neglected given the growing number of consumers in Europe. Frequent microbiological testing and strict compliance with food safety procedures reduce the infectious hazard of fresh fruit juices. Nevertheless labeling regulation should be adapted to indicate to consumers that unpasteurized fresh fruit juices remain vulnerable to microbial contamination.

PRESENTER: NOËL

20090214

Session: o8 .2

Track: Food-and water-borne diseases

Hepatitis A Outbreak in a Naval Base-Thailand, June 2008

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BACKGROUND

Hepatitis A outbreaks rarely occur in adult population. In late June 2008, a hepatitis A outbreak in a naval base was notified. An investigation was initiated to describe epidemiological characteristics, identify risk factors and mode of transmission, determine secondary infection and implement prevention and control measures.

METHODS

A suspect case was a seaman who developed jaundice or 2 of the following symptoms: fever, abdominal pain, nausea, vomiting, fatigue, dark urine, RUQ pain, anorexia and malaise. Active case finding was performed on seaman batch 4/2007 in the naval base. Serum, rectal swab and water samples were collected and sent for Anti-HAV IgM, Anti-HAV IgG testing and virus isolation. A retrospective cohort study was conducted to identify risk factors.

RESULTS

Overall attack rate was 59.12% (81/137). Of those, 47 (34.3%) were laboratory-confirmed symptomatic cases and 34 (24.82%) were asymptomatic infection. Median age was 22 years (range: 21-26 years). Common symptoms were abdominal pain (91.49%), followed by fatigue, dark urine, fever, jaundice, (87.23%, 78.72%, 68.09%, 63.83%, respectively). The low proportion of immunity among seamen before an outbreak 24 (17.52%) was characterized by negative anti-HAV IgM and positive Anti-HAV IgG. Hepatitis A virus (genotype 1A) was identified from 2 rectal swabs and a water source in a training center. The risk factors were contacting ill cases (RR 1.50, 95%CI=1.08-2.08) and hand washing before meal (RR 0.66, 95%CI=0.48-0.92, chi-square for trend 8.04, p=0.005). No secondary case in the naval base and household members was reported.

CONCLUSION

A common source outbreak of hepatitis A in seaman reflects low immunity in young Thai population. Hepatitis A vaccination is recommended for the new cohort of young seaman.

PRESENTER: SILAPORN

20090237

Session: o8 .3

Track: Food-and water-borne diseases

Investigation of a 7 year recurrent Salmonella Infantis outbreak of gastroenteritis in a rehabilitation clinic

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BACKGROUND

Since 2002, several episodes of Salmonella Infantis (SI) gastroenteritis of a specific phage type have occurred in a German rehabilitation clinic without known source and vehicle of infection. Responding to a further outbreak in 2009, an investigation aimed to identify risk factors and the source.

METHODS

In a retrospective cohort study, clinic patients filled self-administered questionnaires on food consumption, physical therapy, activities and medical conditions. Cases were defined as patients with diarrhoea or vomiting, or stool culture positive for SI April 1st-14th. Specimens submitted to microbiological analysis included stools of all patients from one department and from kitchen employees, food samples from six days (6th-11th April), and environmental samples.

RESULTS

Nineteen of 308 clinic patients were symptomatic; 11 with onset on April 4th-5th. Screening found 9/49 asymptomatic patients SI positive, yielding a total of 28 cases. Altogether, 241 questionnaires (including 23 cases) were analysed. The following risk factors were detected by univariable analysis: eating lunch the second sitting (Relative Risk [RR] 4.6, 95%CI 1.1-20.0), use of antacids (RR 2.7, 95%CI 1.2-6.1) and in exact logistic regression: eating lunch (Odds Ratio [OR] 3.6, 95% CI 1.1-□) and dinner (OR 4.9, 95%CI 0.8-□) on April 3rd. SI was cultured from retained samples of noodles and rice served on April 2nd and 3rd. Three kitchen employees tested SI-positive. Environmental investigation identified insufficiencies in storage and handling of food items.

CONCLUSION

We suggest that the outbreak was caused by inadequate kitchen hygiene, with food contaminated by one or more infected kitchen employees. The initial source remains elusive. Advice included frequent testing of stool specimen from kitchen employees to identify carriers, and a strict kitchen hygiene regimen to prevent further outbreaks.

PRESENTER: SPACKOVA

20090053

Session: o8 .4

Track: Food-and water-borne diseases

Estimation of risk of Hepatitis A contamination of blood supplies during community-wide outbreak in Latvia, 2008

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BACKGROUND

Hepatitis A virus (HAV) transmission through blood and clotting factors has been reported. A community-wide outbreak of HAV was recorded in Latvia in 2008. Most cases were limited to Riga and more than 80% were older than 18 years. Our objective was to quantify the risk of HAV contaminated blood products in Riga during this outbreak.

METHODS

We estimated the number of HAV contaminated blood donations per 10,000 donations from 18 to 65 year old residents using methods described by Biggerstaff and Petersen in 2002. We divided the outbreak into three periods. Assumptions were made about the proportion of symptomatic cases, the period of asymptomatic viremia in symptomatic and asymptomatic cases and that symptomatic persons were excluded from blood donation. The risk of receiving contaminated blood was calculated by adjusting crude risk for alanine-aminotransferase (ALT) screening (which would defer donations of viremic asymptomatic donors) and hepatitis A immunity in the community.

RESULTS

The risk of HAV contamination of whole blood in Latvia was 1.36/10,000, 2.03/10,000 and 10.59/10,000 for the periods of February - April, May - July and August - October respectively. The risk of HAV infection following reception of blood between August and October 2008 was highest in children under 14 years, 4.47/10,000 blood recipients.

CONCLUSION

Post-transfusion HAV infection is rare but possible. We were unable to account for other deferral mechanisms or viral inactivation procedures used for whole blood products in this risk estimation. However, this study showed a risk of HAV contamination of blood supplies during community-wide outbreaks in Riga in 2008. Countries should routinely use such risk calculations for blood safety during infectious disease outbreaks to implement more stringent deferral or blood screening measures.

PRESENTER: LUCENKO

20090250

Session: o8 .5

Track: Food-and water-borne diseases

Human listeriosis and co-morbidities in England, 1999 to 2008: quantifying the risk

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BACKGROUND

Listeria monocytogenes causes a rare but severe food borne disease (listeriosis), commonly affecting pregnant women, the elderly and the seriously ill. The epidemiology of listeriosis in England and Wales changed between 2001 and 2008, with more patients aged ≥ 60 years presenting with bacteraemia. We examined the risks in this age group, and quantified the role of co-morbidities for listeriosis in all age groups.

METHODS

Case-patients were resident in England between 1999 and 2008 and were reported to an enhanced national surveillance scheme by hospital microbiologists using a clinical case questionnaire. We coded co-morbidities of non pregnancy-related cases of *L. monocytogenes* infection according to ICD-10. These data were compared with appropriate denominator data (Hospital Episode Statistics Finished Consultant Episodes), to calculate incidence rates per million consultations (with appropriate 95% confidence intervals).

RESULTS

Between 1999 and 2008, 1412 non-pregnancy related cases of listeriosis were reported in England. We received a clinical questionnaire for 81% of cases (N=1141). Eighty-two percent (N=934) had one or more underlying medical conditions, i.e. we recorded 1261 ICD-10 codes on co-morbidities from these 934 cases. The ≥ 60 years age group comprised 76% of all cases and 77% of all co-morbidities. Overall, the highest co-morbidity rates were diseases of the liver (192.85 [150.9-242.9]), systemic connective tissue disorders (163.09 [108.4-235.7]), malignancies of the lymphoid and haematopoietic tissue (141.2 [95% CI: 121.9-162.6]), alcoholism (107.49 [80.8-140.3]), renal failure (103.53 [83.3-127.3]), diabetes (98.4 [76.8-124.1]) and hypertensive disease (81.47 [52.7-120.3]).

CONCLUSION

We have highlighted several underlying conditions not previously thought to be strongly associated with listeriosis, namely diabetes and hypertension. The extent to which these co-morbidities are correlated with each other requires further investigation to enable much better, targeted prevention.

PRESENTER: MOOK

20090124

Session: 09 .1

Track: Surveillance 2

Outbreaks of foodborne infectious intestinal disease in England and Wales: Health Protection Agency surveillance from 1992-2008

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BACKGROUND

The Health Protection Agency has operated a system of surveillance for general outbreaks of infectious intestinal disease (IID) in England and Wales since 1992. A large proportion of these outbreaks are defined as being foodborne and the investigation and reporting of such foodborne outbreaks within the EU became mandatory from 2005 (Directive 2003/99/EC). This outbreak surveillance data has been used in etiological analyses of such outbreaks and effectively serves the following purposes: disease prevention and control; knowledge of disease causation; input into intervention strategies.

METHODS

We summarize the 2350 (21%) foodborne outbreaks of IID in England and Wales recorded between 1992 to 2008 from a collective total of 10,958 general IID outbreaks.

RESULTS

In total 54,292 people were affected, 1999 were hospitalized and 122 deaths were recorded. Salmonella spp. accounted for 1124 (48%) of foodborne outbreaks. Interestingly the proportion of outbreaks attributed to Salmonella, Clostridium perfringens, verocytotoxin-producing Escherichia coli O157 and Norovirus decreased significantly between 1992 and 2008, while increasing for Campylobacter. Over the 17 year period, poultry meat (15%) was consistently the most commonly implicated food vehicle implicated in foodborne outbreaks and red meat (12%), fish and shellfish (10%), desserts (9%) and eggs (5%) were the most frequently represented. The proportion of outbreaks attributed to red meat, fish and shellfish and eggs decreased most significantly. Commercial catering premises were overall the most common setting identified (63%) and within these, restaurant linked outbreaks decreased significantly from 1992-2008.

CONCLUSION

Factors such as the reduction of Salmonella in UK poultry flocks as well as improvements in overall food hygiene in food premises may have contributed to the reduction in numbers of foodborne outbreaks.

PRESENTER: GORMLEY

20090030

Session: 09 .2

Track: Surveillance 2

Can we use web-based medical education to improve mandatory disease reporting in Germany?

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BACKGROUND

The German Medical Association provides physicians with web-based continuous medical education (CME) as tools to achieve required training, but the impact remains unclear. We published a CME on infectious disease notifications (IDN), investigated physicians participation and resulting measurable notification activities.

METHODS

We evaluated participation by medical speciality and affiliations for four CME modules issued in 2007 using anonymised user profiles. To evaluate impacts of the CME on IDN we compared country-wide activity of IDN of Hepatitis A, B, C, measles, meningitis and tuberculosis before and after appearance of the module using Fourier analysis for seasonal adjustment and trend-adjusted t-test.

RESULTS

Between weeks 33 and 51 in 2007, four consecutive CME-topics with related multiple-choice questionnaire were available online for seven weeks respectively. Of 314,912 registered physicians, overall 5.7% (range 5.4%-6.6%) participated and 18,223 physicians attended the module on IDN. Overall participation to CME-topics was highest among laboratory physicians (25%). Of 83,724 general practitioners, 5,369 (6%) participated in the CME on IDN. Within 20 weeks after this CME, more cases of meningitis were reported by physicians ($p=0.02$), laboratories ($p=0.0006$) and more hepatitis A cases by physicians ($p=0.0002$) compared to average numbers in the same weeks in the last 5 years. There was no difference in trends of notified diseases before and after IDN module.

CONCLUSION

Even though participation was low among the main target group for the CME on IDN, We found an association between the increase of notifications for some diseases and CME. However this finding was probably caused by outbreaks. Nevertheless, web-based CME may still be able to increase notification awareness.

PRESENTER: KAMGA WAMBO

20090012

Session: 09 .3

Track: Surveillance 2

Reporting of diagnosed measles cases to health authorities during an outbreak in North Rhine-Westphalia, Germany, 2006/07

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BACKGROUND

High vaccination coverage and active case investigation is required to interrupt indigenous measles transmission. In Germany, reporting of measles is mandatory but surveillance is likely to underestimate true case numbers. We compared mandatory reporting data with statutory health insurance data. The latter are provided by physicians to health insurance companies to receive payment. We aimed to determine the proportion of measles cases that were diagnosed but not reported by physicians during an outbreak in North Rhine-Westphalia (NRW) 2006/2007.

METHODS

We analysed data on measles diagnoses in NRW in 2006/2007 including demographic characteristics of cases. Health insurance data were regarded as the gold standard for this study. Quality of data was evaluated according to the good practice secondary data analysis. The study population consisted of statutory health insured persons in NRW (n=18 million; 86% of the population in NRW).

RESULTS

Physicians diagnosed 4,653 measles cases in NRW in 2006/2007; 68% were under 5 year-olds. In comparison, 2,014 cases were reported via the mandatory reporting system with 21% under 5 year-olds. Thus, 43% of diagnosed cases were notified in 2006/2007. Physicians reported 57% of diagnosed cases at peak of the outbreak in the first half of 2006. When case numbers declined during the second half of 2007, 11 of 422 diagnosed cases (3%) were reported.

CONCLUSION

The physicians' awareness of reporting diagnosed measles cases was higher at peak of the outbreak than towards the end. Overall, less than 50% of diagnosed cases were reported even during outbreak time; data suggest that this might be worse in endemic situation. Active case investigation by health authorities was constrained; an obstacle of great public health importance on the way towards measles elimination.

PRESENTER: REUSS

20090261

Session: 09 .4

Track: Surveillance 2

Epidemiology of invasive Streptococcus pyogenes infections in Finland, 2004-2008

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BACKGROUND

A number of countries have reported recent increases in the incidence of invasive Streptococcus pyogenes (group A streptococcus, GAS) disease. To identify emerging epidemiological patterns in Finland, we analysed data during a five-year period, in particular sex- and age-specific trends, seasonal patterns and prevalent emm-types.

METHODS

A case of invasive GAS (iGAS) was defined as GAS isolated from blood or cerebrospinal fluid. Finnish microbiology laboratories notify the National Infectious Disease Registry of all patients with an iGAS infection. Cases and their corresponding isolates during 2004-2008 were included. Isolates were emm-typed.

RESULTS

A total of 829 cases of iGAS were identified between 2004-2008 (overall annual incidence 3.2 cases/100,000 population). The rate of iGAS infection had an increasing trend, reaching 4.2/100,000 in 2008, with a more pronounced increase occurring in men. The rate was generally higher in men (3.7) than women (2.7), especially among persons aged 45-64 years (5.7 vs. 2.9; $P < 0.05$). However, among persons aged 25-34 years, women had a higher rate than men (3.3 vs. 1.7; $P < 0.05$). Most cases occurred between June-August (29%) and December-February (28%), with pronounced peaks of cases seen during midsummer for most years (2005-2007), and occasionally during midwinter (2007) and spring (2008). The most common emm-types were 28 (21%), 1 (18%), 84 (8%), 75 (6%) and 89 (6%). Women had more infections by emm28 than men, especially in persons aged 15-44 years ($P < 0.01$).

CONCLUSION

The incidence of iGAS disease in Finland is increasing, especially among males. The observed age- and sex-specific differences suggest yet undefined variation in predisposing factors and underlying conditions. Seasonal patterns were unusual with relatively more summer activity than reported in other countries, possibly linked to differences in seasonal outdoor activities.

PRESENTER: SILJANDER

20090039

Session: 09 .5

Track: Surveillance 2

Independent predictors of tetanus anti-toxin levels in The Netherlands; a serosurveillance study

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BACKGROUND

Despite a low incidence of disease, it is important to evaluate the long term effect of routine vaccination. We used the data from a population-based serosurveillance study to assess whether the Dutch population is sufficiently protected against tetanus, and which factors determine the tetanus anti-toxin level. Note, immunological protection against tetanus can only be obtained through vaccination.

METHODS

Individuals were selected using two-stage cluster sampling, including all regions of The Netherlands. Non-western migrants were over-sampled. In total, 6385 individuals donated blood and filled out a questionnaire (response rate 32%). Serum anti-toxin antibodies were assessed using a Multiplex Immunoassay (Luminex xMAP technology). Data were analyzed in SAS. Multivariable linear regression was used to study which factors determine tetanus anti-toxin level.

RESULTS

From all participants, 94.2% (95% C.I. 93.5-94.8) had a tetanus anti-toxin level above the minimal protective value (0.01 IU/ml). The overall geometric mean titer for the Dutch population was 0.91 (95% C.I. 0.85-0.97) IU/ml. The following factors were independent predictors of the tetanus anti-toxin level: age, sex, ethnicity, self-reported travel history to regions outside Europe, participation in the National immunization Program (NIP), vaccination because of profession, total number of obtained vaccinations, and self-reported time since last tetanus vaccination.

CONCLUSION

Overall, the Dutch population is very well protected against tetanus due to good NIP participation and additional vaccinations because of traveling or profession. However, individuals born before 1952 (introduction of NIP) and first generation migrants from Morocco, Turkey, or other non-western countries, remain at risk for tetanus and should be vaccinated after sustained injury. Possibly, the current policy for revaccination after injury can be reevaluated.

PRESENTER: STEENS

20090191

Session: 10 .1

Track: International Health

The First Indigenous Outbreak of Novel Influenza A (H1N1) in a Pub in a Popular Seaside Location, Thailand, June 2009

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BACKGROUND

On June 8th, 2009, Taiwan CDC notified Thailand International Health Regulation focal point of two confirmed novel influenza cases among Taiwanese tourists. Both joined different tour groups but visited a same pub and a same hotel in a popular seaside city of Thailand. An investigation was immediately conducted to assess the possibility of indigenous community spreading.

METHODS

Active case finding for Influenza-like illness (ILI) was conducted among pub and hotel employees. Active surveillance for novel influenza was established in 31 healthcare facilities in the city and surrounding districts. Throat swabs were collected from all ILI cases. Confirmed cases were ILI patients with positive novel influenza A (H1N1) by RT-PCR. A retrospective cohort study was performed in the pub to determine risk factors.

RESULTS

Four of 41 hotel employees reported ILI but their throat swabs were negative for the novel virus. Attack rate of ILI among pub employees was 33% (41/123) and 15/41 (37%) were confirmed novel influenza infection. Retrospective cohort study indicated history of contact to foreign guests a week before illness (adjusted OR=7.21, 95%CI=1.45-35.96) and age < 30 years (adjusted OR=2.91, 95%CI=1.19-7.11) were significant risk factors. Active surveillance revealed 11 more confirmed cases in community. Their occupations are mostly related to tourism. Influenza prevention and control campaigns were immediately launched. The pub was voluntarily closed and disinfected.

CONCLUSION

The first indigenous novel influenza A (H1N1) outbreak in Thailand occurred in a pub in a seaside city. Thai Ministry of Public Health decided to move the country's strategy from containment to mitigation. ILI surveillance has been strengthened in other tourist attraction provinces of Thailand. International collaboration assisted in monitoring the novel influenza and indicated potential areas to cause international outbreaks.

PRESENTER: JIAMSIRI

20090038

Session: 10 .2

Track: International Health

Factors triggering the initiation of international contact tracing in public ground conveyances

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BACKGROUND

The increasing mobility within and to Europe makes exposure to infectious diseases in coaches or railways likely. Scientific evidence on the risk of transmission of infectious diseases in public ground conveyances is scanty, therefore a theoretical discourse on the rationale to initiate contact tracing (CT) is needed. It was aimed to identify factors triggering the initiation of CT after exposure to infectious diseases in public ground conveyances.

METHODS

In a moderated group discussion with four experts from the health and transport sector, the general properties of a hypothetical pathogen, host characteristics, environmental and additional factors were weighed. Furthermore, expert opinion on the necessity and the rationale for CT after exposure to infectious disease was collected.

RESULTS

At least three experts rated fourteen factors as relevant for CT: pathogen characteristics: "airborne transmission", "communicability before or during the onset of symptoms"; passenger characteristics: "age (> 60 years; < 1 year)", "pregnancy"; environmental factors: "duration of travel > 8 hours", "distance to contact person < 1 meter"; additional factors: "perceived seriousness by public is high", "high media attention", and "high political interest". The diseases always requiring CT were SARS, viral hemorrhagic fever, avian influenza, small pox, Lassa fever, and pulmonary bubonic plague. Other factors identified were duration of travel, phase of the pandemic, vaccination status, political and media pressure.

CONCLUSION

The rating on the importance of factors influencing CT and the definition of infectious diseases requiring CT is a step forward towards the development of a risk assessment tool for transmission of infectious diseases in public ground conveyances. This publication arises from the project REACT which has received funding from the EU in the framework of the Public Health Programme.

PRESENTER: MOHR

20090122

Session: 10 .3

Track: International Health

Lot Quality Assurance Sampling Used to Evaluate Immunization Coverage during the National Yellow Fever Vaccination Campaign, Cameroon, May 2009

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BACKGROUND

Cameroon is among 12 African countries participating in the Yellow Fever Initiative. Between 4 and 11 May 2009, the national Yellow Fever vaccination campaign targeted 90% of the 7,469,615 individuals aged >9 months in 62 health districts at risk for Yellow Fever. We used Lot Quality Assurance Sampling (LQAS) to identify districts with low immunization coverage in order to guide mop-up actions during the last four days of the campaign.

METHODS

We selected a subset of districts at risk for low coverage based on indicators of previous performance prior to the campaign (12) or reporting the lowest preliminary administrative coverage at day 2 of the campaign (5). LQAS classifies the districts (lots) as with unacceptable coverage based on the number of unvaccinated individuals (d) found in a sample (N). We designed the sampling plan to reject a lot with coverage below 90%: N=50; d=7, with alpha and beta errors of 5% and 12%, respectively.

RESULTS

Of the 17 districts evaluated, 58.8% (10/17) were 'rejected' due to exceeding the threshold of 7 unvaccinated individuals, based on vaccination documented by the campaign immunization card; allowing for only verbal confirmation of vaccination, we would have rejected 41.2% (7/17). Based on these findings a two-day extension of the campaign was recommended nationally. At the end of the campaign the national administrative yellow fever vaccination coverage was 100.5%.

CONCLUSION

Towards the end of the campaign some districts were not reaching the coverage target. Many individuals claimed to be vaccinated in absence of documentation, suggesting faulty distribution of immunization cards. The use of LQAS for coverage assessment while the campaign was still in progress appeared to be useful to guide operational strategy.

PRESENTER: PEZZOLI

20090140

Session: 10 .4

Track: International Health

Investigation of imported cases is helpful for surveillance of Dengue

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BACKGROUND

Since 2006, Dengue is a notifiable disease in France as a consequence of the presence of the potential vector *Aedes albopictus* in Mediterranean districts and evidence of viremic patients returning from endemic areas. Whereas Dengue is endemic in Western Africa, relevant data are not available due to lack of surveillance and diagnostic means in most countries. This work highlights how the epidemiological and virological collaborative investigation of imported cases led to a better understanding of the features of two outbreaks that occurred in 2008 in Côte d'Ivoire and Mali.

METHODS

Suspected autochthonous and imported cases were investigated in France by serology and RT-PCR. Virus strains were tentatively isolated from RT-PCR positive samples and genome sequences established for molecular epidemiology purposes.

RESULTS

Within the imported cases, 7 of 14 returning from Côte d'Ivoire and 2 returning from Bamako (Mali) and Senegal were confirmed positive for dengue infection. Among these, 3 cases representative of each country were RT-PCR positive. Over the 30 autochthonous cases clustered 450 km west of Bamako, 23 displayed dengue markers and 13 of the 23 had viremia. Typing of viral strains revealed the emergence of Dengue 3 in Côte d'Ivoire, a serotype never observed before in West Africa, and the circulation of Dengue 2 in Mali and Senegal. Malian and Senegalese strains shared 99.6% sequence identity and phylogenetic analysis identified a common sylvatic origin of these epidemiologically unrelated clusters.

CONCLUSION

Investigation of imported cases is helpful for surveillance of Dengue activity and to assist endemic countries for diagnosis and outbreak understanding. Imported cases are early and appropriate sentinels regarding the emergence or spreading of dengue serotypes and provide valuable information about global circulation of the strains.

PRESENTER: RENAUDAT

20090019

Session: 10 .5

Track: International Health

Screening of migrants for chronic hepatitis b virus infection: a cost-effectiveness analysis

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BACKGROUND

Persons with chronic hepatitis B virus infection (HBV) are at risk of developing cirrhosis and hepatocellular carcinoma. Early detection of chronic HBV infection through screening and treatment of eligible patients has the potential to contribute to secondary prevention of HBV. We assessed the cost-effectiveness of systematic screening for chronic hepatitis B (CHB) of first generation migrants in The Netherlands from intermediate and high endemic countries.

METHODS

Epidemiological data of expected numbers of patients with active CHB in the target population and data on the costs of a screening program were combined with the outcomes of a Markov model in terms of costs and QALYs for patients with and without treatment. The base-case assumptions were an HBV prevalence of 3.35%, 35% participation in screening, specialist consultation for 58% of patients selected for referral, and 75% of eligible patients starting treatment.

RESULTS

Compared to the status quo, a one-time screening can reduce mortality of liver related diseases by 10%. Using base case estimates, the incremental cost effectiveness ratio (ICER) of screening compared to the status quo is €8,966 per QALY gained. The ICER varied between €7,936 and €11,705 per QALY gained in univariate sensitivity analysis, varying parameter values of HBV prevalence, participation rate, successful referral and treatment compliance. In multivariate sensitivity analysis for treatment effectiveness the ICER varied between €7,222 and €15,694, and for disease progression in natural history from €5,568 to €60,418.

CONCLUSION

Early detection and treatment of eligible patients has a large impact on liver related health outcomes. Systematic screening for chronic HBV infection targeted at first generation migrants is likely to be cost effective, even at low estimates for the HBsAg prevalence, participation, referral and treatment compliance.

PRESENTER: VELDHUIJZEN

20090036

Session: 11 .1

Track: Vaccine preventable diseases 2

Predictors of childhood vaccination uptake: a cross-sectional study in Greece

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BACKGROUND

To enhance vaccine uptake, factors influencing immunization status of children should be identified and addressed. We conducted a cross-sectional study among children attending the first year of the Greek Grammar school (6 year-olds) and their parents/guardians to identify predictors of complete and age-appropriate vaccination status.

METHODS

The country was stratified into 6 regions and each region was subdivided into urban and rural areas. Each cluster contained a school classroom randomly selected from each region. All 4,390 pupils of the selected clusters were asked to provide their vaccination booklet and their parents/guardians were asked to complete a questionnaire regarding beliefs and attitudes towards immunization. Weighted proportions, Relative Risks (RR) and 95% Confidence Intervals (95%CI) were estimated in a way that allowed for the stratification and the clustering of the sample.

RESULTS

Of all 3,878 (88.3%) participant children, 63.9% (95%CI 61.4%-66.3%) had received all the recommended vaccines and 52.1% (95%CI 49.5%-54.8%) were up-to-date. Belonging to a minority group (adjusted-RR 0.53; 95%CI 0.45-0.64, adjusted-RR 0.41; 95%CI 0.32-0.53), having other siblings (adjusted-RR 0.73; 95%CI 0.62-0.84, adjusted-RR 0.71; 95%CI 0.59-0.81), and perceiving long distance to immunization site as a barrier (adjusted-RR 0.93; 95%CI 0.86-1.01, adjusted-RR 0.87; 95%CI 0.76-0.99) were independent predictors of both complete and age-appropriate vaccination status in the final regression models, respectively. Maternal age \geq 30 years (adjusted-RR 1.14; 95%CI 1.02-1.28) and the perception of less severity of vaccine preventable diseases (adjusted-RR 0.92; 95%CI 0.85-0.99) were associated with complete vaccination, whereas paternal education of high school or higher (adjusted-RR 1.13; 95%CI 1.03-1.24) was the other independent determinant of age-appropriate immunization.

CONCLUSION

Socioeconomic factors rather than parental attitudes towards immunization explained underimmunization. Further interventions are warranted to enhance vaccine uptake in high-risk groups identified in this study.

PRESENTER: DANIS

2009006

Session: 11 .2

Track: Vaccine preventable diseases 2

Diphtheria Surveillance Network: focus on microbiological diagnostics and molecular typing in Europe

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BACKGROUND

Although a vaccine-preventable disease, diphtheria is still seen in many countries. DIPNET is a Dedicated Surveillance Network, encompassing 25 European countries together with key global reference centres. Diphtheria diagnosis heavily depends on microbiology detection; one objective was to assess laboratory procedures in order to harmonise methods and performance across the EU and beyond; namely (i) laboratory diagnostics and (ii) molecular typing.

METHODS

A series of diagnostic workshops were held in 2007 and country-specific workshops in 2008. In addition, two EQA panels were dispatched; (i) 6 simulated throat specimens to 34 countries and (ii) 12 *Corynebacterium diphtheriae* isolates to 8 countries. Participants were asked to (i) isolate, identify & perform toxigenicity testing on any corynebacteria present and (ii) characterise isolates using molecular typing.

RESULTS

EU members who recently joined DIPNET attended the workshops and were trained in primary culture, screening, identification and toxigenicity procedures. The attendees showed competence and gave positive feedback. From the EQA results, (i) a variety of tests were used for screening, identification & toxigenicity and many centres reported problems obtaining reagents and media for these specialised tests. Only 6/34 centres produced acceptable results for all 6 EQA specimens. Overall, 21% identification and 16% toxigenicity reports were unacceptable. (ii) At least 4 centres performed the gold standard, ribotyping. One other centre performed MLST. Preliminary results indicate only 3/12 isolates correlated between the centres.

CONCLUSION

Discrepancies in methodologies reflect the complacency and minimal awareness that still exists for diphtheria diagnostics and molecular typing still requires harmonising across key reference laboratories. These findings emphasise that further training and EQA exercises should continue to maintain expertise, assess capabilities and aid standardisation on a global scale.

PRESENTER: NEAL

20090206

Session: 11 .3

Track: Vaccine preventable diseases 2

Complications of Varicella Evaluated Within Four Years of the German Varicella Sentinel Surveillance System, 2005-2009

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BACKGROUND

Although varicella is considered a mild childhood disease, severe cases and even deaths occur. Routine varicella vaccination for children above 11 months was introduced in Germany in 2004 to reduce incidence, severe complications and burden of disease. A countrywide varicella sentinel surveillance system was initiated to evaluate the vaccination programme.

METHODS

Sentinel physicians report the number of varicella by age group and of varicella complications (VC) monthly and fill in case based questionnaires for patients with VC. We evaluated trend and clinical features of reported VC from April 2005 to March 2009.

RESULTS

Since 2005, the number of varicella cases decreased by 37% and VC declined by 73%. A total of 280 VC were reported by 150/1176 physicians, 126/280 (48%) in males. VC affected mainly age-groups 0-4 (59%) and 5-9 (31%). The proportion of VC of all reported varicella cases was highest in infants (0.9%) and in adults (2%). VC affected the skin in 144 cases, the central-nervous-system in 27 and other sites, including middle ear and respiratory tract, in 127 cases. Twenty-one cases had two different types of VC, 71 cases were hospitalised. Of all VC 165 (59%) recovered completely, 19 (7%) developed permanent sequelae and 2 (1%) cases died. The outcome remains unknown in 94 cases. Of 277 complicated cases with known vaccination status only 16 were vaccinated (none of them twice), six of these developed symptoms less than 42 days after vaccination.

CONCLUSION

The sentinel surveillance confirmed a higher risk for VC in infants and adults. The decrease in number of varicella cases and in the proportion of cases with VC suggests a successful varicella vaccination programme in Germany, which should however be monitored further.

PRESENTER: SPACKOVA

20090070

Session: 11 .4

Track: Vaccine preventable diseases 2

Epidemiological impact and cost effectiveness of serogroup C meningococcal vaccination in France

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BACKGROUND

In France, vaccination against sérotype C *Neisseria meningitidis* is only recommended for high risk children, but several local outbreaks have resulted in vaccination campaigns at local and regional level since 2002. To support the decision to integrate or not the serogroup C meningococcal vaccine into the routine vaccination schedule, we compared the epidemiological impact and cost-effectiveness ratios of several strategies: routine vaccination at different ages, catch-up campaign, booster dose at 12 years of age.

METHODS

We used the model developed by De Wals et al. to which we added a multiple cohorts Markovian component to capture the different timescales for vaccination. The impact of herd immunity was calibrated on the basis of the UK experience. Age specific incidences, sequelae and fatality rates were derived from French surveillance data. Two vaccine prices were considered: 15 and 38 € per dose. Costs were discounted at 4% per year and health outcomes (life year and disability adjusted life year) at 2%. Results were expressed from a societal perspective.

RESULTS

Vaccination of 12-month-old children with a cost of 15 € per dose was the only cost-effective strategy, according to WHO cost-effectiveness thresholds. Taking into account herd immunity, vaccination of 80% of the 12-month-old, together with a catch up campaign of the 2-24 year old (50% coverage) and a booster dose at 12 years of age (80% coverage) would result in a reduction of the incidence of more than 70 % over a 20 year period. The cost per DALY averted would be 80 987 Euros.

CONCLUSION

Based on those results, the French advisory board for immunization recommended routine Men C vaccination as of 12 months of age with a catch-up campaign for older children.

PRESENTER: VAN CAUTERAN

20090056

Session: 11 .5

Track: Vaccine preventable diseases 2

Current status of diphtheria and related infections in Europe

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BACKGROUND

Although diphtheria is now rare in most European countries, increasing international travel and population movement within the European Union threaten re-emergence. A European approach to diphtheria surveillance allows skills and resources to be shared, increasing the ability of a country and its neighbours to detect and respond to epidemics that are small, widespread, and/or at an early stage. The DIPNET surveillance database monitors the current status of diphtheria and related infections caused by toxigenic *Corynebacterium diphtheriae* and *C. ulcerans* in Europe.

METHODS

The DIPNET database links surveillance and microbiological data, creating an integrated tool for both microbiologists and epidemiologists. Retrospective case-based diphtheria data from DIPNET countries for 2000 to 2007 and prospective data from 2008, collected through the DIPNET website, was analysed.

RESULTS

The number of toxigenic strains reported in the decade 2000 to June 2009 varied widely from none (14 countries), to >600 (Latvia). Some countries, mainly those with strong microbiological support, reported mild cases of diphtheria caused by toxigenic *C. diphtheriae* and *C. ulcerans*. Toxigenic *C. ulcerans* isolates are increasing compared to toxigenic *C. diphtheriae* in some countries, and are often associated with contact with domestic animals.

CONCLUSION

Whilst diphtheria is well controlled by vaccination the threat of re-emergence remains. The absence of reported cases in some countries may reflect the lack of appropriate epidemiological and microbiological investigation. The increasing prevalence of *C. ulcerans* infection in some countries, which can cause classic respiratory diphtheria, also highlights the need for better understanding of this pathogen and its association with domestic animals. The integrated surveillance database should provide a useful tool for monitoring changes in the epidemiology and increasing the understanding of both of these infections.

PRESENTER: WHITE

20090071

Session: 12 .1

Track: Health care associated infections 2

Increasing incidence and testing do not explain steep mortality rise associated to *Clostridium difficile* infection in Brussels and Flanders, 1998-2006

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BACKGROUND

Clostridium difficile infection (CDI) incidence and mortality increased in North America and Europe over the last decade. Emerging hypervirulent and fluoroquinolones-resistant strains might have contributed to this. Belgium introduced moxifloxacin in 2002 and first ribotype 027 isolate dates from 2003. We measured CDI-related mortality, incidence and number of tests performed for the period 1998-2006 to provide evidence for public health action to reduce mortality.

METHODS

We selected: (1) records with ICD-10 code for *Clostridium difficile* enterocolitis from mortality databases from Flanders and Brussels regions, (1998-2006); (2) records with ICD-9-CM code for intestinal CDI from the Belgian hospital discharges database (1999-2006); (3) the number of CDI-related tests billed from the social security database (1998-2006). We standardized mortality and hospital discharge data by age, using Belgian 2000 midyear population. We compared years 2000 and 2006 for mortality and hospital discharge rates and number of diagnostic tests performed. We calculated age- and sex-specific mortality rates for 1998-2006.

RESULTS

Between 2000 and 2006, mortality increased by 811% (0.4 to 2.8 deaths/100,000 population), hospital discharge by 215% (18.0 to 38.6 persons/100,000 population) and diagnostic tests billed by 159% (79,938 to 126,912). From 1998 to 2006 mortality in 65-79 year-old increased from 0.3 to 2.9/100,000 population for males and from 0.4 to 1.6 for females; in over 79 year-old from 0 to 26.3 for males and 1.2 to 29.3 for females.

CONCLUSION

Between 1998 and 2006, CDI-associated mortality in Brussels and Flanders increased faster than discharges, especially in the eldest. Testing increase did not explain this difference. Further information about incidence of hypervirulent strains and antibiotic consumption, among others, is needed in order to better understand the causes of this increase in CDI-associated mortality.

PRESENTER: GUTIÉRREZ

20090134

Session: 12 .2

Track: Health care associated infections 2

The Added Value of Post Discharge Follow-up of Surgical Site Infections

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BACKGROUND

Surgical site infections (SSI) lead to increased morbidity and mortality. With the increasing trend towards a reduction in hospital length-of-stay, post-discharge surveillance following surgery is becoming more important.

METHODS

The mandatory Norwegian Surveillance System for Hospital-Acquired Infections (NOIS) requires that all patients included in the system are followed up for 30 days after surgery.

RESULTS

Surveillance data was collected on all patients who underwent one of five surgical procedures during a 3-month period (September 1st - November 30th) in 2005-2008. During these four years, 90% of all patients in NOIS were completely followed up by the hospitals (endpoint >25 days, organ-space infection or death). The highest follow-up rate was in hip replacement surgery (95%) and the lowest in appendectomy (76%). Of the 953 infections registered, 800 were diagnosed post-discharge (84%). 167 (21%) of these 800 were readmitted or had revisional surgery because of their surgical site infection. The mean number of days until infection was 12.9 days (95% CI 12.4-13.5) (median 12 days), whereas the mean postoperative length of stay was 5.8 days (95% CI 5.7-5.9) (median 5 days).

CONCLUSION

Most European surveillance systems do not include mandatory post-discharge follow-up. Across countries post-discharge surveillance is done in a multitude of ways ranging from passive to active and voluntary to mandatory. Post-discharge follow-up is an important, resource demanding and complicated aspect of surveillance of SSI, but necessary in order to obtain a complete picture of morbidity since 84% of infections are detected after discharge.

PRESENTER: LØWER

20090035

Session: 12 .3

Track: Health care associated infections 2

National surveillance of surgical site infections after laparoscopic cholecystectomy in Norway: incidence and risk factors

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BACKGROUND

Surgical site infections (SSIs) lead to an additional burden for patients and health care system. A mandatory three-month national surveillance system was introduced in Norway in 2005 in order to provide incidence rates and identify risk factors for SSIs following certain surgical procedures. Hospitals can choose to survey one of five procedures, including cholecystectomy.

METHODS

In 2005-2008 hospitals were invited to assess all patients for SSIs during three-month surveillance periods. Infection status was evaluated at discharge and 30 days after surgery by using the Centers for Disease Control criteria. The hospitals transferred data to the national database. We calculated incidence proportions and aimed to identify risk factors (by multivariate analysis, Poisson regression; Stata10.1) for SSIs after laparoscopic cholecystectomy.

RESULTS

The number of hospitals that submitted data for cholecystectomy increased from 8 in 2005 to 16 in 2008. In total, 1097 procedures were reported. Laparoscopic technique was used in 1007 (92%) cases, out of them 899 (89%) were followed for 30 days. Patients, median age was 49 years, 74% were females. Sixty-one infections were registered (among these 51 were superficial and 10 deep or organ/space infections), giving incidence proportion of 6.8% (95%CI=5.1%-8.4%). The incidence range between hospitals was 4.9%-9.2%. Increased risk for infection was associated with wound contamination class_4 (dirty or infected wound) (RR=13.2; 95%CI=3.4%-51.9%), physical status class_2 (mild systemic disease) (RR=2.2; 95%CI=1.2%-4.2%) and class_3 (severe systemic disease) (RR=3.0; 95%CI=1.1%-8.8%). Over 93% of infections occurred post-discharge.

CONCLUSION

Laparoscopic cholecystectomy is the preferred method in Norway. Post-discharge follow-up is important. Surveillance results should be used locally to reduce the SSIs incidence. Targeting high-risk patients should be prioritised. Continuous annual surveillance implementation with more potential risk variables is considered within 2012.

PRESENTER: JUNUSSOVA

20090085

Session: 12 .4

Track: Health care associated infections 2

Surgical site infections after appendectomy

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BACKGROUND

Appendectomy is a high volume surgical procedure with a peak occurrence in young adults. After introduction in 1982, laparoscopic appendectomy has increased in volume. A Cochrane review recommends antibiotic prophylaxis during surgery.

METHODS

From 2005 it has been mandatory for Norwegian hospitals to report data on surgical site infections over a 3-months period, including a post-discharge follow-up for 30 days after surgery, for at least one surgical procedure according to a prioritized list (appendectomy priority 4) to the Norwegian Surveillance System for Surgical Site Infections (NOIS).

RESULTS

In 2008 a total of 410 patients with surgery of appendectomy were reported from 15 hospitals, 2/3 as laparoscopic procedures, and nearly 50% were provided antibiotic prophylaxis. Among the 410 patients 24 cases of surgical site infections were diagnosed (incidence 5.9%), 15 as superficial wound, 3 as deep and 6 as organ / space infections. The incidence of all surgical site infections were 4.3% and 9.0% ($P=0.06$) after laparoscopy respective open procedure, explained by a higher incidence of superficial wound infections. The incidence of all surgical site infections after surgery with antibiotic prophylaxis was 6.5% and 5.3% after surgery with no antibiotic prophylaxis. However, the incidence of deep and organ / space surgical site infections after surgery without antibiotic prophylaxis was higher (3.4%) than with antibiotic prophylaxis (1.0%) ($P=0.11$). Accordingly, the incidence of superficial surgical site infections was higher (5.5%) for surgery with antibiotic prophylaxis than for surgery without antibiotic prophylaxis (1.9%) ($P=0.06$).

CONCLUSION

We observed fewer deep and organ / space infections after appendectomy with antibiotic prophylaxis, whereas more superficial wound infections were seen. Furthermore, we observed fewer infections after laparoscopic surgery compared to open procedure.

PRESENTER: MØLLER-STRAY

20090026

Session: 12 .5

Track: Health care associated infections 2

Healthcare-associated infections in Finnish neonatal intensive care units - first results from repeated prevalence surveys

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BACKGROUND

Studies on healthcare-associated infections (HAIs) in neonatal intensive care units (NICUs) in industrialised countries have reported a wide range of prevalences (7%-17%). No such Finnish data exists to date. The aim of this study was to assess prevalence, onset and types of HAI in Finnish NICU patients, in order to strengthen incidence surveillance of HAIs in this patient-group and to familiarise the NICU staff with HAI surveillance definitions.

METHODS

We conducted six monthly point-prevalence surveys in Finnish NICUs between November 2008 and May 2009. The definitions for nosocomial infections by the US Centers for Disease Control and Prevention were used. For all patients present on the day of survey, data were recorded on standardised forms by a trained study team at each NICU. All newly diagnosed HAIs and those still being treated on the day of survey were recorded; late-onset HAIs (onset at >72 h of age) with a hospital stay of >48 h, were included in the current analysis.

RESULTS

Every NICU in Finland ($N=23$) participated. During the six surveys, 1281 forms were obtained, including 935 forms regarding infants aged >72 h and hospitalised for >48 h. Among them, 61 HAIs in 60 patients were identified (prevalence 6.5%; 95%CI 5.0%-8.3%). Very low birth-weight (VLBW, <1500 g) infants suffered from late-onset HAIs more commonly than non-VLBW infants (10% vs. 4%, $p<0.01$). Main types of late-onset HAI were clinical sepsis (34% of late-onset HAIs), laboratory-confirmed primary bloodstream infection (20%), conjunctivitis (16%), and pneumonia (8%).

CONCLUSION

The HAI prevalence was in line with the previous reports. Most HAIs were invasive and occurred in VLBW infants. In the future, surveillance should target this patient group to re-inforce hospital control measures capable of reducing healthcare-related transmission.

PRESENTER: SARVIKIVI

20090271

Session: 13 .1

Track: Environmental Epidemiology

surveillance for carbon monoxide poisonings: a French environmental surveillance system as a part of preventive policies

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BACKGROUND

In France, carbon monoxide (CO) poisonings cause yearly 100 deaths and 5 000 exposed people emergency managing. In order to improve knowledge of CO poisoning circumstances and define adapted preventive policies, a specific surveillance system was set up in 2005.

METHODS

Everybody in contact with suspected CO poisoning case could report it to poison control centers or public health departments. As soon as possible a technical investigation is setting up to identify cause of poisoning. A medical investigation is also set up to describe clinic symptoms, medical management and gravity. Standardized questionnaires are filled and captured in a national database. To overcome lack of clinic symptoms specificity, epidemiological case definition has been build from 5 combinations of both environmental and medical criteria.

RESULTS

About 1 300 CO poisoning incidents involving more than 4 000 exposed persons have been yearly declared. Most of them (85%) are domestic unintentional poisoning. Few occurred in a public place (3%)¹. Unintentional domestic CO poisonings concerned all social classes and half of them occurred in home owner residents. 40% were due to gas furnace with cumulative favouring conditions like blocking area ventilation. Public health promotion focused on these. During colder month power outages, outbreak CO poisonings were observed due to inadapted use of generator or portable heating devices inside. After, CO poisoning outbreaks due to inadapted use of portable heating device in church involving each time about 100 persons, french Ministry of health made rules to forbid such use in public places.

CONCLUSION

French CO poisonings surveillance system has improved knowledge in circumstances of CO poisonings. A dual strategy of preventive message and rules was set up to transform in public health knowledge in action.

PRESENTER: VERRIER

20090198

Session: 13 .2

Track: Environmental Epidemiology

Prioritisation of physical agents for public health action - A structured approach

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BACKGROUND

As we enter the 21st century, public health problems caused by environmental hazards are multiplying due to population growth, crowding, industrialisation, climate changes, quick and worldwide diffusion of new technologies and chemical substances. A number of new potential environmental health threats related to exposure to physical agents, such as nanoparticles, electromagnetic fields, have to be evaluated or monitored. The objective of this study is to select and prioritise physical agents using a list of criteria and indicators in order to implement a ranking for the future activity of the InVS.

METHODS

The data were obtained from 2005-2009 literature databases: Medline, Web of Knowledge, press releases, National Environmental Health Surveys and internal InVS data. With defined key words (physical agents, risk, hazard, ionising radiation, noise etc) we searched on the websites of different French and international environmental and public health institutes, to define the content of the denomination "physical agent". Likewise, we defined types of criteria (strategic, scientific and sociologic) and several indicators (global classification, frequency of citations for each physical agent in the past 5 years, temporal variation of scientific and social interest) to assess public health importance and achieve a weighting.

RESULTS

As first results we established a list of 14 physical agents seen as potential hazard by most institutes. We selected a list of 7 groups of physical agents to be prioritised applying predefined criteria and indicators. These are: ionising radiations, non ionising radiation, noise, vibration, extreme temperature, physical phenomena and nanoparticles.

CONCLUSION

There is work in progress, by expert groups of InVS, on the strategic and scientific classification of physical agents of interest in order to obtain the priority order in environmental health context.

PRESENTER: ANTICS

20090072

Session: 13 .3

Track: Environmental Epidemiology

Early detection of excess legionella cases in France: evaluation performance of five automated methods

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BACKGROUND

In France, postal codes of residence and dates of onset of symptoms are used for the early detection of legionella case clusters. This method is time consuming and requires epidemiologists with good knowledge about legionella surveillance and case follow up. An automated analysis program was created, using R freeware and surveillance R-package, to flag excess of cases and facilitate epidemiologist observations. We tested the performance of five detection methods.

METHODS

We tested one linear regression (Farrington), two historical mean (CDC, RKI) and two CUSUM methods (one on sum of cases with Rossi transformation and one on sum of Serfling residuals without transformation). Case records of 99 districts and 52 weeks for the year 2008 (5148 district-weeks) were used. The sensitivity and positive predictive value were assessed for the five methods using as reference the current epidemiologist surveillance method which detected 38 positive and 5110 negative district-weeks in 2008.

RESULTS

Twenty-three positive district-weeks (61%) were flagged by at least one method. Sensitivities were 45% (CUSUM-Rossi), 39% (CDC), 34% (CUSUM-residuals), 21% (Farrington) and 16% (RKI). Positive predictive values were 67% (Farrington), 60% (RKI), 54% (CUSUM-residuals), 27% (CUSUM-Rossi) and 24% (CDC). All four district-weeks flagged by all methods corresponded to positive district-weeks. Thirteen district-weeks were flagged by 3 or 4 methods; six corresponded to positive and seven to negative district-weeks. One of these latter was retrospectively identified as an alert that was missed by the epidemiologist.

CONCLUSION

Methods with high sensitivity have lowest positive predictive value and vice versa. A combined interpretation of method's results is necessary to improve reliability of statistical flags. Automated detection methods provide valuable aid in highlighting excess of legionella cases and facilitate ascertainment by the epidemiologist.

PRESENTER: GRANDESSO

20090239

Session: 13 .4

Track: Environmental Epidemiology

The use of windscreen wiper fluid without added chemicals in cars and commercial vehicles: A newly identified risk factor for Legionnaires' disease

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BACKGROUND

A source of infection is rarely identified for sporadic cases of Legionnaires' disease. Among sporadic cases in the UK, professional drivers are five times more commonly represented than expected. We therefore investigated possible risk exposures in relation to driving or spending time in a car or other vehicle.

METHODS

A case control study including all surviving sporadic cases in England and Wales between 12 July 2008 and 5 March 2009 was carried out. Cases were contacted by phone and controls were consecutively recruited by sequential digital dialling matched by geographic area, sex and age group. Those who consented were sent a questionnaire asking questions on driving habits, potential sources in vehicles and known risk factors. The results were analysed with multivariable analysis.

RESULTS

Seventy five (75) cases and 67 controls were included in the study. Among those spending time in a vehicle 15/50 cases did not add any chemical to their windscreen wiper fluid while only 1/58 controls did not do so. Preliminary results for this exposure using a multivariable logistic regression model that included significant known risk factors showed of an association with being a Legionnaires' case OR 21.4, 95%CI (1.7-264.7), p 0.02.

CONCLUSION

This study has possibly identified a biologically plausible new risk factor for infection with Legionnaires' disease. The bacteria could grow in the stagnant water of the windscreen wiper fluid reservoir, which is irregularly aerosolised onto the windscreen, and may then enter the vehicle through the ventilation system. This is an important public health finding. A simple recommendation to add chemicals to the windscreen wiper fluid may mitigate transmission of Legionella bacteria to drivers and passengers.

PRESENTER: WALLENSTEN

20090063

Session: 14 .1

Track: Tuberculosis

Protective effect of BCG vaccination in a nursery outbreak of Tuberculosis in London

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BACKGROUND

In July 2008 North-West London Health Protection Unit was contacted about a case of smear positive pulmonary tuberculosis (TB) in a 28-year-old UK-born nursery teacher. She had been symptomatic while working in the nursery for 9 months. As part of the outbreak investigation, we aimed to determine risk factors for acquiring TB in this setting.

METHODS

Screening by chest X-ray, Interferon Gamma Release Assay (IGRA) tests and clinical signs of nursery children, staff and their contacts was conducted using a stone-in-the pond approach (search for contacts in concentric circles around the source case). We collected information on various factors, including BCG vaccination status, and analysed data using multivariable logistic regression.

RESULTS

In addition to the index case, 88 adults and 168 children who had all been at the nursery were screened for TB, in total 257 persons (65% children). We found 12 active (13 with the index case) and 41 latent TB cases (74% children). Among teachers at the nursery the attack rate was 42% (95% CI 22-62) and 40% (95% CI 30-50) among the children in the main nursery. A significantly lower proportion of IGRA positivity was seen in BCG vaccinated vs. non-vaccinated individuals (14% vs. 34%, $p=0.009$). Median age of children was 2.6 years (Interquartile range=1.5). The OR for TB infection by BCG status adjusted for age, sex and contact with the index case was 0.25 (95% CI 0.08-0.7) and the adjusted OR for TB infection by contact with index case was 14.4 (95% CI 3.1-66.7).

CONCLUSION

This outbreak shows extensive transmission of tuberculosis among very young children where BCG seems to have a protective effect against TB infection as assessed by positive IGRA.

PRESENTER: ERIKSEN

20090147

Session: 14 .2

Track: Tuberculosis

A high attack rate of tuberculosis infections in a school outbreak, Wilhelmshaven, Germany, 2008

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BACKGROUND

In Wilhelmshaven (population=80.000), <10 cases of tuberculosis are yearly notified on average. In September 2008, after one month of coughing, a 13-year-old schoolboy with a migration background was diagnosed with pulmonary tuberculosis. Contact tracing was initiated to find the source and secondary cases to prevent further spread.

METHODS

Contact persons of the index case were offered Interferon Gamma Release Assay (IGRA) to look for latent tuberculosis infection (LTBI). A retrospective cohort-study was conducted in pupils at the same class level. Timetables were obtained from the school. Data on risk-factors (e.g. smoking, migration background) and vicinity of contacts were collected from the pupils by self-administered questionnaires and analysed by descriptive and analytical methods including multivariate logistic regression.

RESULTS

Altogether 117 persons were traced: 32 LTBI were detected and two additional pulmonary culture-positive tuberculosis cases, the schoolboy's sister and father, who reported an earlier episode of treated tuberculosis in his country of origin. The cohort study included 33/54 (61%) pupils, 17 (52%) with LTBI. Bivariate analysis revealed the following risk factors: being in the same class (Relative Risk (RR) 3.9; 95%-Confidence Interval (CI) 1.4-11.0), having contact with the index case after school time (RR=2.5; 95%-CI=1.2-5.1). No increased risk was found for migration background and smoking. Results remained stable in multivariate analysis. Vicinity of contacts within schoolrooms was difficult to evaluate and yielded inconsistent results.

CONCLUSION

Our findings suggest that the schoolboy was infected by his father. He may have been the source of infection for at least 16 persons, to most of them he had typical classroom contact during school. The results show the importance of intensified contact tracing and specific diagnostic in order to detect cases and LTBI.

PRESENTER: HOFMANN

20090084

Session: 14 .3

Track: Tuberculosis

Tuberculosis in children in London, 1999-2007

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BACKGROUND

Tuberculosis (TB) is a particular public health concern in London, with a 1987-2007 incidence increase from 21 to 43/100,000 population. Cases of TB in young children represent recently acquired infection and serve as a surrogate marker for ongoing community transmission. The objective of the study is to describe childhood TB patterns, in order to orient TB-control activities.

METHODS

Data on childhood (0-16 years) TB cases from the Enhanced TB surveillance system, London, 1999-2007 were analysed. We calculated incidence over time and described the childhood TB cases by country of origin and ethnicity.

RESULTS

In 2007, almost 8% of new London TB cases were in children (n=251) and 2% in under-fives, a similar proportion since 1999. Childhood TB incidence remained stable from 1999-2001 at 11-12/100,000 population, increased to 14.6/100,000 in 2002, and remained relatively static at 16-17/100,000 from 2004-2007. Incidence in under-fives fluctuated between 9-14/100,000 since 2002 (relatively small numbers). In 2007, most (53%) London childhood TB cases were UK-born. However, 94% were from an ethnic minority - 51% Black African and 22% Indian subcontinent ethnicity. Of the non-UK born, 32% were in the UK for more than 5 years.

CONCLUSION

In London, TB incidence in children overall is not decreasing. This is a cause for concern as it is a marker of ongoing transmission rather than reactivation of old disease. One quarter of these cases are in under-fives, with implications for household transmission. Most of these children are from ethnic minority groups. As many of these children are UK-born, or recent (less than five years) arrivals to the UK, early intervention is possible. This information should be used to target interventions and ensure no missed opportunities for prevention.

PRESENTER: KITCHING

20090044

Session: 14 .4

Track: Tuberculosis

Does increasing immigration affect the epidemiology of TB in Austria, 1997-2006?

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BACKGROUND

As seen in other high-income European countries, the incidence of tuberculosis (TB) in Austria decreased over the past decade. The proportion of TB-cases in foreign-born populations settled in Europe increased during this period. Also in Austria immigration activities increased. The aim of the present study was to study the influence of immigration on the TB-burden in Austria.

METHODS

Descriptive and correlational analyses were performed using the case data from the National TB-database and aggregated data from the Austrian population statistics and immigration statistics. Foreign-born Austrian residents (non-Austrians) were defined as long-stay non-Austrians when having lived in Austria for at least 5 years, otherwise defined as short-stay non-Austrians.

RESULTS

There was no correlation found in the annual TB-incidences between Austrians and non-Austrians ($r=0.01$; $p=0.98$). The age distribution differed significantly between these two groups: non-Austrian TB-cases were younger. The age-adjusted province-specific incidence rates between these groups did not correlate ($r=0.43$, $p=0.25$). There was no positive correlation found between increasing immigration and TB in Austrians. A positive correlation was found between immigration from high TB incidence countries and TB in non-Austrians ($r=0.87$, $p<0.01$). A total of 94% of the TB cases in non-Austrians were diagnosed in the first 5 years after arrival. In particular, the number of TB cases in short-stay non-Austrians positively correlated with the increasing immigration from high TB-incidence countries ($r=0.86$, $p<0.01$).

CONCLUSION

The only observed effect of immigration was that increasing immigration from high TB-incidence countries is related to increasing TB cases in short-stay non-Austrians. This indicates reactivation of remote infection. Serological studies in immigrants from high TB-incidence countries are recommended to provide evidence for decisions making on further control measures.

PRESENTER: KUO

20090073

Session: 15 .1

Track: Sexually Transmitted Infections

Hepatitis-B-seroprevalence among children and adolescents in Germany - Findings from the German Health Interview and Examination Survey for Children and Adolescents (KiGGS)

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BACKGROUND

The majority of hepatitis B (HB) infections acquired during childhood are asymptomatic, but the risk of chronic HB infection is high. To date, no representative data on hepatitis-B-prevalence among children and adolescents in Germany are available. The aim of this study was to estimate hepatitis-B-seroprevalence and to assess determinants of HB infection among children and adolescents in Germany.

METHODS

In 2003-2006, the Robert Koch Institute conducted a nationwide cross-sectional Health Interview and Examination Survey for Children and Adolescents (0-17 years) in Germany (n=17,641). Demographic data on age, gender, migrant background and social status were collected through questionnaires and interviews. The children were defined as immigrants (two-sided migrant background) if child and at least one parent immigrated OR both parents immigrated. Information on HB vaccination status was obtained from vaccination cards. Serological samples from participants >3 years were tested for anti-HBc and HBsAg. We performed a multivariable logistic regression analysis to assess determinants of HB infection. The analysis was weighted in order to achieve representative results.

RESULTS

Of the children and adolescents, 0.5% (95%CI:0.4-0.7) were anti-HBc positive, among whom 39% were HBsAg positive. Anti-HBc prevalence among immigrant and non-immigrant children and adolescents were 2.1% (95%CI:1.6-2.9) and 0.2% (95%CI:0.1-0.3), respectively. The migrant background was significantly associated with anti-HBc positivity (OR:6.9, 95%CI:2.8-17.1). No differences among age, gender, social status or HB vaccination status regarding anti-HBc positivity were found.

CONCLUSION

Generally, HB is a rare infection among children and adolescents in Germany. However, the prevalence of anti-HBc among immigrant children and adolescents was remarkably higher than non-immigrant children and adolescents. HB vaccination and targeted testing for HB infection should be especially provided to immigrant children and adolescents as well as their families.

PRESENTER: CAI

20090144

Session: 15 .2

Track: Sexually Transmitted Infections

Participation and positivity rates in a large scale population-based Chlamydia Screening Implementation in The Netherlands

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BACKGROUND

In April 2008, a selective systematic, internet-based Chlamydia Screening started among 16-29 year old citizens in Amsterdam, Rotterdam and South-Limburg. The programme aims to predict the effect of yearly screening on the prevalence of Chlamydia trachomatis (Ct) and related complications in the target population. Here we present results from the first year of screening.

METHODS

The main outcome parameters, participation and Ct-positivity rate in the screened population, were compared among subgroups within each screening region.

RESULTS

In the first round, 261,053 young people were invited in the 3 regions. 52,347 requested testing kits of which 78% were returned to the laboratories, hence finally 16% of invitees was tested for Ct. A total of 1733 chlamydia infections was identified, equivalent to a 4.2% positivity rate. * Women were more likely to participate than men (21% versus 10%). The positivity rate among women was higher than among men (4.4% versus 3.8%). * Young people from 16 to 19 years old were less likely to participate but more likely to test positive than participants of 20 to 29 years old (participation 12% versus 17%, positivity 7.3% versus 3.8%). * Relatively speaking, indigenous Dutch people participated most frequently (20%), followed by Antillean / Aruban participants (17%). Participation was lowest for people from Moroccan and Turkish backgrounds (5% and 6%). Participants from an Antillean / Aruban background were most likely to have a positive result (9.8%), followed by Surinamese people (8.2%) and people from Central and Southern African countries (7.9%).

CONCLUSION

The first round of the large scale Chlamydia screening has been successfully concluded. One out of six young people in the intervention areas participated and one in 25 participants was found positive for Chlamydia.

PRESENTER: VAN DEN BROEK

20090033

Session: 15 .3

Track: Sexually Transmitted Infections

Participant acceptability of the Chlamydia Screening Implementation programme in The Netherlands

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BACKGROUND

In April 2008, The Netherlands launched a Chlamydia Screening Implementation to decide whether to introduce a national screening. The population-based screening is offered to all 16-29 year-olds in three regions of The Netherlands. Participants receive a postal invitation and subsequently request a self sampling kit and access their results through an internet-based system. The aim of this study was to determine the usability and acceptability of the current screening method for participants.

METHODS

A random sample of participants was invited by email to complete the acceptability questionnaire two weeks after receiving test results. The online questionnaire enquired into their experiences, reasons for participation and future willingness to be screened. The resulting database was linked to demographic data for analysis and comparisons between subgroups.

RESULTS

Overall 41,092 people (16.0% of invitees) returned a sample. Of 5739 participants invited, 63% completed the acceptability questionnaire. Primary motivation for participation was concern for health (64%), particularly amongst women, Chlamydia (Ct)-positive participants and non-Dutch ethnic groups ($p < 0.001$). Most participants (93.4%) found the use of the internet and home testing (97.0%) advantageous, regardless of test results. The waiting time for test results was acceptable to 89.3% of all participants. Ct-positives, non-Dutch ethnic groups, women and under 20 years olds were more willing to participate in future screening.

CONCLUSION

These preliminary results indicate the internet screening method was acceptable to most participants, including Ct-positives. Relevant high risk groups expressed more willingness to be screened again. However, particular consideration must be given to the groups who would not participate in the future and efforts made to stimulate participation. Such decisions should be made in combination with the experiences of non-responders (separate study).

PRESENTER: GREENLAND

20090167

Session: 15 .4

Track: Sexually Transmitted Infections

Epidemiology of acute and chronic hepatitis B virus infections in Norway, 1992-2007

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BACKGROUND

Norway is a low prevalence country for hepatitis B virus infection (HB). Vaccination is only recommended for risk groups (intravenous drug users (IDU), men having sex with men (MSM), immigrants and contacts of known carriers). We describe the epidemiology of HB in Norway, 1992-2007, in order to target preventive measures.

METHODS

We used case based data from the national surveillance system on acute and chronic HB. The Norwegian Statistics Bureau provided population and migration data and the Norwegian Institute for Alcohol and Drug Research the estimated number IDU for 2002-2004. We calculated incidence rates (IR) and incidence rate ratios (IRR) for acute and chronic HB with 95% confidence intervals (CI).

RESULTS

The annual IR of acute HB in Norway ranged from 0.7 per 100,000 (1992) to a peak 10.4 in 1999 and decreased to 2.1 in 2007. Transmission occurred mainly among IDU (61%) or through sexual contact (21%). The highest IR (928 per 100,000) was in IDU. The risk of acquiring acute HB was higher in people of 20-29 years (IRR=6.6 [3.3-13.3]) compared to those 50-59 years, and in males (IRR=2.3 [1.7-3.2]). We observed two peaks of newly reported chronic HB cases in 1999 and 2003 (IR=13.9 and 17.7 per 100,000 respectively). The IR decreased to 10.3 per 100,000 in 2007. Chronic HBV was more likely to be diagnosed among immigrants (IRR=67 [52-87]) than among Norwegians, and among those 20-29 years (IRR=5.4 [3.6-8.2]) compared to those 50-59 years.

CONCLUSION

IDU and MSM are the main risk groups for acute HB. The observed peaks of chronic HB might be related to increased immigration. The present targeted vaccination strategy should be continued even if universal childhood vaccination is introduced.

PRESENTER: RIMŠELIENĖ

20090077

Session: 16 .1

Track: Influenza 3

High proportion of self-reported symptoms and incomplete adherence to prophylactic oseltamivir among London schoolchildren, May 2009

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BACKGROUND

During April-May 2009, a number of London schools were affected by Influenza A(H1N1)v (swine flu) and advised to close. Antiviral prophylaxis was offered to close contacts in the school setting. Anecdotal evidence was suggestive of non-compliance with oseltamivir because of side-effects. There was an urgent need to provide information on adherence to, and side-effects from oseltamivir, to assist policy decisions regarding antiviral use in UK schools.

METHODS

We conducted a cross-sectional anonymised online survey among pupils from one primary and two secondary schools with confirmed swine flu cases in London, using a questionnaire which included a section for parental comments. Proportions and frequencies were calculated. Questions with an open option were described qualitatively.

RESULTS

Among 103 schoolchildren responding (response rate 40%), 95 were known to have been offered oseltamivir for prophylaxis, and 85 actually took any. Fifty-six (66%) completed a full 10-day course; 48% of primary and 76% of secondary schoolchildren. Fifty-three percent reported one/more side-effects, most frequently nausea (29%), stomach pain (20%), and problems sleeping (12%). Gastrointestinal and neuropsychiatric side-effects were reported by 40% and 18% respectively. Comments showed parents often made their own risk assessment as to the likely benefit of oseltamivir to their child. Reasons for discontinuing oseltamivir were side-effects and concerns about effectiveness and necessity.

CONCLUSION

This study formed part of an ongoing public health investigation, provided preliminary information on adherence to, and side-effects from oseltamivir in schools; and a useful snapshot of attitudes and behaviours regarding oseltamivir use. The findings formed part of the body of growing evidence that helped refine policy regarding use of prophylactic antivirals in UK schools i.e. limiting prophylaxis to the small number of contacts considered most at risk.

PRESENTER: KITCHING

20090110

Session: 16 .2

Track: Influenza 3

Compliance to and occurrence of self reported adverse events of oseltamivir in nursery and primary school children following exposure to influenza A(H1N1)v

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BACKGROUND

Between 26.04.-09.06.2009, Scotland had confirmed over 250 cases of influenza A(H1N1)v, the highest incidence in Europe (5/100,000). Two of the first confirmed cases were children aged two and five years who attended a nursery and primary school/afterschool club respectively whilst symptomatic. The schools were closed for a week and all classmates were prescribed oseltamivir (prophylactic or treatment course) This investigation aims to determine treatment compliance to and adverse events (AE) related to oseltamivir use in young children.

METHODS

We conducted a retrospective cohort study among all children who received oseltamivir. We defined AE as at least one of nine symptoms including diarrhoea, nausea, vomiting, tiredness and rash. A questionnaire was sent to parents, one week after reopening of the schools and afterschool club. Data on treatment compliance and AE were collected. We calculated proportions of children that finished the full course and experienced AE.

RESULTS

Overall, questionnaires were returned for 108 (88%) children (mean age 4.1 years). Eighty-one children (79%) finished the full course of oseltamivir as prescribed, 21 stopped prematurely. Parents of 16 children gave a reason for stopping: the most common reason was the child having difficulty swallowing /refusing the drug (6/102, 6 %). Twenty-seven children (26%) experienced at least one AE. AE were reason to stop oseltamivir for only two children (2 %). The most frequently reported AE were tiredness (15 children). No severe AE were reported. No child developed laboratory-confirmed influenza A(H1N1)v.

CONCLUSION

Treatment compliance to prophylactic oseltamivir in young children was high, which can inform future policy decisions on distribution of oseltamivir prophylaxis in this age group in outbreaks. One in four children experienced AE, but this did not affect compliance.

PRESENTER: VAN VELZEN

20090205

Session: 16 .3

Track: Influenza 3

Side effects are common among school children receiving oseltamivir chemoprophylaxis

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BACKGROUND

School closure along with mass prophylactic oseltamivir treatment of pupils have been used in England to contain school outbreaks of Influenza A(H1N1)v. Oseltamivir has rarely, if ever, been used as chemoprophylaxis of school children before the current A(H1N1)v pandemic. We evaluated the protective effect, compliance with and side effects of oseltamivir chemoprophylactic treatment with a ten-day course of 1x 75mg given to 11-12 year old pupils in one school year in a secondary school in South West England closed for ten days in response to a symptomatic laboratory-confirmed pupil.

METHODS

After parental consent, we distributed a questionnaire to pupils in the affected school year in class one week after the school had re-opened. Questions included symptoms of flu-like illness in the weeks before, during and after school closure, compliance with chemoprophylaxis and side effects. We used the Health Protection Agency's case definition of H1N1v; fever plus at least two other flu like symptoms.

RESULTS

All present on the day, 248 (93.2%) participated. Seventeen reported symptoms in the questionnaire compatible with the case definition, but only 5 had originally been reported to the HPA and tested. All had tested negative. Compliance with chemoprophylaxis was high, 77% took the full course, 91% took at least 7 days. Fifty-one percent experienced symptoms such as feeling sick (31.2%), headaches (24.3%) and stomach ache (21.1%).

CONCLUSION

Although some children were ill with flu-like symptoms, we did not detect widespread H1N1v disease among pupils. Compliance with oseltamivir chemoprophylaxis was high, although likely side effects were common. The burden of side effects needs to be considered when deciding on mass oseltamivir chemoprophylaxis in children especially given that the symptoms of H1N1v are generally mild.

PRESENTER: WALLENSTEN

20090242

Session: 16 .4

Track: Influenza 3

Novel A(H1N1)v case and contact management in 13 European countries during the containment phase, April 27 - May 15, 2009

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BACKGROUND

On 23 April 2009, several cases of respiratory illness were confirmed as a new swine-lineage influenza A(H1N1) virus infection in the United States. In March and April, Mexico experienced outbreaks of respiratory illness caused by a novel virus similar to that identified in sporadic cases in the US. This novel virus was subsequently identified in humans in other continents including Europe, leading WHO to declare a pandemic on 11 June 2009.

METHODS

The management of novel A(H1N1)v cases and contacts was reviewed with data available as of 15 May 2009 during the containment phase in Europe. Cases and contacts management measures were documented in 13 European countries using websites and international networks in order to describe strategies adopted by national authorities across Europe.

RESULTS

Clinical and biological criteria used to define a novel A(H1N1)v case were similar across Europe. Epidemiological criteria pertaining to in-country transmission differed between European countries. Cases and contact management were heterogeneous in the 13 documented countries. Four groups of countries were identified, ranging from systematic curative treatment and hospital quarantine of suspect cases (France and Cyprus) to curative treatment and home quarantine of probable and confirmed cases (Netherlands, Denmark). Contact management ranged from prophylactic treatment and compulsory home quarantine for contacts of suspect cases (Spain, Portugal) to treatment decided on a case by case basis tailored on individual risk factors in contact persons (Finland and Norway).

CONCLUSION

The A(H1N1) pandemic is a major health event with huge impact on public health worldwide. European countries should increase their capacity to adopt common case definition and to implement common essential public health measures in order to improve their efficacy and their coherence.

PRESENTER: COHUET

20090153

Session: 16 .5

Track: Influenza 3

Outcomes of two case investigations focusing on duration of viral shedding and the contact management among some of the first reported cases of influenza A(H1N1)v in Germany

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BACKGROUND

On April 29 2009, the first cases infected with novel influenza A(H1N1) virus (NIV) were reported in Germany. To gather essential epidemiological and clinical information about NIV, the Robert Koch Institute in collaboration with the local health authorities systematically investigated early reported cases and their contacts, assessing case/contact management and viral transmissibility to optimise prevention strategies.

METHODS

Following reports of NIV cases in Wittenberg and Düsseldorf, cases and contacts were interviewed and investigated. Contacts were categorised as close (household, sexual or unprotected medical examination: to be given antiviral prophylaxis with oseltamivir and isolated for 7 days after exposure) or more distant. Nasal and pharyngeal swabs and lavages were collected daily from cases and at least once from contacts. Serum was also collected from cases and contacts for later testing.

RESULTS

Samples were taken from two index cases, eight close and 32 more distant contacts. The first index case had mild influenza-like illness (ILI) after returning from Mexico, was diagnosed four days after symptom onset and recovered without antiviral treatment. The second index case developed ILI after returning from New York, he was diagnosed, hospitalised and began antiviral treatment five days after symptom onset. Two further NIV cases were diagnosed among eight close contacts. In all four identified cases NIV shedding persisted for 6-8 days after symptom onset in the nasal lavage material. No NIV was detected among the 32 more distant contacts investigated in both settings.

CONCLUSION

We only found NIV transmission among close contacts. Extensive contact tracing beyond close contacts was important in this early phase. Our results suggest that providing antiviral prophylaxis and isolating close contacts may be sufficient in later phases of the epidemic.

PRESENTER: NIELSEN

20090163

Session: 17 .1

Track: Outbreaks 2

Norovirus-outbreak at an army-barracks, Germany, January 2009

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BACKGROUND

In January 2009, an outbreak of acute gastroenteritis occurred among 101/815 (12.4%) persons at an army-barracks in Germany. Patient numbers peaked January 7-9 (n=49). We conducted a retrospective cohort study in one division to identify vehicle of infection and mode of transmission in order to prevent further illnesses.

METHODS

Cases were persons affiliated with the barracks with onset of diarrhoea or vomiting on January 5 through 9. We collected information on food consumption in the canteen January 5-7 and on contact with ill persons or vomit. We calculated relative risks (RR) and adjusted odds ratios (aOR) using Chi-square test and multivariable logistic regression. Stool specimens from all patients or canteen workers, food served January 5-7 and surface samples were microbiologically tested.

RESULTS

Overall, 178/247 (72%) persons completed self-administered questionnaires. Of 27 cases (attack rate 15.2%), 25 ate at the canteen and 21 consumed salad from a buffet. In bivariate (RR 4.8, 95%CI=2.1-11.4) and multivariable (aOR=5.5, 95%CI=1.8-17.2) analysis, salad consumption was associated with disease. Norovirus was found in the stool of 8/28 patients, 4/25 canteen workers and 6/55 surface samples (subtype 11.4 2006b). Sequences were identical in surface and most stool samples, except for canteen workers. None of the canteen workers reported vomiting or diarrhoea. Control measures comprised excluding norovirus positive canteen workers from work and disinfection of the canteen's kitchen. All 33 food samples including salad were norovirus negative.

CONCLUSION

Our investigation suggests that a norovirus-contaminated salad buffet caused the outbreak on January 7-9. The mode of contamination and original source remain unclear. Person-to-person and surface-to-person transmission may have caused additional cases. Overall, emphasis on hand hygiene in group accommodations and kitchens may help prevent norovirus transmission.

PRESENTER: WADL

20090141

Session: 17 .2

Track: Outbreaks 2

Norovirus outbreak at a primary school showing a change in the prevalent genotypes in the region

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BACKGROUND

A large gastroenteritis outbreak affected 10 out of 11 classes at a primary school. One class of 25 children aged 6-8 years was investigated.

METHODS

A retrospective study was performed. Epidemiological investigation included a standardized questionnaire: sex, age, risk factors (e.g. food/drinks, toilet use, hand washing, stay abroad, ill family members) and disease characteristics. The primary case definition was diarrhoea/vomiting in the last 2 weeks. Stool was collected for microbiological analysis.

RESULTS

Questionnaires were completed one week after onset of symptoms by 16 children (response rate 70%). Primary attack rate was 88% (14 cases). All children had fallen ill within 48 hours with symptoms of vomiting 100% and diarrhoea 50%, lasting 1-4 days. Two children reported ill family members just before the outbreak. No other risk factors were identified. One child mentioned vomiting in class though. PCR showed norovirus GI.2 Southampton in all returned 10 stools (cases). Samples were negative for bacteria and parasites. Secondary cases were reported by 7 households (household secondary AR 50%); 11 secondary cases (56 members at risk) were identified (secondary AR 20%).

CONCLUSION

This school outbreak was caused by norovirus GI.2 Southampton. This strain was introduced first in The Netherlands during a large crossborder waterborne outbreak earlier that year in the same region, showing a change in the prevalent genotypes. More investigation and sample analysis could help understanding the prevalence and tracing the source of norovirus infections. Vomiting in the classroom most likely increased virus shedding. Norovirus is highly contagious and known for large outbreaks among susceptible groups like school children. For prevention and control, hand washing, ventilation, exclusion of ill persons, and prompt cleaning where someone has been ill are essential.

PRESENTER: WAARBEEK

20090010

Session: 17 .3

Track: Outbreaks 2

Excess mortality during a norovirus outbreak following a pilgrimage to Lourdes

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BACKGROUND

Norovirus infection is considered as a mild disease. Nevertheless, some severe cases and prolonged illness have been reported in frail patients. An outbreak of norovirus occurred in a psychiatric institution in The Netherlands from 30/09/2008 to 03/11/2008, originating from pilgrims returning from Lourdes (France). We investigated risk factors for norovirus disease and mortality in the institution.

METHODS

Using a symptoms-based case definition, we performed two cohort studies: one including the whole institution (n=285), with dates of onset of symptoms, demographic data and survival; one involving residents of a high-care building (somatic and psychiatric disorders) for whom more detailed data from medical records was available (n=59). To identify risk factors for norovirus infection and mortality we calculated relative risks (RR) and 95% confidence intervals (95%CI). Mortality data over 3 years was collected for the high-care building to investigate a potential excess mortality.

RESULTS

The overall attack rate of norovirus disease was 36.1% (104/285) and risk factors were attending the pilgrimage (RR=2.0; 95%CI=1.4-3.0) and age over 70 (RR=1.7; 95%CI=1.2-2.2). Use of statins (RR=1.7; 95%CI=1.0-2.7) and diuretics (RR=1.5; 95%CI=1.0-2.4) were associated with norovirus infection in the high-care building cohort when adjusted for underlying conditions. Overall case fatality was 5.8% (6/104). Infection during pilgrimage, compared to institution-acquired, was associated with increased case-fatality (RR=19.9; 95%CI=6.7-58.9) among patients with similar underlying conditions. Average monthly mortality was 12.5 times greater (95%CI=1.9-15.6) during the outbreak period than during the rest of the 3 years (83.3 vs. 6.7 deaths per 1000 patient-months).

CONCLUSION

Norovirus disease can lead to death among elderly. Further investigations including prospective studies are needed to assess the impact of statins on vulnerability to norovirus.

PRESENTER: RONDY

20090086

Session: 17 .4

Track: Outbreaks 2

Role of asymptomatic foodhandlers in norovirus transmission

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BACKGROUND

In early 2009, the public health department in Dublin was notified of gastroenteritis cases among people who attended a family lunchtime event in a hotel the previous weekend. Sandwiches were the suspected vehicle of transmission. The epidemiological investigation undertaken aimed to determine the source of contamination and institute control measures.

METHODS

A cohort study was carried out among the 100 attendees (family and friends). A standardized questionnaire assessed food and person-to-person transmission. Cases were persons who developed diarrhea or/and vomiting in the 60 hours following the lunch. Environmental investigations were conducted in the hotel. Cases, kitchen and bar staff submitted stool samples.

RESULTS

Of 57 respondents, 27 (40%) met the case definition. The multivariate model identified egg (RR=1.7, 95%CI=1.3-2.4), turkey (RR=3.8, 95%CI=1.9-7.7), chicken (RR=1.7, 95%CI=1.2-5.0) and tuna sandwiches (RR=1.7, 95%CI=1.2-2.4) associated with having the disease. The model included an interaction term between consumption of turkey and chicken sandwiches (RR=0.2, 95%CI=0.2-0.4). Eight guests tested positive for norovirus. Sandwiches had most likely been contaminated by three asymptomatic food handlers that tested norovirus positive. Environmental investigation subsequently ascertained that two other hotel staff vomited in the staff toilets seven days prior to the function but hadn't reported it. Another two were symptomatic while off duty three days after that vomiting episode.

CONCLUSION

Asymptomatic norovirus carriers can be responsible for foodborne outbreaks. However, assessing the clinical pattern of the disease in food handlers may be biased: barriers in reporting symptoms remain such as unpaid sick leave. Meanwhile, any single vomiting episode must be reported and appropriate hygiene control measure taken.

PRESENTER: NICOLAY

20090029

Session: 17 .5

Track: Outbreaks 2

Water-borne norovirus outbreak in a mountain village in Sweden, April 2009

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BACKGROUND

During Easter 2009, over 100 people resident in the same village fell ill with gastrointestinal symptoms. Given the extent of the outbreak and the lack of an obvious common event for all cases, the outbreak was suspected to be waterborne. A boiling water advice was issued on April 16th. We conducted an investigation to describe the outbreak, to identify the etiologic agent and confirm the source.

METHODS

We conducted a retrospective cohort study among all residents in the village through a household questionnaire mailed by post. Cases were defined as individuals resident in the village who developed vomiting or diarrhoea between 7-17 April. Attack rates (AR) and risk ratios (RR) were calculated using univariate and stratified analysis.

RESULTS

We received 116 questionnaires back out of 155 (75% response rate), with information on 270 individuals. Of them, 173 fulfilled the case definition (64%). The epidemiological curve was consistent with a point source outbreak. Residents living in households connected to the public water network were at an increased risk of developing disease (RR 4.80 95% CI 1.68-13.73) compared to those with no connection to the public network. Stool samples were obtained from 6 cases. All of them were positive for norovirus genotype 1.3. In a sample from the public water network the same genotype of norovirus was identified.

CONCLUSION

The epidemiological, laboratory and environmental investigation point to the public water network as the source of the outbreak. One of the water supplies of the network was found to be contaminated and closed down. The source of contamination hasn't been identified.

PRESENTER: MONTES

20090203

Session: 18 .1

Track: New methods in public health

Representing spatial distribution of hospital emergency departments' catchment areas to enhance syndromic surveillance: an example in Midi-Pyrénées Region, France, 2008

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BACKGROUND

Since 2004, the French Institute of Public Health Surveillance has implemented a syndromic surveillance system based on daily activity of hospital emergency departments (ED) among other sources, to contribute to the detection and description of epidemics and of unexpected health events. Our objective was to describe geographic catchment areas of each ED of the extended Midi-Pyrénées Region (France) in 2008 to know: 1/ the source population to which ED surveillance data refer to; 2/ the ED where to collect data if a special event occurs in a territory.

METHODS

Individual information on daily visits in the 66 ED of our study area (including 940 territories) were analysed, stratified by ED, territory of residence and age-group. To answer Question 1, proportions of visits and visit rates by territory were calculated for each ED. To answer Question 2, the first and second most visited ED were defined for each territory. Maps representing those indicators were produced by a Geographic Information System (GIS).

RESULTS

We analyzed 1084978 visits of inhabitants of the study area. On average, annual number of visits per ED was 16439 (range: 786 to 79303), annual visit rate in a territory was 13.1% (range: 0.0% to 174.5%), and the most visited ED represented 60.4% (range: 100.0% to 6.6%) of the visits of a territory.

CONCLUSION

A GIS could enhance the effectiveness of a syndromic surveillance based on ED data that are already routinely analyzed. Maps make it easier to quickly identify the source population of a given ED and the ED where to collect health data to estimate the impact of unexpected events. Such tool could be further developed by including the analysis of medical diagnoses.

PRESENTER: GROUT

20090057

Session: 18 .2

Track: New methods in public health

I-MOVE, towards monitoring seasonal and pandemic influenza vaccine effectiveness in Europe: pooled analysis of 5 countries case-control studies in the 2008-9 pilot phase

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BACKGROUND

Within I-MOVE, a ECDC-funded project, European Member states monitor seasonal and pandemic influenza vaccine effectiveness (IVE). In 2008-9, five countries conducted IVE pilot case-control studies using similar protocols. Sentinel GPs (128) swabbed all elderly consulting for influenza-like symptoms (ILI). Influenza cases were confirmed using RT-PCR or culture and compared to ILI influenza negative controls. We carried out a pooled analysis to obtain a summary IVE in the 65+ age-group.

METHODS

We measured IVE in each study as 1- odds ratio. We assessed heterogeneity between studies qualitatively and using the I^2 index. We appended data from all studies and used a 1-stage pooled model with study as a fixed effect. We measured crude IVE and using logistic regression adjusted estimates for age-group, sex, chronic diseases, smoking, functional status, previous influenza vaccinations and previous hospitalisations. We stratified IVE in two age-groups and by influenza type.

RESULTS

We pooled 138 cases and 189 controls. There was no statistical heterogeneity ($I^2=0$) between studies but ILI case definition, previous hospitalizations and functional status differed slightly. Crude IVE was 55% (95% CIs: 28-72%). Adjusted IVE was 59% (95% CIs: 15-80%). IVE was 65% (95% CIs: 16-86%) in the 65-74 and 60% (95% CIs: -73 -91%) in the 75+ age-group. IVE for AH3 was 56% (95% CIs: 0-81%).

CONCLUSION

Pooled analysis is feasible among European studies, but ILI case and covariate definitions need further standardisation. In 2008-9, seasonal IVE was good in the 65+ age-group. Larger sample sizes are needed at country- and European-level to achieve greater precision for stratified and influenza type-specific analyses. For 2009-10, I-MOVE will extend the study to obtain early IVE estimates in groups targeted for H1N1 pandemic vaccination.

PRESENTER: KISSLING

20090269

Session: 18 .3

Track: New methods in public health

Cholera epidemic in Guinea-Bissau: the importance of 'place'

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BACKGROUND

As resources are limited when responding to cholera outbreaks, knowledge about where to orient interventions is crucial. We describe the cholera epidemic affecting Guinea-Bissau in 2008 focusing on spatial distribution in order to guide prevention and control activities.

METHODS

Data collected included age, sex, place of residence, treatment center, and outcome using the WHO clinical case definition. Adjusted attack rates (AR) were calculated for the country regions and for the sanitary areas of the capital (Bissau) using a Poisson regression model. We obtained more detailed description of the epidemic in Bairro Bandim through a cluster study: cross-sectional study to measure the prevalence of houses with at least one cholera case. We applied K-functions and Kernel smoothing to detect clustering. The sample was selected from a satellite photo (Google Earth™); 140 houses (and the four closet households) were selected from the 2,202 identified structures.

RESULTS

A total of 14,222 cases and 225 deaths were reported in the country (AR=0.94%, CFR=1.64%). The most affected area in the Capital was Barirro Bandim (AR=4%). A total of 616 households were included in the cluster analysis. We found at least one case in 140 households (22.7%; 95%CI:19.5-26.2%). Houses with cases were more clustered ($p<0.001$); 35% of houses had at least one cholera case in the most affected areas. We identified two areas within Barrio Bandim at highest risk: a market and an intersection where runoff accumulates waste.

CONCLUSION

Our analysis allowed for identification of high risk areas within the capital. We showed that a good spatial description of cholera epidemics, using available new tools to analyze the spatial distribution of cases, is essential to orient case management and control measures

PRESENTER: LUQUERO

20090025

Session: 18 .4

Track: New methods in public health

Epidemiology facing its limits? The investigation of an unprecedented large salmonella outbreak, Denmark, 2008-2009

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BACKGROUND

From April 2008 to June 2009 a total of 1372 cases were confirmed with Salmonella Typhimurium phage type U292 with a specific MLVA pattern in Denmark. The outbreak peaked in June 2008 with 60 new cases per week. By June 2009 the outbreak is still ongoing with 5-10 new cases per week. The aim of this presentation is to review the epidemiological tools and results of the outbreak investigation in order to assess the methodology.

METHODS

Epidemiological investigations on human cases included among others patient interviews, three case-control studies, two comparative analyses of the patients' grocery shopping, and collection of food leftovers from the patients' homes. Four cohort studies have been conducted of embedded outbreaks within the outbreak.

RESULTS

Hypothesis generation focused the case-control studies on fresh pork meat, pork products and dairy products. The third case-control study showed an increased risk of illness for eating chicken (OR=5.9, 95%CI:1.3-26.7); however in-depth interviews and trace back investigation did not find a specific chicken product/producer. Comparison of the patients' grocery shopping did not point out any product/producer and the outbreak strain of salmonella was not found in products tested from patients' homes. One food item, roast of veal, served in one of the embedded outbreaks was associated with salmonella (RR=2.2, 95%CI:1.0-4.9); however further investigation did not support this as the source.

CONCLUSION

In spite of the application of several epidemiological tools, the source(s) of this unprecedented large outbreak has not been identified. It is possible that epidemiological tools have limitations in source finding for certain vehicles for example food products eaten by the majority of a population, several food products from one producer, or different products with a common ingredient.

PRESENTER: MÜLLER

20090106

Session: 19 .1

Track: Surveillance 3

Real time monitoring of mortality - a common algorithm for European countries proposed by the "European monitoring of excess mortality for public health action" project (EuroMOMO)

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BACKGROUND

When a pandemic or other health threatening events occur in a population, real time monitoring of mortality is crucial to assess impact, monitor progression and inform public health measures. Common methods are needed to enable comparison between population subgroups across Europe and facilitate international risk assessments. In response to the 2009 pandemic the project "European monitoring of excess mortality for public health action" (EuroMOMO) developed an algorithm (A-MOMO-pack) to provide the weekly expected and observed number of deaths, corrected for registration delay and standardised to facilitate comparison between population subgroups.

METHODS

To ensure real-time monitoring, delays in death reporting are modelled to compute weekly a "corrected number of deaths". Concordance with the real weekly number of deaths is measured on historical data. Expected mortality (baseline) is modelled on historical data using a cyclical Poisson regression, accounting for previous excesses. Variation of the weekly corrected number of deaths around the baseline is measured and expressed in crude numbers and in a standardised unit (Z-score). The algorithm is being validated in various countries including Denmark, Belgium and Ireland.

RESULTS

The algorithm is robust. Outputs are easily validated and used by the countries before being centralised at the EuroMOMO-hub. The correction for delay is concordant with historical data, despite very large registration delays visible for instance in Ireland. Easy comparison between population subgroups can be made using standardised indicators without the need for population data.

CONCLUSION

The EuroMOMO project responded to the 2009 influenza A(H1N1) pandemic by providing a simple mortality monitoring method to European countries. The system is flexible, simple to implement, allowing many countries to join. It will gradually be tailored to the needs of National and European partners.

PRESENTER: GERGONNE

20090241

Session: 19 .2

Track: Surveillance 3

Excess Mortality Related to Outbreaks of Influenza, Respiratory Syncytial Virus and Norovirus in Sweden 2004-2007

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BACKGROUND

Already in the 1830ies the first observations of the relation between influenza outbreaks and high winter mortality were made, and in the 1850ies the concept of excess mortality was established. Many other viral infections apart from influenza occur in the winter period, and these outbreaks are often simultaneous with high influenza activity. Above all respiratory syncytial viruses (RSV) and noroviruses (NoV) have been suggested to contribute to excess mortality. If not included in the analysis, these simultaneous events may give falsely high numbers for influenza related mortality.

METHODS

The effect of excess mortality attributable to influenza, RSV and NoV is investigated by analyzing the weekly number of reported deaths and laboratory verified cases of each infection in the age group 65 years and older in Sweden during the period 2003-07. Observed mortality is fitted to a Generalized Additive Poisson regression Model (GAM) where reported cases, as well as year and week number to account for trend and seasonality, are used as explanatory variables.

RESULTS

All three infections contributed significantly to mortality with estimated numbers of extra deaths per year of 1400 for influenza, 200 for RSV and 450 for NoV.

CONCLUSION

The difference from this study, in relation to most others, is that laboratory reporting only in persons above 65 were used to identify the peaks. The reported excess mortality related to RSV has varied, and results have been debated but in most reports it is substantially lower than what is reported for influenza, as confirmed in this study. There are articles describing cases of deaths connected to NoV infection, but to our knowledge only one article has been published on excess mortality due to NoV infections.

PRESENTER: ANDERSSON

20090254

Session: 19 .3

Track: Surveillance 3

Comparison of survey methods for the estimation of influenza vaccination coverage in Sweden

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BACKGROUND

To date there is no population-based vaccination register in Sweden. Over the years different surveys have been conducted to estimate the influenza vaccination coverage: household and individual telephone interviews, and individual postal questionnaires. Our objective was to compare feasibility of different survey methods in order to optimize resources in the future.

METHODS

In 2004/05 a household survey was performed with telephone interviews. A sample of 1334 telephone numbers was selected. Contact was established with 1070 households, and information on all household members was collected. For 2005/06 telephone interviews were conducted with a sample of 2150 individuals, for which telephone numbers were available for 1636. In season 2008/09 a questionnaire was sent to 5021 individuals. All samples were randomly selected from the Swedish population. We compared feasibility, and response and vaccination rates.

RESULTS

In 2004/05, 872 households participated, with a response rate of 81% and data from 2119 individuals. In 2005/06 the response rate was 62%, and 51% in 2008/09. Vaccination coverage estimates were 11.6%, 11.4% and 23.7%. Sampling errors for the estimated vaccination uptake were similar in all three surveys. Telephone numbers were most often missing for those 16-25 years. Cost of operation was lowest with the household telephone survey, but logistics was simplest with the postal questionnaire as it needed fewer trained staff.

CONCLUSION

The household survey produced the highest response rate, was more economical but needed to account for the design effect. Use of telephone numbers introduced bias, since many mobile numbers were often not registered. The postal questionnaire was the most practical method but more susceptible to non-response. The choice of survey should therefore be dependent on available resources, including updated telephone and address registers.

PRESENTER: NGO

20090055

Session: 19 .4

Track: Surveillance 3

Unique Swedish travel data compared with surveillance data identifies trends in contracting food- and water-borne diseases abroad

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BACKGROUND

The majority of food- and water-borne infections reported in Sweden are contracted abroad. International travel has grown and destinations tend to change to outside Europe. We compared reported countries of infection from surveillance data to Swedish travel data. The aim was to identify trends and evaluate the risk of food- and water-borne diseases at the most common destinations outside Sweden.

METHODS

Information about country of infection from notifications of Salmonella, Campylobacter, hepatitis A and Shigella for 1997-2008 was compared to travel data from the Swedish Travel and Tourist Database (TDB). This unique database contains detailed information about when, how and where Swedes have travelled throughout the years.

RESULTS

Journeys outside Sweden have increased over the period, especially to South East Asia including Thailand. However, Spain (including Canary Islands and Mallorca) still largely exceeds Thailand in number of journeys every year. Until 2001 most cases of salmonellosis and campylobacteriosis were infected in Spain but since then, Thailand has dominated. This does not only reflect increased travel to Thailand but also a decrease in the number of cases from Spain. Calculated risk of disease (cases per travellers) showed the strongest decrease for salmonellosis from Spain (114 to 10 cases/100 000 travellers) and a stable risk for Thailand (around 300 cases/100 000 travellers). For Shigella and hepatitis A, the situation differs, with Egypt and India being the most frequent countries of infections for Shigella and countries in the Middle East for hepatitis A.

CONCLUSION

Combination of surveillance and travel data is an important tool to calculate risk of contracting diseases in various countries. This combined analysis can with further development be used for public health and travel recommendations.

PRESENTER: IVARSSON

20090107

Session: 19 .5

Track: Surveillance 3

Completeness of hepatitis, brucellosis, syphilis, measles and HIV/AIDS surveillance in Izmir, Turkey

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BACKGROUND

According to the surveillance system in Turkey, most diseases are notified only by clinicians, without involving laboratory notification. It is thought that a considerable inadequacy in notifications exists but it had not been quantified by any researcher. Our aim was to describe data on cases of various notifiable diseases that can be obtained from laboratories in Izmir, Turkey, 2003, assess completeness of surveillance by combining laboratory data and notifications and try to quantify under-notification using capture-recapture.

METHODS

Data on positive laboratory results for notifiable and serologically detectable diseases hepatitis A, B, C, brucellosis, syphilis, measles and HIV detected in 2003 in Izmir (population 3.5 million) were collected from serology laboratories according to WHO surveillance standards and compared with notifications received by the Provincial Health Directorate. Matching and elimination of duplicates was done. Total numbers of cases were estimated with capture-recapture method. Sensitivities of both notifications and laboratory data were calculated according to these estimates.

RESULTS

Among laboratories performing serologic tests (n=158) in Izmir, 84.2% accepted to participate, from where data about 23,515 positive results were collected. After elimination of duplicate results of cases and cases residing out of Izmir, the total number of cases was 11,402. The total number of notifications was 1802. Notification rates of cases found in laboratories were 31.6% for hepatitis A, 12.1% for acute hepatitis B, 31.8% for brucellosis, 25.9% for syphilis and 100% for HIV confirmation.

CONCLUSION

For hepatitis A, B, C, brucellosis and syphilis, there is considerable under-notification by clinicians and that laboratory data has the potential of important contribution to their surveillance. The integration of laboratory data to the surveillance of these diseases would be appropriate.

PRESENTER: DURUSOY

20090228

Session: 20 .1

Track: Zoonoses

A brucellosis outbreak in a previously brucellosis-free Greek island

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BACKGROUND

Thasos was a brucellosis-free Greek island in East Macedonia. On 16 May 2008, HCDCP was notified about seven cases of brucellosis among inhabitants of Thasos. There was an epidemiological link among cases, namely the consumption of a traditional cheese variety that is produced locally around Easter. During the following months, more cases were notified among people living in the area or who had visited the area. An outbreak investigation was launched in order to identify the source of infection, control the outbreak and prevent future ones.

METHODS

A case-control study was implemented among residents of the island. Participants were personally interviewed using a questionnaire including fields on demographic data, clinical manifestations compatible with brucellosis and exposure to possible risk factors. Data were analysed with STATA v10. The regional public health services carried out environmental controls in shops and fresh cheese production units of the area.

RESULTS

Ninety-eight cases and 98 controls were invited to participate in the study. The median age of cases was 48 years and that of controls was 52 years. Sheep possession (OR=20.1), contact with agricultural animals (OR=11.6) and consumption of fresh cheese (OR=105.7) were all found to be statistically significant risk factors for brucellosis. Tissue samples were taken from eight patients and *Brucella melitensis* was isolated in five of them; biotype 3 was identified in three of the samples. *Brucella* spp was isolated in 18 of 30 herds tested.

CONCLUSION

In the light of this event, Thasos is no longer considered as a *Brucella*-free island. Farmers and the public were informed about correct practices regarding cheese production and consumption respectively.

PRESENTER: KARAGIANNIS

20090123

Session: 20 .2

Track: Zoonoses

The tip and the iceberg - symptomatic and asymptomatic Q fever infections in an outbreak setting

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BACKGROUND

Q fever is a zoonosis caused by *Coxiella burnetii*. An outbreak affecting 39 persons living in a village in Bavaria was notified to the local authorities. We conducted an investigation to describe the true number of infected persons and the risk exposures in the village population.

METHODS

All residents aged 10 years or over were invited to participate in the investigation. We offered serological screening for Q fever infection. An accompanying questionnaire explored demographics, disease manifestation, and possible risk exposures to *Coxiella burnetii*. A symptomatic Q fever case was defined as a person with P2IgM-antibodies and fever. Student's t-test and Fisher's exact test were used to analyze continuous and categorical variables. Poisson regression models were fitted to investigate the relationship between the prevalence of infection and the distance between residence and the proposed source, a sheep barn.

RESULTS

Among 939 eligible inhabitants, 547 (58.3%) participated, with a mean age of 45 years and a sex ratio of 1:1. Serologically confirmed acute Q fever infection was diagnosed in 101 participants (18.5%) including 58 (57.4%) symptomatic and 43 asymptomatic. Age and sex distribution were equal in all strata. A linear relationship was found for the distance between residency and barn and the probability of being infected, with a prevalence ratio of 1.34 for approximately 200m distance (CI 1.15-1.55, $p < 0.01$). No other risk factors could be identified.

CONCLUSION

We found 1.6 symptomatic and 1.9 asymptomatic cases for each notified case in the study population. The high number of infected inhabitants emphasizes the importance of active surveillance in outbreak situations. As chronic Q fever infection may evolve after symptomatic or asymptomatic infection, follow-up examinations should be offered to all infected persons.

PRESENTER: BROCKMANN

20090018

Session: 20 .3

Track: Zoonoses

Prevalence and risk factors for methicillin-resistant *Staphylococcus aureus* nasal colonization in veterinary personnel, Germany

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BACKGROUND

Methicillin-resistant *Staphylococcus aureus* (MRSA) is the most frequently isolated antibiotic-resistant nosocomial human pathogen world-wide. Recently MRSA have also been isolated from animals, most frequently pigs. Reports on frequent carriage of MRSA in veterinarians have raised concerns about their possible role in the exchange of the pathogen between animals and humans. The aim of this study was to estimate the prevalence of MRSA in veterinarians attending a conference and to identify risk factors for colonization

METHODS

Volunteers were recruited at a veterinary conference in Germany to provide a nasal swab and complete a questionnaire designed to collect data on occupational exposure to animals and risk factors for MRSA colonization. Multivariate analysis was performed using a logistic regression model. MRSA were cultured according to standard lab methods, MRSA were identified by *mecA* gene PCR.

RESULTS

Among the 687 study participants (32% of attendees, 86% veterinarians, 14% technicians and students) 9.2% were colonized with MRSA. The carriage varied from 30.6% (11/36) for those working only on pig farms (95% confidence interval (CI) 16.3-48.1%), 8.7% (4/46) in horse practices (CI 2.4-20.8%), to 3.9% (7/173) in small animal practice (CI 1.6-7.8%). Multivariable analysis showed an increased risk of MRSA colonization associated with occupational exposure to pig herds (adjusted odds ratio 4.23, CI 2.35-7.62). For veterinarians working with pig herds the chance for MRSA carriage increased per 10 herd visits/week by a factor of 1.73 (CI 1.18-2.55).

CONCLUSION

The prevalence of MRSA colonization among veterinarians of all specialisations found in this study was high compared to the general population in which the prevalence is estimated to be below 1%. These results suggest that all veterinarians should be screened for MRSA before planned medical interventions.

PRESENTER: KLEINKAUF

20090034

Session: 20 .4

Track: Zoonoses

Giardia and Cryptosporidium in Finland - who gets diagnosed?

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BACKGROUND

To identify populations at risk of giardiasis and cryptosporidiosis, we characterized all notified cases in Finnish Infectious Disease Registry (FIDR) and persons tested for these parasites in the clinical laboratory HUSLAB that covers Helsinki metropolitan area.

METHODS

Laboratory-confirmed giardiasis and cryptosporidiosis cases notified to FIDR in 1995-2006 and HUSLAB test referrals in 2004-2006 were analyzed according to age, gender, place of residence and country of birth.

RESULTS

Average yearly incidence was 54 giardiasis (range 43-68) and 2 cryptosporidiosis (range 0.8-3.5) cases/million inhabitants. Median age was 22 years (range <1-96 years) for giardiasis and 26 years (range <1-69 years) for cryptosporidiosis cases. Giardiasis was more common in males (Incidence rate ratio (IRR) =1.2, 95% CI 1.1-1.3) while cryptosporidiosis incidence was similar between genders. Incidence of both infections was 3-fold in <5-year-olds compared to other agegroups. Giardia infection was more frequent among non-Finns than Finns (IRR= 12.1, 95% CI 10.1-14.3); in <5-year-olds, the corresponding IRR was 193 (95% CI 127-301). All cryptosporidiosis cases were Finns. In the metropolitan area, infections were more frequent (Giardia: IRR= 3.0, 95% CI 2.8-3.2; Cryptosporidium: IRR=12.7, 95% CI 8.1-21.0). Persons tested were older than cases. Giardia-testing was less frequent in males (IRR=0.75, 95% CI 0.73-0.78). Non-Finns were more often tested than Finns (Giardia: IRR=3.1, 95% CI 3.0-3.3; Cryptosporidium: IRR=2.0, 95% CI 1.3-3.0). Among the 15279 persons tested for giardiasis, 281 were positive (1.8%), proportion being highest in <5-year-old non-Finns (45/321; 14%). Four cryptosporidiosis cases of 267 tested (1.5%) were detected.

CONCLUSION

Non-Finns were more frequently tested. Cryptosporidium-testing was rare which may cause underdetection. Giardiasis predominated in non-Finn infants probably reflecting frequency of immigration examinations. In non-Finn infants with gastrointestinal illness, giardia test should be considered.

PRESENTER: RIMHANEN-FINNE

20090186

Session: 20 .5

Track: Zoonoses

Goat census and brucellosis prevalence-Phetchaburi Province, Thailand 2008

Kitipat Sujit

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Karon Chanachai

BACKGROUND

Brucella melitensis is a bacterial disease which can affect most species of domestic animals. In humans the disease is perhaps more severe than, that caused by *B. abortus*. Non vaccine policy was used in Thailand for brucellosis. We conducted *B. melitensis* survey in Phetchaburi Province with objectives to census goats, describe disease status, and possible risk factors.

METHODS

We reviewed laboratory results of brucellosis in goat from Veterinary Research and Development Center. Goat serum were sent to the laboratory, and confirmed of brucellosis by the Rose Bengal Technique (99.11% sensitivity and 99.88% specificity). Phetchaburi Livestock officers interviewed goat farmers with questionnaire, consist of general information of farmer and information of farm process. Laboratory results were matched with the questionnaire. Reviewed disease data collection and data transfer system in Provincial Livestock Office.

RESULTS

Overall, there were 8,999 goats in Phetchaburi Province, and 6,013 (66%) serum were collected from 173 farms. Prevalence by farm was 19% and prevalence by animals was 3%. Totally, 32 brucellosis positive farms were found in five of nine districts. Chaum district had both highest number of farms and highest prevalence. From questionnaires, 110 interviewed farms, were matched with laboratory records. The average number of animals in each farm was 37 goats (4-260), 30% of farms fed goats in public posture area, 49% had cattle in goat farm and 17% had clinical sign of brucellosis.

CONCLUSION

Phetchaburi Province had high prevalence of brucellosis. Possible risk factor included farms, having goats with clinical sign like brucellosis, shared posture area and purchased or exchanged animals between farms without tested. All brucellosis positive goats were culled and compensation by Provincial Livestock Office.

PRESENTER: SUJIT

20090192

Session: 21 .1

Track: Antimicrobial resistance

Antibiotic stewardship programmes in hospitals: achievements and gaps in Southwestern France, 2007

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BACKGROUND

To improve antibiotic (AB) use and prevent emergence of resistant bacteria, hospitals implement AB stewardship programmes (ABS) according to regulatory guidelines issued in 2002, following the European Council recommendation for prudent use of antimicrobial agents. A study was performed in 2007 to assess the impact of this strategy in Southwestern France.

METHODS

Data were retrospectively collected by auto-questionnaire from 230 voluntary hospitals (66% of hospital beds in the region): structure and process indicators reflecting ABS implementation, hospital activity group (psychiatric, long term care, acute care, local and secondary/tertiary).

RESULTS

Differences in ABS content existed among hospitals, with fewer measures in local and long term care hospitals. AB advisors were appointed in 72% of hospitals: 22% were anaesthetists or intensive care doctors, 13% pharmacists, 12% infectious disease specialists. Only 40% had diploma in anti-infective agents use. Half of the committees responsible for AB policy had held less than three meetings in 2007. List of restricted AB existed in 82% hospitals, with automatic stop order in 90% of them. Guidelines for antibiotic prophylaxis existed in almost all surgical hospitals; 76% of hospitals had guidelines for treatment, implemented the previous year only in half of the respondents. Only 47% had assessed AB use. Computerised tools were scarce except in psychiatric and long term care facilities.

CONCLUSION

Most hospitals had implemented a wide range of measures, five years after national guidelines enforcement. There is still room for improvement regarding computerized tools for AB management, audit of practices and tailored training for AB advisors. Public reporting of structure and process indicators on ABS, effective since 2008, should strengthen the development of multifaceted approach to improve AB use and prevent bacterial resistance.

PRESENTER: DUMARTIN

20090127

Session: 21 .2

Track: Antimicrobial resistance

How does antibiotic stewardship programme impact antibiotic use? A four-year survey in 84 hospitals, Southwestern France

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BACKGROUND

To tackle the high level of antibiotic (AB) use, France launched a national strategy aimed at decreasing consumption in hospitals, by fostering AB stewardship programmes (ABS). A study was performed to assess the impact of this strategy in southwestern France.

METHODS

Data were retrospectively collected from 2005 to 2008 by 84 voluntary public or private hospitals with around 4 million patient-days (PD) each year: structure and process indicators reflecting the implementation of ABS, consumption of AB for systemic use (defined daily doses (DDD) per 1,000 PD), hospital activity group (psychiatric, long term care, acute care, local and secondary/tertiary). AB were classified according to WHO recommendations (ATC-DDD system, 2008).

RESULTS

Differences in ABS content existed among hospitals, with fewer measures in local hospitals. Implementation of ABS improved between 2005 and 2008 for each hospital group. AB advisors were appointed in 85% of hospitals in 2008 compared to 50% in 2005. Guidelines for treatment existed in 92% versus 55% in 2005, but evaluation was performed in only 65% (42% in 2005). Computerised resources were scarce. Globally, AB use remained stable over years (around 60 DDD/1,000 PD in psychiatric hospitals, 436 in 2005 and 428 in 2008 in acute care clinics). In hospitals with quite comprehensive ABS in 2005 and improvements during the survey, total AB and fluoroquinolones (FQ) use decreased (4,5% for FQ), whereas it increased in hospitals with poor ABS in 2005.

CONCLUSION

This multicentre survey highlighted the need for fostering measures such as information technology for AB prescription, practices audits and medical education. ABS comprising complementary measures appeared relevant in controlling AB use and should be tailored to better fit to local hospitals needs.

PRESENTER: DUMARTIN

20090259

Session: 21 .3

Track: Antimicrobial resistance

Pattern of prescriptions and prudent use of antimicrobials in a small animal teaching hospital in Italy: a retrospective survey

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BACKGROUND

Antimicrobial resistance is an important public health issue. The role of pets as potential reservoir and source of multi-resistant bacteria for humans is a growing concern and prudent use of antimicrobials is a key tool to prevent the emergence of resistances in humans and animals. This study aimed to investigate patterns of antimicrobial prescriptions in dogs and cats admitted to an Italian veterinary teaching hospital. Moreover agreement with general principles of antimicrobials prudent use was investigated in gastroenteritis, pyodermitis, respiratory and urinary tract infections.

METHODS

A cross-sectional retrospective study was performed on clinical records of 1002 patients, randomly selected among the 3025 estimated to receive systemic antimicrobials for therapeutic purpose in the period 2000-2007. Antimicrobials were categorized by grouping active compounds according to the anatomical therapeutic chemical classification system (ATCvet/ATC). A prescription was considered prudent if it was a first line antimicrobial, or if the choice was driven by cultural examination or susceptibility testing.

RESULTS

One thousand and seventy one antimicrobials were prescribed to 747 dogs and 255 cats. The majority (86%) were oral antimicrobial drugs. Penicillins associations and penicillins with beta-lactamase inhibitors, first and second generation cephalosporins and fluoroquinolones represented the 68% of the prescribed antimicrobials, followed by tetracycline and metronidazole-streptomycin. Cultural examination was performed in 4,5% of the cases, and 44% of them were submitted to susceptibility testing. Proportion of prudent prescriptions varied according to the groups of diseases analysed.

CONCLUSION

This is the first survey on the use of antimicrobials in small animals in Italy. Although results can't be inferred to general population, they point out the need to improve the application of prudent use principles and identify areas where addressing educational programmes.

PRESENTER: ESCHER

20090100

Session: 21 .4

Track: Antimicrobial resistance

Antibiotic prescriptions for the common cold. What are the expectations of Germany's general population?

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BACKGROUND

Antibiotics are frequently prescribed in primary care for acute upper respiratory tract infections (URTIs) without being warranted (e.g. common cold, flu). Physicians mention patients' expectations as a reason for these prescriptions "against better judgement". Little is known regarding the prevalence of such expectations in Germany and factors of influence (knowledge and attitude).

METHODS

In November 2008, 1778 persons registered with a large market research company were invited to complete an online questionnaire (multiple choice, Likert-scales) on expectations towards physicians concerning prescription of antibiotics and knowledge and attitudes regarding effectiveness and use of antibiotics in the context of URTIs. We calculated relative frequencies of answers (stratified by demographic variables) and used logistic regression analysis to identify determinants for expecting a prescription of antibiotics when suffering from a common cold.

RESULTS

In total, 1076 persons (55% male) aged 15-78 years participated (response: 61%), of whom 93% reported using antibiotics "only if absolutely necessary". A prescription of antibiotics was expected by 113/1076 (10.5%) for common cold and by 92.7% for pneumonia. Among predictors for expecting an antibiotic prescription for common colds were the following opinions: "common cold or flu can effectively be treated with antibiotics" (prevalence: 41.4%, OR=9.6; 95%CI 3.8-24.3) and "antibiotics should be taken when having a sore throat to prevent more serious illness" (prevalence 8.9%; OR=7.6; 95%CI 3.9-14.5). Among those expecting a prescription, 70.8% reported to trust their physician when he/she deems a prescription unnecessary, further 7.1% would be unsatisfied but accept the decision.

CONCLUSION

Overall, answers of participants indicate a sensible use of antibiotics. Physicians should be educated that their decisions against prescription of antibiotics for common cold and against patients' expectations are apparently accepted by the majority.

PRESENTER: FABER

Track: Antimicrobial resistance

Cholera Outbreak in Khonkaen, Thailand, 2007: Early warning of Quinolone Resistance

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BACKGROUND

National guidelines recommend quinolones as first line therapy for *V. Cholerae* O1 El Tor Ogawa infection. No quinolone-resistant cholera has been previously reported in Thailand. In Sep 2007, a large outbreak occurred in Khonkaen province. FETP was joining with local officers to help control the outbreak.

METHODS

Active case finding was performed. Cases were people who had diarrhea and positive for *V. cholerae* during 15 Sep-17 Oct in Khonkaen. One community hospital was selected, and antibiotic use was explored. Water supply, sanitation, and implemented control measures were assessed. Suspect foods and water samples were collected for bacterial culture. Drugs sensitivity reports of 2007 outbreak were reviewed and compared with the 1998-2000 outbreaks.

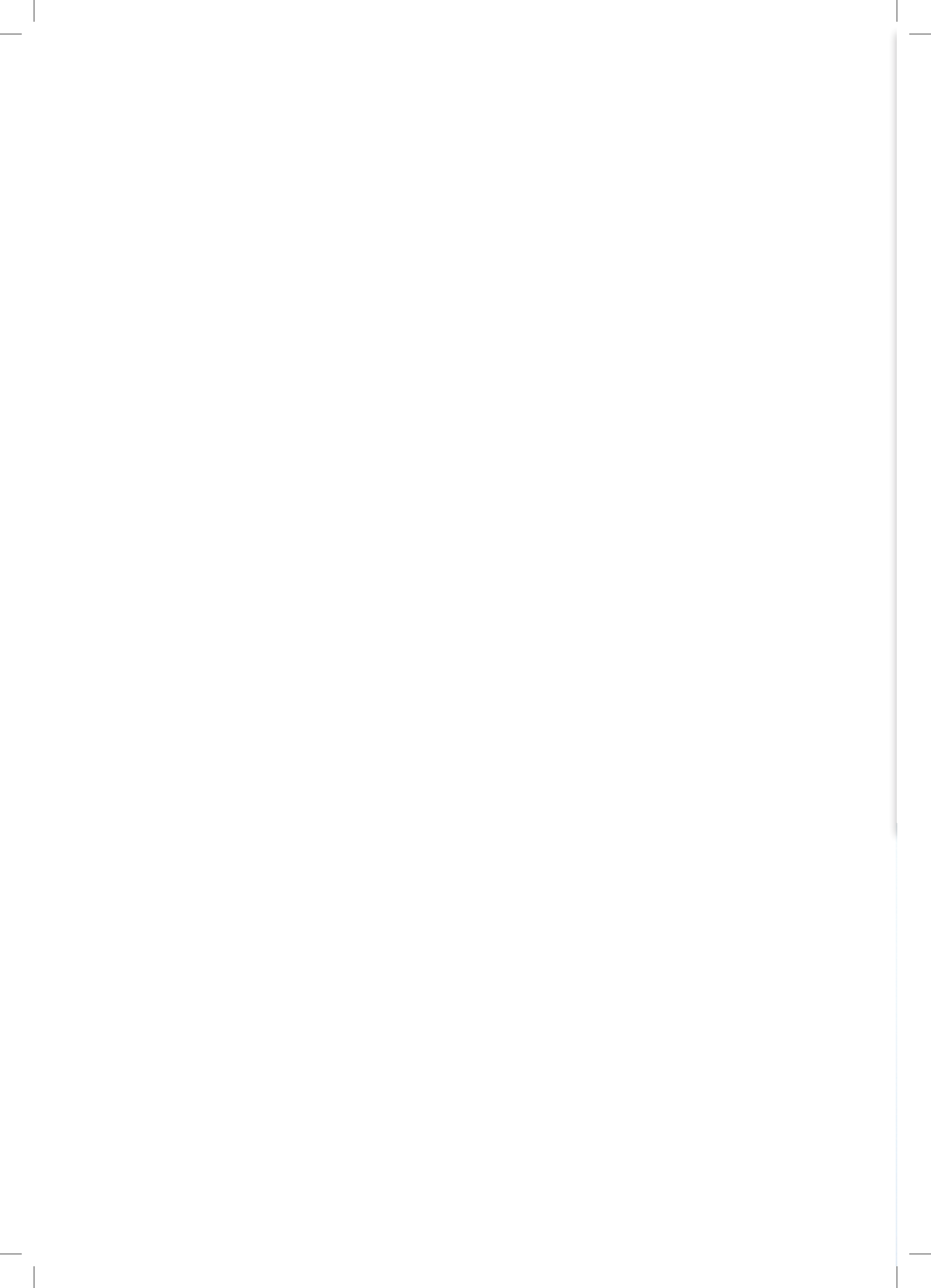
RESULTS

There were 218 *V. Cholerae* O1 El Tor Ogawa infected cases reported from 9 of 25 districts (attack rate 12.5/100,000 populations). One case died. Pattern of antibiotic use from 63 hospital-based cases was Norfloxacin (57%), Norfloxacin with intravenous Ceftriaxone (38%) and others (5%). Of 155 isolated strains, 97-100% resisted to tetracycline and cotrimoxazole, and 100% sensed to Norfloxacin. However, the mean of inhibition zone of Norfloxacin was significantly decreased from 29.3 mm in 1988-2000 outbreaks to 22.5 mm (mean difference 6.8 mm). From 561 foods and 88 water specimens, one strain of *V. cholerae* O1 El Tor Ogawa and 45 strains of *V. parahaemolyticus* were isolated. Residual chlorine in tap-water was less than optimum.

CONCLUSION

The change of microbial resistance suggested that *V. cholerae* O1 El Tor Ogawa will resist to Norfloxacin in the near future. Proper antibiotic use must follow standardized guideline. Cholera microbial resistance laboratory surveillance will be constructed in all regions. Improving personal hygiene, well-cooked food consumption and water treatment were recommended.

PRESENTER: SANGSAWANG





ESCAIDE

European Scientific Conference on
Applied Infectious Disease Epidemiology

Stockholm, 26–28 October 2009

Late Breaker Session

Abstracts



20090275

Session: 22 .1

Track: Late Breaker's session

GIS Visualization of A/H1N1 Vaccination Strategies Optimizing Cost Versus Benefit

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BACKGROUND

In order to prepare for an expected severe outbreak of A/H1N1 influenza in Sweden a research group at the Swedish Institute for Infectious Disease Control (SMI) have constructed a computer simulation model, MicroSim, that explicitly represents all inhabitants in Sweden. For every individual there is information on workplace, dwelling and family relations. This model has been used to simulate the effects of different strategies for vaccine distribution between Swedish counties (the intention is to vaccinate all of the Swedish population). The model is continuously refined with observations of the actual dissemination of the influenza. As the total cost of the vaccination is not negligible cost/benefit of the different strategies have also been simulated. The results are transferred to a GIS for visualization and complementary spatial analysis.

METHODS

Results from microsimulation of A/H1N1 of vaccine strategies, optimizing cost versus benefit have been transferred to a GIS for visualization of spread and for proximity analysis of demands on individual hospitals and care centers.

RESULTS

Mass vaccination shows to be effective also from a cost/benefit calculation excluding cost of deaths. Simulated effects on local hospitals can be of great help to policy makers and for logistics preparation.

CONCLUSION

The methods used should be further enhanced and compared to actual dissemination and consequences as new information can be gathered.

PRESENTER: SKOG AND BROUWERS

20090282

Session: 22 .2

Track: Late Breaker's session

Early estimates of 2008-9 seasonal influenza vaccine effectiveness against A(H1N1)v outcomes, results from a computerized medical records cohort in Navarra (Spain)

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BACKGROUND

Pandemic vaccine effectiveness (VE) monitoring is needed in the 2009-10 influenza season. In Navarra, during the 2008-9 season, we conducted a cohort study to monitor seasonal influenza VE. From week 24-2009 (first case of A(H1N1)v identified in Navarra), we measured the effectiveness of the 2008-9 seasonal vaccine against A(H1N1)v related outcomes.

METHODS

The cohort includes 585,158 non-institutionalised individuals (95% of Navarra population). Data are extracted from computerised records (532 GPs). We estimated VE against medically-attended influenza (MA-ILI), (H1N1)v laboratory-confirmed influenza (H1N1LAB), all cause mortality in >65 years (ACM) for pre-pandemic (week 16-23) and pandemic (weeks 24-35) periods. We adjusted VE by sex, age, nationality, rural/urban area, hospitalisations in previous year, chronic diseases, functional status, and cohabitation with children.

RESULTS

In the pandemic period 2427 MA-ILI, 97 H1N1LAB cases and 691 deaths in >65 years were reported. VE was -4% (95%CI, -24 to 12) against MA-ILI, and 13% (-123 to 66) against H1N1LAB. VE against ACM was - 11% (-35 to 9) in the pre-pandemic and 22% (8 to 33) in the pandemic period.

CONCLUSION

In the early phase of the pandemic, using the GP database we estimated seasonal VE against A(H1N1)v outcomes. MA-ILI is a non-specific outcome influenced by health-seeking behaviour. H1N1LAB is a specific outcome but the small sample size resulted in imprecise estimates. ACM was lower in vaccinated than in non-vaccinated elderly in the pandemic period but not during the pre-pandemic period. This suggests a protective effect of the vaccine against ACM during A(H1N1)v circulation. In 2009-10 the Navarra cohort will provide early and repeated seasonal and pandemic VE estimates. More laboratory specimens will be collected to increase the precision of the VE against laboratory outcomes.

PRESENTER: CASTILLA

20090284

Session: 22 .3

Track: Late Breaker's session

The German shedding study on novel influenza virus A/H1N1 provides important information for modelers and public health officials

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BACKGROUND

Characteristics of the novel influenza A/H1N1 virus (NIV), such as the most suitable specimen type, duration of viral shedding or the relationship of symptoms to viral load need to be investigated both for modelling efforts and to formulate public health recommendations.

METHODS

From 30 German laboratory-confirmed NIV cases and their 66 household contacts we documented symptoms and conducted serial viral testing. Specimens taken included nasal wash, nasal swab, throat wash and throat swab. Specimens were tested and RNA copies/ml were quantified by RT-PCR. Symptoms were summarized in a score.

RESULTS

We identified 13 (20%) secondary cases among 66 household contacts. Three of these (23%) were asymptomatic. Nasal wash was the most sensitive material in detecting NIV (88%; 95% confidence interval: 69-97%), all other specimen types had a sensitivity of less than 30%. Median duration of shedding was 6.4 days, there was no significant difference between treated and non-treated patients. Symptom scores (pooled and stratified by illness day) and degree of viral shedding correlated well ($r=0.72$; $p=0.002$).

CONCLUSION

Symptomatic household attack rate, proportion of asymptomatic patients and duration of shedding compare well to data of seasonal influenza. Nasal wash is the most sensitive specimen type which may be of relevance for confirmation of patients presenting late in their course of illness. Clinical presentation may be used as a surrogate marker for infectiousness. This may allow taking individual clinical presentation into account for public health recommendations.

PRESENTER: BUCHHOLZ

20090289

Session: 22 .4

Track: Late Breaker's session

Household transmission of the first school outbreak of Novel Influenza A (H1N1) infection in Thailand, June-August 2009

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BACKGROUND

On 9 June 2009, one day after the first report of indigenous case in Thailand, Bureau of Epidemiology received notification of a confirmed H1N1 student who had no history of traveling aboard. An investigation was conducted during 10 June-10 August 2009 to describe epidemiological characteristics and household transmission.

METHODS

We interviewed and reviewed medical record of the index case. Telephone-interview was performed with grade 6 students who visited nursing room with URI symptoms during 1 month before index case onset. Data from the national surveillance were retrieved and parents of confirmed cases were interviewed about clinical presentation, prevention practice and household transmission. We conducted an additional survey in 2 grades to assess R_0 .

RESULTS

Overall we got information from 195 (77%) of 253 confirmed cases. Median age was 11 (range 4-70) years. The index and other grade-6-student cases did not travel abroad during incubation period. 31% (53/172) were hospitalized, no severe case. Main symptoms were fever (86%), cough (75%) and headache (55%). During their illness period, 81% solely stay at home, 40% (70/177) used mask everyday while in their house and 36% (63/173) slept alone. Considerable number of parents did not aware of the novel influenza until receiving laboratory results. Household transmission was 8% (64/776). Children age less than 5 years had highest attack rate (11%). R_0 in grade 6 was 1.51(95%CI=1.49, 1.52) and 1.34(95%CI=1.33, 1.66) in grade 9.

CONCLUSION

This was the second outbreak of indigenous-transmission novel influenza in Thailand. The source could not be identified. Mild clinical presentation and delay laboratory results due to laboratory overload caused un-optimal household prevention practice despite panic of parents regarding the outbreak.

PRESENTER: JONGCHERDCHOOTRAKUL

Track: Late Breaker's session

Bringing specificity to large-scale syndromic influenza surveillance through self-sampling by direct mail: Lessons from England

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BACKGROUND

During the early phase of the influenza A/H1N1 epidemic in England, there was concern that existing surveillance of influenza would fail to recognise sustained community transmission. In addition, when members of the public began calling health help lines in large numbers there was uncertainty about the proportion of sick callers that were affected with pandemic influenza (H1N1) 2009. A community self-sampling scheme was established to obtain information that addressed both these uncertainties.

METHODS

Self-sampling of a selection of callers to a national telephone health advice service (NHS Direct) with 'cold/flu' symptoms began on 29 May 2009 and ran until 24 July. The National Pandemic Flu Service (NPFS) was then established as a telephone and web based service to 'diagnose' pandemic (H1N1) and authorise antiviral treatment. Self-sampling of a selection of callers to NPFS began on 3 August 2009 and has continued.

RESULTS

By 31st August, 10,092 callers to NHS-Direct/NPFS had been sent testing kits and 50% returned specimens; 3,791 specimens have been tested and 285 pandemic (H1N1) infections have been detected. During the early phase of the epidemic, the rate of change in the proportions of pandemic (H1N1) infection in the community samples matched the rate of increase in the proportions infected of those tested by following the national clinical management algorithm. During August, 7% (95% CI 6% - 8%) of callers sampled were positive for pandemic (H1N1).

CONCLUSION

The results from the early surveillance mirrored that of clinical testing and identified sustained community transmission in two regions of England. Large-scale, nasal swab self-sampling was acceptable and provided valuable, timely information to guide the national public health response.

PRESENTER: POWERS



ESCAIDE
European Scientific Conference on
Applied Infectious Disease Epidemiology

Stockholm, 26–28 October 2009

Poster Abstracts



20090190

Session: A1.1

Track: Antimicrobial resistance

Prevalence of antimicrobial use for nosocomial infection in 394 French hospitals: analysis of regional variation

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3. Department of Pharmacology, Bordeaux, France
4. Institut de Veille Sanitaire (InVS), Saint-Maurice, France

BACKGROUND

Antimicrobials (AB) for nosocomial infection (NI) are often broad spectrum agents involved in bacterial resistance. We aimed at describing the prevalence of AB use for NI and analysing regional variation using a multilevel model.

METHODS

A multilevel analysis, with time interval at the lowest level, was applied to 394 hospitals that participated in a national prevalence survey in 2001 and 2006 using a standardised protocol. They represented 83% of inpatient beds in France. The second level was hospital characteristics (number of beds, presence of acute care ward) and aggregated patient characteristics for each hospital (mean age, proportion of patients with bacterial NI, proportion of patients with catheters, proportion of immunocompromised patients, proportion of patients undergoing surgery). The regional effect was measured by the regional variable.

RESULTS

The prevalence of AB use for NI in 2006 was significantly higher than in 2001 (2006: 5.2%; 2001: 4.6%; $p < 0.01$) whereas the proportion of patients with bacterial NI and the number of AB used per patient were similar. The most commonly prescribed AB were fluoroquinolones (2001: 20%; 2006: 24%) and penicillins with beta-lactamase inhibitor (2001: 18%; 2006: 17%). Median prevalence of AB use differed significantly between regions. However, the regional effect explained only 1.8% of AB use variation in the multilevel analysis. The proportion of patients with NI, presence of acute care ward and high prevalence of patients with catheters explained 69% of the variability of AB for NI.

CONCLUSION

This study showed the regional variation of AB use for NI was explained by the intrinsic hospital characteristics. It also highlights the importance of developing models taking into account the data hierarchy to perform analysis and identify relevant strategy to improve AB use.

PRESENTER: AMADEO

20090236

Session: A1.2

Track: Antimicrobial resistance

Epidemiology and Antimicrobial Resistance to *Vibrio cholerae* Serotype Inaba Isolated from Outbreaks in northwestern Ethiopia, 2006-2008

Belay Bezabih Beyene, Bayeh Abera, Azene Dessie

It is the authors work and approved by the Bahir Dar Regional Health Research Laboratory Center.

BACKGROUND

Acute watery diarrhea epidemics caused by *Vibrio cholerae* (*V. cholerae*) are a major public health problem in many African countries. This study was conducted to assess the epidemiology and antimicrobial susceptibility of *V. cholerae* in northwestern Ethiopia.

METHODS

Diarrheic stool samples collected from the Amhara region of Ethiopia between August 2006 and September 2008 were processed using standard microbiology techniques to identify *V. cholerae* at Bahir Dar Regional Health Research Laboratory. Antimicrobial susceptibility testing was done by the disc diffusion method.

RESULTS

V. cholerae O1 serotype Inaba was the only etiological agent isolated during the study period. A total of 81 isolates were obtained from cases aged 9 months to 86 years. The isolates showed multiple-antibiotic resistance with 71.6% resistant to two antibiotics, 18.4% resistant to three antibiotics and 5% were resistant to four antibiotics. All isolates were resistant to Co-trimoxazol 81(100%); 76 (93.8%) to Chloramphenicol, 72 (88.8%) to Ampicilin, 12 (15%) to Erythromycin and 5(6.2%) to Tetracycline. All isolates were highly susceptibility to Doxycycline (100%) and Ciprofloxacin (98.8%).

CONCLUSION

Resistance to antibiotics commonly used in the study area is extensive. However, susceptibility to doxycycline or ciprofloxacin is high. This study provides evidence that empiric use of commonly available antibiotics is ineffective in the treatment of cholera and demonstrates the importance of monitoring antimicrobial susceptibility patterns to ensure effective treatment.

PRESENTER: BEYENE

20090162

Session: A1.3

Track: Antimicrobial resistance

Antibiotic use in 357 French hospitals: results from a surveillance network at hospital and ward level, 2007

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BACKGROUND

Antibiotic (AB) use in French hospitals is among the highest according to the European surveillance of antimicrobial consumption (ESAC) project. A study was carried out to describe AB consumption at hospital ward level and to provide tools for benchmarking.

METHODS

AB consumption, expressed in number of defined daily doses (DDD) per 1,000 patient-days (PD), and number of PD in 2007 were retrospectively collected at ward level by 357 voluntary hospitals with around 26 million (PD). Antibacterials for systemic use (class J01 of WHO Anatomical Therapeutic Chemical classification, ATC-DDD system, 2007) were surveyed. Since they are mainly prescribed as antibacterials and they also participate in resistance selection pressure, rifampicin and oral imidazole derivatives were included in the survey to better assess total antibiotic exposure.

RESULTS

Median AB use ranged from 60 DDD/1,000 PD in psychiatric wards to 1466 in intensive care units (ICU). Surgical and medical wards had quite similar consumption (553 and 583 DDD/1,000 PD respectively) whereas the pattern of antibiotics differed. Consumption level was much lower in paediatrics (333), gynaecology (308) and rehabilitation (213). Amoxicillin-clavulanic acid combination was the most common AB, except in paediatrics and gynaecology where it was amoxicillin. In medicine, surgery, ICU and rehabilitation, fluoroquinolones accounted for 13% to 19% of total use. Rifampicin and oral imidazole derivatives accounted for 1 to 2% and for 0.3 to 1.3% respectively of total use.

CONCLUSION

This multicentre survey provided detailed information on AB use in a large sample of wards, allowing relevant comparisons and benchmarking. AB consumption in French ICU compared well with those reported in Germany and Sweden. Analysis of consumption at ward level should help hospitals to target practice audits to improve AB use.

PRESENTER: DUMARTIN

20090193

Session: A1.4

Track: Antimicrobial resistance

Antimicrobial resistance surveillance of respiratory pathogens during a pandemic influenza outbreak

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Health Protection Scotland

BACKGROUND

The Health Protection Scotland pandemic flu plan has a commitment to monitor antimicrobial resistance trends of the common respiratory pathogens associated with secondary bacterial infections (*Streptococcus pneumoniae*, *Staphylococcus aureus* and *Haemophilus influenzae*). For this to be effective the data used has to be representative and reliable. The aim of this study is to review the secondary respiratory pathogen data Health Protection Scotland currently receives in order to develop a national surveillance system

METHODS

Voluntary reports of *Haemophilus influenzae*, *Streptococcus pneumoniae* and *Staphylococcus aureus* from upper and lower respiratory tract sites were analysed. Data was separated into calendar months and duplicate results removed. Percentage resistance for each organism/antibiotic combination with confidence intervals was calculated.

RESULTS

The data currently available from Scotland yields too few numbers to develop a standard surveillance system and is not sufficiently sensitive for the requirements of pandemic flu planning. There is an inconsistency in reporting of organisms by individual hospitals; there is variation in the selection of antibiotics that are tested and reported; and the total number of episodes is too small for any analysis to be significant either statistically or clinically.

CONCLUSION

Resistance data can be skewed by sampling strategies of clinicians testing only for treatment failure. This is compounded by different reporting approaches within laboratories. Whilst it is important that Scotland can monitor respiratory pathogens during a pandemic influenza outbreak this study has demonstrated that a standard surveillance system is not appropriate. An alternative approach using an alert system combined with other reporting systems is proposed.

PRESENTER: EASTAWAY

20090098

Session: A1.5

Track: Antimicrobial resistance

Antibiotic prescriptions for the common cold. What are the expectations of Germany's general population?

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BACKGROUND

Antibiotics are frequently prescribed in primary care for acute upper respiratory tract infections (URTIs) without being warranted (e.g. common cold, flu). Physicians mention patients' expectations as a reason for these prescriptions "against better judgement". Little is known regarding the prevalence of such expectations in Germany and factors of influence (knowledge and attitude).

METHODS

In November 2008, 1778 persons registered with a large market research company were invited to complete an online questionnaire (multiple choice, Likert-scales) on expectations towards physicians concerning prescription of antibiotics and knowledge and attitudes regarding effectiveness and use of antibiotics in the context of URTIs. We calculated relative frequencies of answers (stratified by demographic variables) and used logistic regression analysis to identify determinants for expecting a prescription of antibiotics when suffering from a common cold.

RESULTS

In total, 1076 persons (55% male) aged 15-78 years participated (response: 61%), of whom 93% reported using antibiotics "only if absolutely necessary". A prescription of antibiotics was expected by 113/1076 (10.5%) for common cold and by 92.7% for pneumonia. Among predictors for expecting an antibiotic prescription for common colds were the following opinions: "common cold or flu can effectively be treated with antibiotics" (prevalence: 37.6%, OR=9.6; 95%CI 3.8-24.3) and "antibiotics should be taken when having a sore throat to prevent more serious illness" (prevalence 8.6%; OR=7.6; 95%CI 3.9-14.5). Among those expecting a prescription, 70.8% reported to trust their physician when he/she deems a prescription unnecessary, further 7.1% would be unsatisfied but accept the decision.

CONCLUSION

Overall, answers of participants indicate a sensible use of antibiotics. Physicians should be educated that their decisions against prescription of antibiotics for common cold and against patients' expectations are apparently accepted by the majority.

PRESENTER: FABER

20090068

Session: A1.6

Track: Antimicrobial resistance

Cholera Outbreak in Khonkaen, Thailand, 2007: Early Warning of Quinolone Resistance

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BACKGROUND

National guidelines recommend quinolones as first line therapy for *V. Cholerae* O1 El Tor Ogawa infection. No quinolone-resistant cholera has been previously reported in Thailand. In Sep 2007, a large outbreak occurred in Khonkaen province. FETP was joining with local officers to help control the outbreak.

METHODS

Active case finding was performed. Cases were people who had diarrhea and positive for *V. cholerae* during 15 Sep-17 Oct in Khonkaen. One community hospital was selected, and antibiotic use was explored. Water supply, sanitation, and implemented control measures were assessed. Suspect foods and water samples were collected for bacterial culture. Drugs sensitivity reports of 2007 outbreak were reviewed and compared with the 1998-2000 outbreaks.

RESULTS

There were 218 *V. Cholerae* O1 El Tor Ogawa infected cases reported from 9 of 25 districts (attack rate 12.5/100,000 populations). One case died. Pattern of antibiotic use from 63 hospital-based cases was Norfloxacin (57%), Norfloxacin with intravenous Ceftriaxone (38%) and others (5%). Of 155 isolated strains, 97-100% resisted to tetracycline and cotrimoxazole, and 100% sensed to Norfloxacin. However, the mean of inhibition zone of Norfloxacin was significantly decreased from 29.3 mm in 1988-2000 outbreaks to 22.5 mm (mean difference 6.8 mm). From 561 foods and 88 water specimens, one strain of *V. cholerae* O1 El Tor Ogawa and 45 strains of *V. parahaemolyticus* were isolated. Residual chlorine in tap-water was less than optimum.

CONCLUSION

The change of microbial resistance suggested that *V. cholerae* O1 El Tor Ogawa will resist to Norfloxacin in the near future. Proper antibiotic use must follow standardized guideline. Cholera microbial resistance laboratory surveillance will be constructed in all regions. Improving personal hygiene, well-cooked food consumption and water treatment were recommended.

PRESENTER: SANGSAWANG

20090078

Session: A1.7

Track: Antimicrobial resistance

Impact of antibiotic policies on the prevalence of antibiotic treatments in French healthcare facilities from 2001 to 2006: a quasi-experimental, nested intervention study

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BACKGROUND

The fight against antimicrobial resistance constitutes a public health priority. Interventions towards a better use of antibiotics in healthcare facilities (HCF) have been proved successful but there is no consensus about the best approach. We aimed to evaluate whether antibiotic policies implemented in French HCF had an impact on antimicrobial use from 2001 to 2006.

METHODS

We designed an evaluation study using data (sociodemographic, comorbidities, antibiotic prevalence) on patients from the 2001 and 2006 national prevalence surveys (NPS) and data on specific antibiotic protocols for first line antimicrobial therapy (i.e. before antibiogram is available) implemented in 2005 by each HCF and collected by the Ministry of Health. HCF that did not implement these policies were used as the control group. We performed a multilevel analysis to compare antibiotic use for HCF with different antibiotic policies while taking into account hierarchical structure of data (patient and hospital level).

RESULTS

1145 HCF and 231,244 patients were included in the study. The overall prevalence of patients with an antibiotic prescription was 16.7% (16.6% in 2001 and 16.7% in 2006). Of 1145 HCF, 678 (59.21%) used protocols for first line antimicrobial therapy. After adjustment for patient characteristics and baseline antibiotic consumption prevalence in 2001, HCF that implemented first line antimicrobial therapy protocols had a slightly lower prevalence of antibiotic use (adjusted OR 0.95; 95%CI: 0.89-1.00).

CONCLUSION

This work illustrates how surveillance data could be used to evaluate health interventions. Although the non-experimental design, our preliminary results suggest that HCF that have implemented an antibiotic policy are more likely to reduce the prevalence of antibiotic prescription than those that did not; however reduction was small. Further analyses are ongoing.

PRESENTER: SANTISTEVE

20090245

Session: A2.1

Track: Food- and water-borne diseases

Salmonella typhi & intestinal parasites among Food Handlers in Bahir Dar, Ethiopia-2009

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It is authors work & approved by Bahir Dar university, Ethiopia

BACKGROUND

Food-handlers play an important role in the epidemiology of food-borne illness, however the prevalence in such workers is not well documented in Ethiopia. To determine the prevalence of *Salmonella typhi* (*S. typhi*) and intestinal parasites we undertook an investigation in the town of Bahir Dar, Ethiopia.

METHODS

A cross-sectional study was conducted among food handlers working in a sample of public restaurants from April 10 to May 9, 2009. A pre-tested, structured questionnaire was used for data collection. Stool samples were obtained and assessed for intestinal parasites by direct smear mount in saline and formalin-ether concentration procedures. *S. typhi* was identified from stool by standard bacteriological methods.

RESULTS

Of 384 food handlers, 300 (78%) were females with median age of 20 years. The overall prevalence of *S. typhi* and intestinal parasites were 6 (1.6%) and 158 (41.1%) respectively. The prevalence of intestinal parasites in decreasing order were *Entamoeba histolytica* 49 (12.8%), *Ascaris lumbricoides* 45 (11.7%), *Giardia lamblia* 27 (7.0%), *Ancylostoma* sp. 31 (8.1%), *Strongyloides stercoralis* 11 (2.9%), *Schistosoma mansoni* 7 (1.8%), *Taenia* sp. 5 (1.3%), *Hymenolepis nana* 2 (0.5%) and *Trichuris trichiuria* 2 (0.5%).

CONCLUSION

The prevalence of *S. typhi* was lower than that observed with intestinal parasites. Two of the most common parasitic species identified can be directly transmitted by infected food handlers. General control measures such as improved disposal of human waste along with focused testing and education on food safety and hygiene are necessary to lower the prevalence of infection among food handlers.

PRESENTER: BEYENE

20090024

Session: A2.2

Track: Food- and water-borne diseases

An outbreak of Salmonella Typhimurium infections linked to cross-border shopping, Norway, 2008

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BACKGROUND

The endemic level of salmonellosis in Norway is low, with the majority of infections being acquired abroad. To maintain this favourable situation, Norway obtained additional requirements for import of meat from within the European Union (EU). However, cross-border shopping is common, which may present a challenge regarding food safety communication. In late 2008, the Norwegian Institute of Public Health (NIPH) registered a cluster of cases with a new and distinct Salmonella Typhimurium DNA-profile using multiple-locus variable number of tandem repeats analysis (MLVA). We present the outbreak investigation.

METHODS

We defined a case as a person with laboratory-confirmed Salmonella Typhimurium infection with the distinct MLVA-outbreak profile, and with illness onset 1 September - 31 December 2008. We interviewed all cases with a detailed trawling questionnaire and tested suspected food products from patients' homes. Interviews indicated a link to Swedish shops, and we sent an urgent inquiry through the Food- and Waterborne Diseases network (FWD). Denmark then notified an ongoing outbreak with identical MLVA-profile. Tracing suspected food products was mainly done by food safety authorities in Sweden and Denmark.

RESULTS

Ten cases were verified, all adults from south-eastern Norway. Eight of the patients reported consuming meat purchased at shopping centres located across the border in Sweden during the week before illness onset, and the outbreak strain was isolated in meat samples from two patients' homes. Through international alerts, product tracing and MLVA-typing, Danish pork was identified as the source of outbreaks in Norway, Sweden and Denmark.

CONCLUSION

Good international communication channels, early alerting mechanisms, inter-sectorial collaboration between public health and food safety authorities and harmonised molecular typing tools, are important for effective identification and management of cross-border outbreaks.

PRESENTER: BRUUN

20090251

Session: A2.3

Track: Food- and water-borne diseases

Salmonellosis in Italy from 2002 to 2006

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BACKGROUND

Salmonella is the second most commonly reported zoonotic agent in EU. In Italy, similarly to the majority of the EU member states (MSs), the incidence of salmonellosis is decreasing in the last years. However, differences in the epidemiology of Salmonella in comparison to the other MSs were observed. This study describes the salmonellosis in Italy, in order to improve surveillance and prevention activities at national level.

METHODS

A descriptive study was performed using the 2002-2006 data from the national infectious diseases notification system (SIMI) and the Enternet surveillance system. The hospitalization data were obtained for the year 2005 from the hospital discharge records. No data on outbreak investigation or source of human infections were available for the study period.

RESULTS

Overall, SIMI collected 45338 notifications. Annual rates ranged between 3 and 93/100000 among the regions. The cases decreased from 18/100000 in 2002 to 11/100000 in 2006, with a sharper reduction in the North (from 25 to 14/100000). The 64.5% of the cases occurred in the 0-14 years age class. Enternet provided data on 23923 isolates. The main serovars were S. Typhimurium (43.6%), S. Enteritidis (30.5%) and S. Infantis (2.6%). The hospital discharges for enteric salmonellosis (ICD9-0030) were 3330 (40% of the SIMI 2005 cases) with a mean stay of 5.7 days.

CONCLUSION

Salmonellosis in Italy is decreasing as in EU, but the prevalence of S. Typhimurium could be related to differences in the source of human exposure. Compared to other studies, the hospitalization rate was higher but the mean stay was shorter. The surveillance needs to be harmonized at the national level, under-reporting and risk factors identification for human infections are main constraints to improve salmonellosis prevention in Italy.

PRESENTER: BUSANI

20090213

Session: A2.4

Track: Food- and water-borne diseases

Summary of the Food- and Waterborne Diseases and Zoonoses Urgent Inquiries affecting Europe in 2008

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BACKGROUND

The Urgent Inquiries network (UIN) for food- and waterborne diseases and zoonoses is currently coordinated by the European Centre for Disease Prevention and Control (ECDC). The UIN's objective is early detection of potential multinational clusters and outbreaks through informal communication with a network of nominated epidemiologists and microbiologists in the EU Member States (MS), EEA/EFTA and several non-EU, countries. We present a summary of the urgent inquiries (UI) in 2008.

METHODS

ECDC coordinates the distribution of food- and waterborne disease-related UI's on behalf of countries where an unusual increase in laboratory-confirmed cases has been detected. UIN members are requested to respond indicating whether an increase of that particular pathogen has been detected nationally. Detailed laboratory data, including molecular typing results, are accompanied with epidemiological data. Consequently, multi-country outbreaks related to the same potential source can be identified.

RESULTS

In 2008, 33 UI's were issued through the UIN. Of these, 81% were initiated by EU MS or EEA/EFTA countries. Twelve UI's led to the identification of multinational outbreaks (i.e. cases linked in two or more countries), 9 of which only involved EU MS or EEA/EFTA countries. Thirty-one (94%) inquiries were associated with *Salmonella*, one with *Shigella sonnei* and one with sorbitol-fermenting verotoxin-producing *E. coli*. Four UI's were travel-related and for 13 UI's, the source of exposure was identified.

CONCLUSION

The early detection of outbreaks of food- and waterborne origin through the UIN is important to support public health interventions at the national level. However, harmonization of diagnostic procedures among UIN member countries should be strengthened to improve linking of microbiological results. The current development of a web-based tool will facilitate more rapid information exchange and implementation of control measures.

PRESENTER: CIAMPA

20090094

Session: A2.5

Track: Food- and water-borne diseases

Goose droppings in recreational areas: A risk assessment in The Netherlands

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BACKGROUND

Studies showed fecal contamination in lakes are associated with geese by microbial source tracking. The 10-fold increase in wintering geese since the 1970s triggered the question from the Ministries of Health to assess the possible health risk from exposure to goose droppings in recreational waters in The Netherlands. A qualitative assessment of the health risk was done as a systematic approach since few quantitative data are available.

METHODS

For this purpose, the existing scientific literature was searched from October 2008 to April 2009 through Pubmed with a combination of subject related keywords (e.g. "geese", "dropping", "fecal contamination").

RESULTS

Currently an estimated 2 million geese pass through The Netherlands every winter and about 155 000 geese breed during the summer. Depending on its size one goose produces between 0.5 - 3 kg of feces per day, which is reported to contain human pathogens such as *Giardia*, *Cryptosporidium*, *Encephalitozoon*, *Campylobacter* and *Avian Influenza Virus (AIV)*. The amount of geese feces that gets into the water from the agricultural lands largely depends on distance to the water and the soil and weather circumstances like sunlight, humidity and rainfall. The presence of *Giardia* (approximately 2 months) *Cryptosporidium* (approximately 12 months) in water is longer compared to *AIV* (approximately 4 days), which make them potential threats for exposed bathers depending on the ingestion volume.

CONCLUSION

The available evidence does not rule out a public health threat due to goose droppings. In case of health concerns because of geese and their droppings at a specific bathing water location, a location-specific quantitative risk assessment should be recommended.

PRESENTER: DITTRICH

20090272

Session: A2.6

Track: Food- and water-borne diseases

First study on incidence and risk factors of acute gastro-enteritis (age) among pilgrims to Santiago de Compostela, Spain, 2008

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BACKGROUND

Since the medieval ages, pilgrims are coming to Santiago de Compostela, Spain, from the entire world. Every summer 40,000 persons do the Way and we expect more in 2010. Our objectives were determining incidence of AGE in pilgrims, associated risk factors and microbiological characterization.

METHODS

We realized a cross-sectional study with self-completed questionnaires filled in by pilgrims arriving to Santiago, in the summer of 2008. We calculated the incidence rate of AGE using the days walking for every pilgrim. Simultaneously, we did a case-control study (CCS) to find incident cases of AGE in Galicia. Cases were identified by sanitary services. We asked them a stool sample for microbiology. Controls were asymptomatic pilgrims. We conducted a multivariable analysis by logistic regression.

RESULTS

Cross-sectional study obtained 593 valid questionnaires. Median age was 31.2 years-old. 90.4% drank unbottled water on the Way. 118 (19.9%) From them had have some symptoms, but only 82 (13.8%) were cases. Incidence rate was 23.5 AGE cases / 103 persons-day (CI 95%: 18.9 - 29.4 /103 persons-day). For the CCS, we analysed 175 cases and 478 controls. We found higher risk for AGE in pilgrims under 20 years (OR: 4.72; CI: 2.16 - 10.28). Other important risk factors were: groups of 3 travellers or more (OR: 1.49; CI: 0.98 - 2.28) and to drink unbottled water (OR: 2.09; CI: 0.91 - 4.82). In 31 stool samples analysed, Norovirus was the more frequent etiologic agent (58%).

CONCLUSION

Pilgrims under 20 years, doing the way in group and drink unbottled water, were the three more important risk factors for AGE. We recommend promoting an educational health programme among pilgrims and enhancing AGE's surveillance.

PRESENTER: GIMÉNEZ-DURÁN

20090243

Session: A2.7

Track: Food- and water-borne diseases

Molecular characterization of Salmonella Napoli: a re-emergent serovar in Italy

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BACKGROUND

An increasing trend of human cases of Salmonella Napoli has been observed in Italy since 2002. This serotype, rarely identified in farm animal, has been frequently isolated from surface water. The aims of this study were to analyse the antimicrobial susceptibility, the genetic relatedness and to study the virulence genes of S. Napoli strains isolated in Italy between 2000 and 2005 from human cases, foods of animal origin and the environment.

METHODS

The antimicrobial susceptibility testing was performed using the disk diffusion method, according to CLSI. Genetic relatedness among the isolates was assessed by pulsed field gel electrophoresis (PFGE). The presence of 11 virulence genes (*avrA*, *ssaQ*, *mgtC*, *spi_4D*, *sopB*, *spvC*, *gipA*, *sopE1*, *sodC1*, *bcfC*) was investigated by PCR.

RESULTS

All the strains examined were susceptible to the panel of antimicrobial drugs tested. The PFGE grouped 20/44 strains in a major clone while the other strains were distributed among some minor clones. Genes *avrA*, *spvC*, *gipA*, and *sodC1*, were never found, while *ssaQ* and *sopB* were present in all the strains analyzed. Genes *mgtC*, *bcfC*, and *sopE1* were present in more than 85% of isolates. No specific association between PFGE clones, presence of the genes and isolation source was observed.

CONCLUSION

S. Napoli strains carried an array of virulence genes comparable to that of the major serovar of Salmonella involved in human infections. A major clone appears to circulate in Italy. Environmental isolates belong to the same PFGE clones and "virulotypes" as the human isolates, thus supporting the hypothesis that environment can represent an important risk factor for S. Napoli infection for humans. Further investigations are needed to better understand the epidemiology of this serovar and the possible animal reservoirs.

PRESENTER: GRAZIANI

20090139

Session: A2.8

Track: Food- and water-borne diseases

Beef cattle density and proportion of unsalted water: the most significant explanatory variables for risk of Verotoxigenic *Escherichia coli* (VTEC) infection in Finland 1997-2006

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BACKGROUND

Verotoxigenic *Escherichia coli* (VTEC) causes 10-20 infections in Finland annually. The aim of this study was to identify risk factors for domestically acquired sporadic VTEC infections using demographic and agricultural explanatory variables with methods for scarce count data.

METHODS

The outcome variable was a case of microbiologically confirmed sporadic VTEC infection with no history of foreign travel reported to the National Infectious Disease Register in Finland by municipality between 1997 and 2006. The explanatory variables included cattle and pig density, general agricultural variables, children attending day care, income and education variables, proportion of unsalted water and rainfall. The frequentistic and Bayesian regression was done using hurdle model with poisson distribution and robust standard errors to account for overdispersion of zero counts in the data with R, SPSS, Winbugs and Stata.

RESULTS

Altogether 131 sporadic cases of VTEC were identified in 70/416(17%) municipalities with 0-11 cases in each, 51 (39%) were 5 years or less. In single variable analysis, bulls per population, families with children of low income, proportion of children not attending school lunch, proportion of unsalted water and children attending day care were significant in the hurdle model. In the multivariate hurdle model, bulls were significant positive variable and unsalted water negative variable for both occurrence and spread of VTEC infections. In addition, higher education and small income were significant for spread of the infection. The spatial variable did not improve the models.

CONCLUSION

Bull density and proportion of unsalted water are the main risk factors for occurrence and spread of the VTEC infections in Finland. The infection does not seem to spread significantly in the day care facilities. Food variables and socioeconomic factors would be advantageous.

PRESENTER: JALAVA

20090225

Session: A2.9

Track: Food- and water-borne diseases

Reporting on food-borne outbreaks in the European Union in 2007

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BACKGROUND

Directive 2003/99/EC obligates the European Union (EU) Member States (MSs) to collect data on zoonoses, zoonotic agents, antimicrobial resistance and food-borne outbreaks. The European Food Safety Authority (EFSA) is assigned the task of collecting, analyzing and interpreting the data, which is published as a Community Summary Report, together with the European Centre for Disease Prevention and Control (ECDC).

METHODS

In 2007, a new reporting system for food-borne outbreaks was applied with outbreaks being divided into possible and verified. Detailed information was only requested for verified outbreaks where the link between human cases and the food source was supported by strong evidence.

RESULTS

In total, 5,609 food-borne outbreaks were reported by 22 MSs, which affected approximately 40,000 people and caused 19 deaths. Together, 36.1% of the reported outbreaks were classified as verified. *Salmonella* was the most commonly reported causative agent with 2,201 outbreaks reported, primarily linked to eggs or products thereof. Viruses were the second most common known cause of food-borne outbreaks, accounting for 668 outbreaks. Crustaceans, shellfish, molluscs and buffet meals were frequently associated with these infections. *Campylobacter* was the third most common cause of food-borne outbreaks, associated with 461 outbreaks. Broiler meat and other meat were identified as the most common sources of these outbreaks.

CONCLUSION

Data on food-borne outbreaks varied significantly between MSs because national investigation and reporting systems are not harmonized within the EU. A high number of reported outbreaks do not necessarily indicate a particular food concern but may rather reflect the effectiveness of national reporting systems. EFSA and ECDC aim to improve the comparability of data between MSs in order to provide useful data both for the risk managers and risk assessors.

PRESENTER: RIZZI

20090204

Session: A2.10

Track: Food- and water-borne diseases

Does exposure to drinking water nitrate contribute anything the effect of water disinfection with chlorine on the children methemoglobin levels?

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BACKGROUND

The primary cause (pathogenic microorganisms versus nitrate exposure) of methemoglobinemia is still discussed. As chlorination prevent from drinking water related infections, we aimed in this study at investigating into the role of drinking well water chlorination in the association between well water nitrate and abnormal methemoglobin (MetHb) level (>2% of total hemoglobin) among children aged up to 7 years.

METHODS

240 children participated in this cross-sectional study. Drinking water nitrate was analyzed for each participant, and so was MetHb in blood. The participants' parents were asked about chlorine use, water storage, boiling water, consumed food, and previous diarrhea incidence. Two water nitrate exposure levels (50 mg/l as NO₃⁻, the guideline value set by the WHO) were considered. All variables with a bivariate p-Value <0.25 were subject to a Breslow-Day Test for interaction, and analyzed with logistic regression.

RESULTS

Only water disinfection with chlorine was an effect modifier. Among those who do not disinfect water, the prevalence of abnormal MetHb for those with nitrate level >50 mg/l was 4.95 (p-Value = 0.001, 95% CI = [1.92 - 12.79]) times the prevalence for those with nitrate level <50 mg/l. Whereas, among those who do disinfect water, the prevalence for those with high nitrate levels was only 1.38 (p-Value = 0.435, 95% CI = [0.62 - 3.07]) times the prevalence of those with low nitrate levels. Abnormal MetHb levels (up to 7.9%) were associated (Odds Prevalence Ratios= 3.41; p-Value=0.020) with drinking water nitrate (up to 246.90 mg/l as NO₃⁻). Radish consumption was significantly protective.

CONCLUSION

The effect of drinking water nitrate on MetHb level is only realized when some exogenous microorganisms are also present.

PRESENTER: SADEQ

20090027

Session: A2.11

Track: Food- and water-borne diseases

Duration of excretion in Salmonella or Campylobacter spp. infected food handlers in Berlin 2006-2007

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BACKGROUND

Food handlers (FH) with infectious gastroenteritis are frequently implicated in the spread of foodborne disease. In Germany, infectious gastroenteritis is notifiable and in case of FH exclusion from work is mandatory. Local health departments (LHDs) in Berlin require three consecutive negative test results for FH infected by bacterial enteric pathogens before lifting the work ban. We estimated duration of pathogen excretion to guide case-management.

METHODS

Cases of laboratory-confirmed infectious gastroenteritis in Berlin FH in 2006-07 were identified from our national surveillance system. In addition, we collected information on laboratory investigations and antimicrobial therapy at LHDs. The maximum excretion period (date of onset-date of first negative test) was calculated for those infected by Salmonella or Campylobacter spp. and compared with Wilcoxon rank-sum test.

RESULTS

We analysed data from 359 notified FH. Most commonly identified pathogens were Campylobacter spp. (164 cases, 46%) and Salmonella spp. (110 cases, 31%). The maximum excretion period was significantly longer for FH infected by Salmonella than by Campylobacter spp. (median: 23 days vs. 17 days; p-value = 0.004). Among those with information on antimicrobial therapy (36%), antimicrobials were administered in 19% of Salmonella and 22% of Campylobacter spp. infections. Treatment with antimicrobials significantly prolonged the maximum excretion period for Salmonella spp. (median: 40 days; p-value = 0.034), but not for Campylobacter spp.. Intermittently culture-negative tests were ascertained for 12% and 7% of FH infected by Salmonella spp. and Campylobacter spp., respectively.

CONCLUSION

Excretion periods lasting for weeks with the possibility of intermittently negative test results should be considered in the case-management of FH infected with Salmonella or Campylobacter spp. Antimicrobial therapy may prolong the duration of excretion in Salmonella spp. infected FH.

PRESENTER: WEISS

20090101

Session: A3.1

Track: Health care associated infections

High mortality and Clostridium difficile: PCR ribotype 027 may not be the only culprit !

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BACKGROUND

Clostridium difficile PCR ribotype 027 (CD027) has been reported to cause disease of increased severity and mortality. Our aim was to determine the risk of death associated with three types of Clostridium difficile: CD027, Clostridium difficile non-027 possessing genes for toxin A, toxin B, plus binary toxin (CD non-027), and unselected strains of Clostridium difficile (CD).

METHODS

The study was designed as a registry based study and partly conducted in association with investigations of an outbreak of CD027 in particular hospitals in Zealand. National case based databases for CD, CD027 and CD non-027 were linked with the National Civil Registry to retrieve the date of death. Poisson regression was used to compare the risks of death 30 days after the first episode of infection according to type. In addition, medical records from three hospitals affected by the outbreak were reviewed by two physicians, who evaluated if CD027 were a possible cause of death.

RESULTS

A total of 269/1986 (14%) CD, 54/196 (28%) CD027, 20/73 (27%) CD non-027 cases died within 30 days after infection. After adjustment for county and age, the risk ratio for death 30 days after infection vs CD were 1.4 for CD027 (95% CI 1.0-2.1); 1.9 (1.2-3.0) for CD non-027. In the hospitals with CD027 outbreak, 10/59 (17%) patients died within 30 days; for 6/59 (8%) CD027 was considered a possible cause of death.

CONCLUSION

CD027 is associated to high 30 days mortality, even after examining clinical history. However other strains with toxin production show similar characteristics. Laboratory surveillance and PCR ribotyping should continue in order to increase knowledge on other emerging hypervirulent strains but CD027.

PRESENTER: BACCI

20090255

Session: A3.2

Track: Health care associated infections

A National Surveillance Programme for Clostridium difficile Infection (CDI) in Scotland

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BACKGROUND

Due to increasing rates of CDI, a national mandatory surveillance programme for Scotland was introduced to monitor all CDI in patients aged 65 and over, coordinated with provision of guidance on infection prevention and control to facilitate the reduction of CDI in healthcare settings. A reference service was also implemented to aid understanding of the epidemiology of Clostridium difficile.

METHODS

Following a national protocol for testing and reporting, cases of CDI from all acute and non-acute hospitals, as well as general practices, are submitted. Samples are also submitted to the reference service for PCR ribotyping. Each laboratory has an opportunity to review cases assigned to them. Rates are calculated by health board area using hospital bed days (occupied bed days (OCBDs)) as denominator data.

RESULTS

All hospitals have complied with the protocol. In Year 1, 6430 cases were reported (annual rate 1.34 per 1000 total OCBDs); in Year 2, 6336 cases were reported (annual rate of 1.23). Rates have decreased consecutively in the last four quarters, with the first quarter in Year 3 having the lowest reported rate since surveillance began. 64% of ribotypes reported were of three main types: 106, 001 and 027, with 106 predominating.

CONCLUSION

The national mandatory surveillance programme has led to improvements in the standardisation of testing, diagnosis and reporting of CDI, with the same case definition used by all clinicians in all hospitals across Scotland. Surveillance, along with the implementation of guidance, has raised awareness of CDI and supported the reduction in reported rates. Typing results suggest that 106 and 027 have become predominant in Scotland. Type 106 is unique in the UK compared to the wider distribution of 027 and 001.

PRESENTER: BANKS

20090188

Session: A3.3

Track: Health care associated infections

Remarkable change in main location of nosocomial infections in Spain (1990-2008)

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BACKGROUND

A series of prevalence studies of hospital acquired infections in acute care hospitals, larger than 100 beds, have been carried out annually in Spain since 1990. Around 250 hospitals accounting for more than 50.000 patients participate each year in this survey. The time trends of the main localizations of infections have been analyzed.

METHODS

Data were collected annually during two weeks of May. In this period, according to bed registry every bed counted once, including all inpatients. Data were collected by the infection control personnel at the hospital. Infections were mainly diagnosed according to CDC criteria. Time trend analysis was performed by main locations of infections: urinary tract (UTI), surgical site (SSI), respiratory (RI) and bloodstream infection (BSI). Distribution of nosocomial infections according to location was estimated. Odds ratios for trend were calculated for every location.

RESULTS

During the period 1990-1995 the most frequent infection was UTI followed by SSI, RI and BSI. Since 1996 RI was more prevalent than SSI. After 2002, RI became more frequent than UTI, and has remained in the first place until now. It is followed by UTI, SSI and BSI. Among this period the trend analysis indicated that UTI (OR = 0.974; 95% CI 0.971-0.976) and SSI (0.991; 0.987-0.994) have decreased, while RI (1.012; 1.009-1.016) and BSI (1.023; 1.019-1.027) have increased.

CONCLUSION

Infection prevalence rates by main locations have changed over the study period. The more preventable infections (UTI and SSI) have decreased, while less preventable infections (RI and BSI) have increased. This finding could be related to a change (aging and increased morbidity) in hospitalized patients among the study period; as patients become older and sicker, new preventive strategies may be needed.

PRESENTER: CUESTA

20090032

Session: A3.4

Track: Health care associated infections

Trends in surgical site infection in Scotland 2002 to 2007

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BACKGROUND

Surgical site infection (SSI) is one of the most common healthcare associated infections (HAI) accounting for around 16% of all HAI and is estimated to cost the National Health Service (NHS) in Scotland €240 million per year. SSI adds 5.7 days to a patient's inpatient stay and cost €2600 per patient. SSI is therefore an important outcome measure for surgical procedures. SSI data have been collected for all Scotland for 5 years and Health Protection Scotland (HPS) facilitate the national surveillance of SSI programme.

METHODS

This review of the data from the programme of surveillance presents the results of the analysis of both the cumulative data from 1/4/2002 to 30/6/2007 and also focuses on data from the last year of reporting.

RESULTS

For 2002 to 2007, 1270 in patient SSIs, resulting from 81198 operations in nine categories of surgical procedures have been reported to HPS. In the last year 261 in patient SSIs resulting from 24136 operations have been reported to SSHAIP. The incidence of in patient SSI varied by surgical category. In patient SSI rates for six of the categories of surgery ranged from 0.6% (0.5%, 0.8%) for knee arthroplasty to 2.4% (2.1%, 2.8%) for open reduction of long bone fracture.

CONCLUSION

SSI rates for the last year are lower than the previous year for all categories of surgery, indicating a downward trend in SSI in Scotland. There is a significant reduction in inpatient SSI rates for hip arthroplasty, knee arthroplasty and caesarean section procedures for the last year of surveillance.

PRESENTER: HILL

20090230

Session: A3.5

Track: Health care associated infections

A hospital-related cluster of o27 CDI, Vienna, Austria, 2008-2009

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BACKGROUND

During January and February 2009, a cluster of ten o27 C. difficile infections (o27CDI) in two Viennese hospitals was observed by the National Reference Laboratory for C. difficile. The index case was associated with a 1146-bed hospital (HoX) in Vienna. In 2008, 11 cases of o27CDI were identified in Austria.

METHODS

The HoX-related cluster was described by time, place and person. Surveillance case definitions were given by the Study Group for Clostridium difficile (ESGCD). A cluster case was defined as a patient with o27CDI between December 2008 and June 2009 in HoX or another Viennese hospital with an epidemiological link to HoX. The epidemiological link was defined as stay at HoX within four weeks prior to o27CDI occurrence or as contact to a o27CDI case of HoX. C. difficile (CD) isolates were characterized by toxin analysis and PCR ribotyping.

RESULTS

From December 2008 to June 2009, 77 o27CD isolates were identified from hospitalised CDI cases in Vienna. Out of these, 43 cases (42 new, 1 recurrent) were identified as a HoX-related cluster cases, affecting six Viennese hospitals. Twenty-four of 42 new cases were male (57%), the median age was 81 years (range: 31-98 years) and the lethality was 28% (15/42). All o27CD isolates were positive for toxin A, toxin B and binary toxin. HoX was most affected with 30 cluster cases (71%). According to medical records, 26 of these 30 cases (86.7%) received antibiotics within 45 days prior to onset. Most commonly used antibiotics were: fluoroquinolones (n=13), aminopenicillins (n=12) and cephalosporins (n=2).

CONCLUSION

The enhanced surveillance for early case finding and reinforcement of ESGCD control measures should prevent further spread of o27CD in Viennese hospitals.

PRESENTER: KANITZ

20090096

Session: A3.6

Track: Health care associated infections

Development of National Community Infection Prevention and Control Guidance

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BACKGROUND

NHSScotland policy, "Better Health, Better Care", details a range of measures including increasing provision of local care embedded in communities. The development of evidence-based community infection prevention and control guidance, requested by the Scottish Government, aims to encompass a widened community approach by standardising guidance used in NHS and non-NHS community settings. This guidance is linked to ongoing work to clarify roles and responsibilities of those providing infection prevention and control services within these settings.

METHODS

A multidisciplinary community practitioner group was established to oversee and develop the guidance. The guidance content is primarily based on Health Protection Scotland's Standard Infection Control Precautions (SICPs) Model Policies. These are evidence-based documents, which are rewritten with reference to the most recent scientific literature available at the time of publication. Literature included is subject to defined methods of critical appraisal including SIGN50 methodology. The SICPs are reviewed frequently to ensure that the most recent evidence has been considered. Additional community setting considerations were identified such as disposal of healthcare waste in domestic settings. Search terms were defined to identify additional literature and relevant scientific papers/guidance documents were reviewed.

RESULTS

Guidance was produced comprising the 10 elements of SICPs plus additional sections and information provided in poster format tailored to specific staff groupings to assist community healthcare practitioners to quality assure and standardise their infection prevention and control practices and policies. The use and promotion of the guidance has been recommended by national groups and stakeholders within NHSScotland.

CONCLUSION

To demonstrate improvement, an independent evaluation of the guidance in context of other infection prevention and control guidance for specific staff groupings will be undertaken within a year of publication.

PRESENTER: MULLINGS

20090097

Session: A3.7

Track: Health care associated infections

Implementation of a National Hand Hygiene Campaign: Germs. Wash your Hands of Them

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BACKGROUND

Hand hygiene is considered one of the most effective measures in reducing and preventing the incidence of healthcare associated infections (HAI). The Scottish Government HAI Task Force requested in 2005 that a hand hygiene campaign be implemented across NHSScotland. As such, Scotland's hand hygiene campaign, 'Germs. Wash your hands of them' was officially launched in January 2007.

METHODS

Monitoring of hand hygiene compliance by audit within all NHS boards is a key aspect of this campaign with data obtained published by Health Protection Scotland. An audit tool and supporting protocol were developed to ensure a standard method for data collection was adopted Scotland wide.

RESULTS

Hand hygiene compliance across NHSScotland has increased over the audit periods. During the first three audit periods, compliance with hand hygiene increased from an initial level of 68% to 79% in the 2nd audit period rising further to 87% in the 3rd audit period. The audit tool was modified and compliance with hand hygiene was monitored on a quarterly basis. The level of compliance measured during the 1st quarter audit period was 88% (CI 87%-89%), increasing to 90% (CI 89%-91%) in the 2nd quarter audit period. Compliance with hand hygiene was 93% (CI 92%-94%) throughout the 3rd and 4th quarter audit periods. Furthermore, compliance among nurse, medical, allied health professional and ancillary staff groups has increased throughout the campaign.

CONCLUSION

Hand hygiene compliance has increased significantly throughout the extent of the campaign. An evaluation will now be conducted to determine the effectiveness of different components of a multimodal programme to promote hand hygiene across NHSScotland.

PRESENTER: CAIRNS

20090130

Session: A3.8

Track: Health care associated infections

Internal evaluation of PREZIES the Dutch network for surveillance of nosocomial infections

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BACKGROUND

The Network for surveillance of nosocomial infections (PREZIES) gathers national epidemiological data and ensures the quality control of surveillance of Hospital acquired infection (HAI) in The Netherlands since 1996. PREZIES will be adapted in response to harmonization of surveillance of nosocomial infections in Europe. The growing number of participants prompted an internal evaluation that focused on representativeness and acceptability of the network.

METHODS

We performed an extensive description of PREZIES to characterize activities, data flow, cases definitions and collected data and examined representativeness of surgical site infections data (SSI). Acceptability was explored through semi-structured qualitative interviews collecting opinions and suggestions of a sample of stake-holders: 13 representatives of Dutch hospitals and one of each central health authorities.

RESULTS

PREZIES invites each year all Dutch hospitals to participate in one prevalence survey and 4 specific incidence surveillance modules. PREZIES has grown (35 to 77 hospitals during 2003-2008) and has set-up since 2007 prevalence surveys. For surveillance of SSI, coverage approached 80% for hospitals and 26.2%, 12.0% and 13.7% for respectively colorectal, hip and prosthesis procedures. Stake-holders had a positive opinion on the network achievements, but they pinpointed an important overall workload and the need to improve timeliness for feedback and develop best prevention practices.

CONCLUSION

Given the workload of HAI surveillance and the increasing participation, adaptations should allow PREZIES to continue generating representative data on HAI and contributing to improvement of the quality of health care in The Netherlands. First, surveillance survey participation should be further increased. Second, implementing multi-centre intervention studies should allow defining best prevention practices. Third, choice of surveillance indicators should be uniformized. Finally data collection and feedback should become timelier once fully automated.

PRESENTER: NOËL

20090220

Session: A3.9

Track: Health care associated infections

Staphylococcus aureus nasal carriage among health care workers and the general population. The Tromsø Staph and Skin Study

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BACKGROUND

Nasal carriage of *Staphylococcus aureus* in health care workers (HCWs) may be a significant reservoir for transmission of the infective agent to patients. Our aim was to test whether HCWs are at increased risk of *S. aureus* nasal carriage.

METHODS

A cross-sectional study was done as part of the sixth Tromsø Study in 2007-2008, a large population-based health survey including repeated nasal swab cultures for the assessment of *S. aureus* carriage. In an interview, 1,514 women and 1,118 men aged 30-70 years were asked the question "Do you work in health care services?". Health care services were defined as hospital, nursing home, senior care service, GP's office, and public health center. Logistic regression models were used to study the association between work in health care services and *S. aureus* carriage.

RESULTS

A total of 23.3% of the women and 6.4% of the men were HCWs. HCWs were younger than the general study population of non-HCWs (49.2 versus 52.0 years, $p < 0.001$). The overall prevalence of persistent *S. aureus* nasal carriage was 24.8% among HCWs and 24.9% among non-HCWs. The corresponding sex-specific rates were 21.0% and 17.9% in women ($p = 0.19$), and 43.7% and 32.7% in men ($p = 0.06$). The estimated risk of *S. aureus* nasal carriage in HCWs compared to non-HCWs was 1.28 (Odds Ratio, 95% Confidence Interval = 0.99-1.65, adjusted for age and sex).

CONCLUSION

HCWs are generally not at increased risk of *S. aureus* nasal carriage. More specific information on working place and actual jobs of HCWs would improve the validity of this potential predictor in large epidemiological studies.

PRESENTER: OLSEN

20090252

Session: A3.10

Track: Health care associated infections

Patients and healthcare workers knowledge and perceptions regarding hospitalised acquired infections in Antananarivo-Madagascar

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BACKGROUND

Nosocomial infections (NIs) occur worldwide and affect both high income and poor-resources countries. However NIs problematic is still little known in low income settings. The study investigated knowledge, attitudes and behaviours of patients and healthcare workers (HCW) regarding NIs in Madagascar and identified factors influencing opinions and practices.

METHODS

Socio-demographic and qualitative data regarding perceptions of NIs were collected by interview with a random sample of HCWs and hospitalised patients using two different questionnaires. Univariate and multivariate logistic regressions were used to identify factors associated with NIs unawareness.

RESULTS

Seventy eight patients and eighty HCWs were interviewed in the University Hospital of Antananarivo during August and September 2007. Thirty two percents of patients knew that infections could be acquired after hospital admission. Analysis showed that a high level of school education, a history of hospitalisation, and place of hospitalisation (Traumatology and Cardiology wards) were significantly associated with patient's knowledge about NIs. Patients who had bought soap and gloves were more aware on NIs. Occupation, wards and training period were associated to HCWs' behaviours concerning NIs. Occupation, type of care and duration of training had also influenced significantly their behaviour regarding patient's information on NIs.

CONCLUSION

Our study emphasized the poor knowledge about NIs among patients in Madagascar, as in other studies led in high income countries. These results should encourage HCWs to increase patient's information. However, knowledge about NIs among HCWs and Public Health authorities in Madagascar should be improved before using training and health promotion.

PRESENTER: VAILLANT

20090052

Session: A3.11

Track: Health care associated infections

Risk factors for acquiring moxifloxacin-resistant *Clostridium difficile*, Stockholm, Sweden

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BACKGROUND

Clostridium difficile infection (CDI) is one of the most common health care-associated infections. Nation-wide screening for moxifloxacin-resistant strains from 1 December 2007-31 July 2008 discovered a cluster of a moxifloxacin-resistant strain referred to as PCR ribotype SE37 in Stockholm. We assessed potential risk factors for acquiring moxifloxacin-resistant CDI caused by ribotype SE37 in order to recommend upon infection control measures.

METHODS

We conducted a case-control study where a case was defined as a resident of Stockholm whose first laboratory confirmed CDI episode during the screening period was caused by the SE37 strain. A control was defined as a resident of Stockholm whose first CDI episode during the screening period was caused by a moxifloxacin-sensitive strain. We aimed to select three controls per case matched by age. Data were collected on mortality and exposure to health care during eight weeks preceding diagnosis. Adjusted odds ratios (aOR) were calculated using conditional logistic regression analysis.

RESULTS

A total of 59 cases were identified and matched to 177 controls. Of cases the median age was 81 years old (range 52-97 years); 66% were women. Hospital-acquired CDI was observed in 97% of cases and 81% of controls ($p=0.003$). Mortality within 30 days after diagnosis was observed in 19% of cases and 21% of controls ($p=0.714$). Preliminary analysis demonstrated that cases admitted to a surgery, geriatric or internal medicine ward had an increased aOR of 3.5 (95%CI=1.6-7.4), 2.6 (95%CI=1.2-5.6) and 2.3 (95%CI=1.1-4.5), respectively.

CONCLUSION

Admission to a surgery, geriatric or internal medicine ward might be a risk factor for acquiring CDI caused by PCR ribotype SE37. It is recommended to evaluate antibiotic usage in these wards. Data collection on antibiotics is ongoing.

PRESENTER: ZOMER

20090177

Session: A4.1

Track: HIV - STI

Modeling the Effect of High Dead Space Syringes on HIV Epidemic among Injecting Drug Users

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BACKGROUND

HIV prevalence among injecting drug users (IDUs) ranges from 1% to over 70% in cities and countries around the world. While most HIV transmission among IDUs is attributed to the sharing of needles and syringes, researchers rarely consider the types of syringes used. Some designs of syringes used by IDUs retain substantially more blood, and thus more HIV, after use than other designs. The quantity of virus in an exposure is believed to influence the probability of HIV transmission associated with it. We use mathematical models and published data to illustrate the potential impact of two types of syringes on HIV prevalence among IDUs.

METHODS

Mathematical model was used to evaluate the impact of HDSS use in high-risk and low-risk IDU populations. Model parameters we obtained from peer-reviewed publications.

RESULTS

Simulation analysis shows that HIV epidemic could be sustained even when a small percent of sharing (10%) involved HDSS. The effect is stronger in high-risk populations where even moderate percent of HDSS use sustains high HIV prevalence. Steady state HIV prevalence increases with the proportion of HDSS and for high and low-risk population reaches around 40% and 80% respectively. For low risk population, the use of LDSS could result in virtual elimination of HIV.

CONCLUSION

Our models suggest that injection-related HIV epidemics may not occur when most (e.g., 95% or more) of IDUs use LDSS. While these results are based on indirect risk measures and a number of simplifying assumptions, the effect of blood containing dead space on HIV prevalence seems to be very strong even under relatively conservative assumptions. The results have potential implications for needle exchange programs and the types of syringes produced and distributed worldwide.

PRESENTER: BOBASHEV

20090011

Session: A4.2

Track: HIV - STI

Changes in at-risk behaviour for HIV infection among HIV-positive persons in Italy

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BACKGROUND

Several studies have indicated that many HIV seropositive persons continue to engage in at-risk behaviour and that awareness of being seropositive does not always translate into behavioural changes, for instance, safer sexual practices. We compared the sexual and drug-using practices of HIV-positive persons before and after the diagnosis of HIV infection to determine whether their behaviour had changed.

METHODS

In 2006, we conducted a cross-sectional study involving clinical centres in five Italian cities. Each centre was asked to enrol 100 persons aged ≥ 18 years who had a diagnosis of HIV infection that dated back at least 2 years. Data were collected with a specifically designed questionnaire, administered during a structured interview. The McNemar χ^2 test was used to compare the data before and after the diagnosis.

RESULTS

A total of 497 persons participated (65.5% males; median age of 40 years; age range: 34-45 years). The most common exposure categories were: heterosexual contact (43.4%), homosexual contact (27.2%), and injecting drug use (20.6%). Though the percentage of drug users significantly decreased after diagnosis, 32.4% of injectors continued to use drugs, and about half of them exchanged syringes. Regarding sexual behaviour, after diagnosis there was a significant decrease in the number of sexual partners and in stable relationships and an increase in condom use, both for persons with stable partners and those with occasional partners, though the percentage varied according to the specific sexual practice.

CONCLUSION

These results indicate that though at-risk behaviour seems to decrease after the diagnosis of HIV infection, seropositive persons continue to engage in at-risk practices, indicating the need for interventions specifically geared towards HIV-positive persons.

PRESENTER: CAMONI

20090013

Session: A4.3

Track: HIV - STI

Repeat infection with Chlamydia trachomatis: a prospective cohort study from an STI-clinic in Stockholm

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BACKGROUND

Infections with genital Chlamydia trachomatis (Ct) are the most common notifiable STI in Sweden. Repeat Ct infections contribute to the further spread and Ct-related complications. The aim of the study was to estimate in a clinical setting the risk for repeat Ct infection.

METHODS

A prospective cohort study with data collection at inclusion and at 6-8 month follow-up was performed at a drop-in STI-clinic for adults in Stockholm, between December 2007 and March 2009. Inclusion criteria were age 20-39 years, basic knowledge of Swedish, and a sample for Ct. Data collection included an anonymous self-administered questionnaire on sexual behaviour, reproductive health, and history of STI. Self-sampled vaginal and urine specimens were analyzed by BDProbeTec. A test of cure for all patients treated for Ct and contact tracing were also performed. Risk ratio (RR) for a repeat infection given a previous one was analyzed as a one-sided chi-square test.

RESULTS

A total of 2813 visitors consented to participate, 51% men. A history of at least one Ct infection in the past was reported by 37%. At inclusion 10.9% were Ct-positive. The follow-up visit was attended by 49%, and 3.4% were Ct-positive. Having a positive sample at inclusion led to a two times higher risk of Ct at follow-up (RR=1.99, p-value= 0.038). Moreover a self-reported Ct infection in the past also increased the risk for Ct at inclusion (RR=1.20, p-value=0.015).

CONCLUSION

Being positive for Ct increased the risk for a repeat infection after 6-8 months. In order to identify potential patients with repeat Ct infections and to improve counseling in a clinical setting, further analysis of risk factors associated with repeat Ct infections is needed.

PRESENTER: KÜHLMANN BERENZON

20090222

Session: A4.4

Track: HIV - STI

European Health Programmes 2003-2008 Projects contribution for the HIV/AIDS Action Plan 2006-2009 implementation

Cinthia MENEL LEMOS on behalf of Network of HIV/AIDS and drugs prevention projects funded under the Health Programme 2006-2009

Executive Agency for Health and Consumers (EAHC)

BACKGROUND

The European Health 2003-2008 Programmes have supported projects aiming to tackle HIV/AIDS epidemic executing the HIV/AIDS Action Plan 2006-2009 priority areas as leadership and advocacy, prevention of new infections and HIV/AIDS treatment preparedness.

METHODS

The EU Action Plan HIV/AIDS 2006-2009 execution was measured through mapping projects activities. The HIV/AIDS prevention projects sources of information were DGSANCO health portal, project websites, EAHC project database.

RESULTS

32 projects were identified with 15 Million € EC co-funding. Most actions intended to prevent new infections of HIV/AIDS and HBV/HCV targeting vulnerable groups: youths (SUNFLOWER, HCUBE), immigrants-ethnic minorities (Aids&Mobility), MSM (SIALON, Everywhere, EMIS), drug users (SEID, SDDCARE, Prevention&standards) or sex workers (Tampep). Eurosupport action covered positive prevention through counselling and sexual-reproductive health promotion of people living with HIV/AIDS. Connections and TCJP networks act in identifying best practice for blood borne infections and harm reduction within judicial systems. Correlation strengthens capacity building among service providers through development of training and guidelines on peer education, outreach, e-learning for HIV/HCV prevention. 10 actions aimed to exchange best practices on reduction of drug demand, by developing indicative, selective prevention and harm reduction prevention of blood borne infections among drugs users. Universal access to antiretroviral therapy (ACTIVATE, EATG) and management HIV/AIDS dual (MAIDS) diagnosis were supported through development training module on treatment preparedness.

CONCLUSION

The Health Programmes 2003-2008 ensured implementation of the HIV/AIDS EU Action Plan 2006-2009. Essential priority areas remain uncovered: promotion voluntary counselling & testing, HIV/AIDS peer education & training development, drug treatment best practices inventory, strategies to assure affordable ARV, health professionals capacity building, HIV drug resistance surveillance and susceptibility testing network.

PRESENTER: MENEL LEMOS

20090023

Session: A4.5

Track: HIV - STI

SIALON: HIV prevalence, undiagnosed HIV cases and Risk behaviour among MSM

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BACKGROUND

HIV prevalence and unsafe sexual practices among MSM has risen in recent years in Europe. The objective was to obtain information on HIV prevalence and risk behaviour using an outreach testing method based on oral fluid sample linked to a questionnaire, in Verona (Italy) and Barcelona (Spain).

METHODS

Cross-sectional study on MSM who have had sex with another man during the last year. A Venue-Day-Time sampling method was used, a probability-based method for enrolling subjects at times and places where they congregate. Statistical Analysis: STATA 10 package was used. UNGASS indicators (UNAIDS) for the most at risk population were included in the self administered questionnaire. An oral fluid collector device was used to collect biological sample. EIA testing was performed to detect anti HIV antibodies.

RESULTS

Valid samples were 797. Average age: 35.8 years (Verona), 38.2 years (Barcelona). HIV prevalence: 11.56% (Verona), 16.54% (Barcelona). Percentage of respondents reporting inconsistent condom use during the last 6 months with steady partner was 62.10% (Italy) and 62.63% (Spain); with casual partner the percentage was 38.11% and 35.99% respectively. MSM who had an oral fluid HIV+ test and reporting an HIV-test within the previous 12 months were 45.45% in Verona and 39.13% in Barcelona.

CONCLUSION

HIV prevalence in Barcelona is slightly lower than in previous studies, maybe related to a different sampling method. In Verona previous data were not available and estimated prevalence seems to be high. Among oral fluid HIV+ subjects, nearly half reported an HIV- test in the last year and were not aware of their real serumstatus. Data suggest that quite a number of infections were recently acquired and a new epidemic wave is probably developing.

PRESENTER: MIRANDOLA

20090221

Session: A4.6

Track: HIV - STI

Sexual behavior and preferences among HIV/AIDS patients in Selangor, Malaysia

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BACKGROUND

HIV/AIDS epidemic in Malaysia has now penetrated the 'low-risk' population through sexual contact. This study aims to explore the sexual behavior among HIV patients and their sexual behavior and preferences so as to recommend effective preventive interventions measures to high risk groups.

METHODS

A cross-sectional study using purposive sampling method. 3 prisons, 2 drug rehab centers, 1 hospital and 3 health clinics were chosen. Respondent were those attending clinic session at the identified premise and a modified self-administered questionnaire adopted from BSs and SPSS was used.

RESULTS

146 out of 159 (91.8%) attendees respondent, 84.6% males, 13% females and 2% transgender. Male (53%) and transgender (71%) had more than 5 years duration of seropositivity. Being married, with less than 5 years duration of seropositivity and those with greater importance of sex ($p < 0.05$) were more sexually active. 75% of the females practice unprotected sex and were 12 times more likely compares to transgender. Those who are under the influence of drugs were 6 times more likely to practice unprotected sex as compared to those who never had sex under the influence of drug (95%CI 2.5, 12.9). Those who were unmarried (63%), partner with unknown serostatus (69%), sex worker as partner (72%), buying sex (70%) are willing to disclose their HIV status.

CONCLUSION

The study showed risky sexual behavior is prevalent among HIV patients especially women. Targeted safe sex education to high risk groups need to incorporated into the existing HIV counseling program.

PRESENTER: SULAIMAN

20090248

Session: A5.1

Track: Influenza

European paediatric influenza analysis (EPIA): estimates of the paediatric disease burden of influenza in The Netherlands and Spain

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BACKGROUND

EPIA is a collaborative research project aimed at estimating the paediatric burden of influenza in Europe. The project's goal is to provide country-specific information needed for making decisions regarding vaccination. This study examined the burden of disease in children in a country with primary care paediatricians (Spain) versus a country with primary care general practitioners (GPs; The Netherlands).

METHODS

Weekly virological data for influenza and RSV, along with age-specific, influenza-like illness (ILI) data from The Netherlands and Spain were used in a regression model where $ILI\ rate = \beta_0 + \beta_1 * RSV + \beta_2 * InfA(H3) + \beta_3 * InfA(H1) + \beta_4 * InfB$.

RESULTS

During 5 Dutch seasons (2002-2007) the model attributed 50% and 62% of the ILI burden to influenza in the 0-4 and 5-14 year age groups, respectively. This corresponded to 0.9% of children aged 0-4 and 0.6% of children aged 5-14 visiting their GP for influenza in an average winter. RSV contributed 15-17% and Influenza A(H1N1) did not contribute significantly during the time period of study. In Spain (2002-2007), the model attributed 84% and 94% of the ILI burden to influenza in the 0-4 and 5-14 year age groups, respectively. This corresponded to a seasonal average of 2.3% of children 0-4 years old and 3.1% of children 5-14 years old seeking medical attention for influenza. In Spain, influenza explained a significant proportion of the ILI burden, whereas RSV did not.

CONCLUSION

The current study applied a virus-guided regression model to 5 seasons of data from two countries. Differences in the pattern and magnitude of the ILI burden between the countries are discussed. Possible explanations include the role of public knowledge regarding influenza (parents' management of their child's illness) and differences in health care provision (i.e., paediatricians vs. GPs) in the two countries.

PRESENTER: BALDERSTON

20090258

Session: A5.2

Track: Influenza

Strong contribution of EPIET fellows to members states' efforts in the pandemic of influenza A(H1N1)v

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BACKGROUND

The European Programme for Intervention Epidemiology Training (EPIET) was created to develop a European network of intervention epidemiologists and develop a response capacity inside and beyond the EU. We reviewed the involvement of EPIET fellows in EU members states' efforts to fight the pandemic of influenza A(H1N1)v (influenza pandemic).

METHODS

We asked EPIET fellows to provide a qualitative overview of their activities linked to the influenza pandemic during a training module in late June 2009. We completed the data for missing fellows with information from EPIET coordinators. The listed activities were categorised as follows: outbreak investigations, surveillance, research, contact tracing and support of the emergency operations centre (EOC).

RESULTS

A total of 47 EPIET fellows are based in 25 host sites in 15 EU member states and Norway. Of these, 36 (77%) reported to be involved in influenza pandemic activities in 19 host sites. The most frequently reported involvement was in surveillance and data management/analysis (n=20), followed by EOC support (n=17), research activities (n=15) and contact tracing (n=11). In addition, nine fellows were performing outbreak investigations in schools. Of these, four fellows were leading the investigations. One fellow was sent to WHO-EURO for support of pandemic influenza activities, while two fellows were involved in the evaluation of the pandemic influenza response at ECDC.

CONCLUSION

EPIET fellows have played an important role in supporting influenza pandemic activities on a regional and national level. However, fellows have not yet been involved in influenza pandemic activities outside of Europe. With the influenza pandemic unfolding, fellows should obtain further opportunities for outbreak investigations and analytical studies, contributing to member states response capacity.

PRESENTER: BREMER

20090099

Session: A5.3

Track: Influenza

Do adjuvated influenza vaccines make a difference? An analysis based on outbreak investigations in nursing homes in Lahn-Dill-District, Germany

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BACKGROUND

Influenza causes substantial mortality and morbidity, especially in nursing homes. The effectiveness of influenza vaccines in elderly individuals is modest. Adjuvated vaccines inducing increased immune response have been licensed for the elderly but data on effectiveness is limited. Therefore, we analyzed pooled data from four influenza outbreaks to compare the effect of adjuvated vaccines to non-adjuvated in reducing morbidity.

METHODS

To determine vaccine effectiveness (VE) of adjuvated and non-adjuvated vaccines in preventing influenza-like illness (ILI) and hospital admissions for all causes (HA) we conducted a meta-analysis of four nursing home outbreaks in Lahn-Dill-District of which three occurred in 2008/09 and one in 2006/07. We calculated Mantel-Haenszel-weighted relative risks to estimate VE using the Greenwood-Yule-formula. To assess the effect on statistical heterogeneity we calculated the statistic I-square for every pooled estimate.

RESULTS

The overall VE against ILI was -2,5% [95%-confidence interval: -37,5% to 34,3%], against HA 37,9% [-33,9% to 74,5%]. Adjuvated vaccines had a lower VE against ILI (-18,6% [-54,8% to 31,7%] vs. 8,0% [-40,2% to 49,3%]). Adjuvated vaccines reduced hospital admissions by 21,8% [-64,4% to 78,3%] compared to 49,5% [-37,4% to 84,1%] for non-adjuvated vaccines.

CONCLUSION

All study results are limited in precision and power due to the small sample size and/ or the small effect of influenza vaccines. Nevertheless, our data are consistent with results obtained in other published outbreak investigations concerning prevention of ILI and HA. Since VE varies from influenza season to season this study design can not determine an absolute VE, only a comparison of the effect size of these vaccines is possible. Here, adjuvated vaccines do not show to be superior to non-adjuvated ones.

PRESENTER: GEIS

20090195

Session: A5.4

Track: Influenza

The Situation Room of the Robert Koch Institute, the national centre for managing the Novel Influenza Situation in Germany; Analysis of the first two month response

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BACKGROUND

In 24 April 2009, when first information of a potential new pandemic Influenza A(H1N1) strain became available, the Robert Koch Institute decided to set up its Situation Room (SR) in order to collect epidemiologic information, to organise the national response, and to collate the case-reports in Germany. The objective of this summary is to analyse the first two months (24.4.-28.6.09) response in order to guide further planning.

METHODS

The functions and used tools for the SR were described. The existing shift plans have been analysed in order to know how many persons and working hours were necessary to run the SR.

RESULTS

In the SR for 893 persons information was entered in the national linelist, epidemiological information was collected, 98 situation reports were written and 800 ToDos were coordinated. Initially 8 persons were in each shift, later 4-5. The SR had one single E-Mail-address and dedicated phone lines. It coordinated all tasks through modified MS Outlook ToDo application. Case based information was entered in a newly created data base. Influenza specific tasks were forwarded to the Influenza Unit, which had one liaison officer for each shift. SR worked in 2 daily shifts, from 8.00 till 19.00. The SR also ran weekends. From 19.00 - 8.00 the on-duty-officer responded to relevant requests. In the first 2 months 94 persons worked in the SR. 642 person shifts were done (approx. 4500 hours or 560 working days), including 127 weekend shifts.

CONCLUSION

The organisation of the SR and used tools facilitated the organised response to the Influenza situation. However, a more standardised, less human resources requiring approach has to be developed to ensure a successful long-term response to the new Influenza situation.

PRESENTER: GILSDORF

20090170

Session: A5.5

Track: Influenza

FluZone: A national decision support system for managing the containment phase of the H1N1 Flu pandemic in England

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4. Consultant in Health Informatics, inFact, UK

BACKGROUND

This work is the continuation of a seven-year development programme of a web based decision support system for health protection in England called HPZone. The emergence of swine flu prompted the development of a scoped version of HPZone dedicated to the H1N1 outbreak. FluZone has been developed using a bottom-up and top down approach in a rapidly changing environment.

METHODS

FluZone is a web based system linking ten Flu Response Centres throughout England. It includes a triage page commensurate with a continuously changing case definition and provides a variety of prompts for appropriate action in different circumstances, such as arranging nasal and throat swabs, and chemoprophylaxis. The application has enabled 1500 multi-disciplinary users enter appropriate data about H1N1 Enquiries, Cases, Contacts and Outbreaks across the entire country.

RESULTS

The combination of an advanced query facility on the rich data set captured and time and spatial visualisation methods in FluZone, has provided a powerful tool for improved case management, quick contact tracing and advanced epidemiological analyses. The data also stores contextual settings with common exposure contacts. Full audit trails are available in respect of what, when and how it happened.

CONCLUSION

The system has performed well at peak times with over 350 concurrent users with minimal training. FluZone has demonstrably contributed to the containment phase of the pandemic supporting the delivery of the nationally agreed approach to management of cases and contacts and the capture of high quality local, regional and national epidemiological data in real time to inform future planning of the national response.

PRESENTER: KARA-ZAITRI

20090212

Session: A5.6

Track: Influenza

Enhanced influenza surveillance in Georgia in the context of the emergence of novel influenza A(H1N1) virus

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BACKGROUND

Prior to 2006 influenza surveillance in Georgia was merely based on monthly reporting of aggregated clinical cases by age, without laboratory confirmation. The emergence of an influenza virus of pandemic potential (A/H5N1) and absence of data on influenza strains circulating in Georgia have shown the importance of strengthening of surveillance of Influenza Like Illnesses (ILI) in the country. Therefore National Influenza Center at National Center for Disease Control and Public Health (NCDC) and several sentinel surveillance sites were established in 2006. Improvement of influenza surveillance increased availability for rapid detection, timely reporting and response to a new influenza virus occurrence

METHODS

Since May, 2009 due to pandemic spread of novel influenza A(H1N1) virus, to enhance influenza surveillance in Georgia for timely detection of pandemic influenza A(H1N1) virus, several additional activities were implemented: 1) introducing weekly reporting of Influenza, both ILI and Acute Respiratory Illness (ARI) cases; 2) developing and distributing new reporting forms; 3) strengthening the monitoring of Severe Acute Respiratory Illness (SARI) cases; and 4) training up to 3000 health care providers throughout the country on issues related to novel influenza A(H1N1) virus and pandemic preparedness.

RESULTS

Data received from weekly reporting and strengthen of SARI monitoring will be used as baseline for further period to timely recognize any uncommon age distribution and/or any unusual increase of ILI, ARI/SARI. Enhanced awareness of public health providers was reflected in pre/ post tests results and in improving reporting and notification system.

CONCLUSION

Maintenance of enhanced influenza surveillance system requires huge efforts, but gives possibility to timely detect and respond to any unexpected or unusual events that is especially important in terms of novel influenza A(H1N1) virus.

PRESENTER: TARKHAN-MOURAVI

20090145

Session: A5.7

Track: Influenza

Towards a common crossborder system for pandemic preparedness, surveillance and response in The Netherlands, Germany and Belgium

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BACKGROUND

Recent pandemic influenza experiences have re-emphasised the urgent need for improved collaboration and integration of surveillance and response systems especially in crossborder countries. The latter is further complicated by the diverse political systems, medical infrastructures, economies, cultures, and the balance between public good and private right. Challenges include: • Legal aspects relating to sharing data and resources • Inconsistencies in response protocols • Crossborder public messages • Flexible exchange of key information This paper discusses an EU funded project by the Euregio Meuse-Rhine (EMR), to enhance cross-border cooperation on infectious diseases surveillance and pandemic flu preparedness and response.

METHODS

A secure web-based application called FluZone, originally developed and implemented in England, has been piloted for the pandemic flu in the EMR fully considering the varying legal aspects with following outcomes:

RESULTS

- Formalised approach to synthesising and exchanging experiences on pandemic flu preparedness and securing a consolidated plan allowing local nuances and including:
 - o Preparing for an emergency
 - o Surveillance, case investigation and treatment
 - o Preventing spread of disease and maintaining essential services during pandemic.
 - o Research and evaluation, implementation, testing (exercise), and revision of the plan
- Real-time surveillance dashboard on sources, cases, contacts, enquiries and outbreaks
- Consolidation of continuously changing case definitions, protocols and triage methods.
- Rapid exchange of epidemiology and laboratory data
- Geographical mapping of cases, contacts, and contextual locations such as schools.
- Secure communications between the health protection professionals, and to the crossborder community

CONCLUSION

Cross-border collaboration on pandemic flu management and epidemiology/surveillance is complex but essential. Using a common realtime system has proved to significantly streamline operations, improve communication, enhance cooperation, and yielded better management of the pandemic.

PRESENTER: TER WAARBEEK

20090058

Session: A5.8

Track: Influenza

Respiratory hygiene patterns in English households: results from the Flu Watch cohort

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BACKGROUND

During the current influenza pandemic, respiratory hygiene measures are being promoted in public health campaigns to reduce virus transmission. Though the effectiveness of media campaigns is difficult to evaluate, behavioural change is more likely when messages are targeted. However current levels of respiratory hygiene among different population groups in the UK are unknown. Therefore, as part of Flu Watch - a large household cohort study of influenza transmission - we examine levels of self-reported respiratory hygiene and discuss possible impact on public health campaigns.

METHODS

Participants were randomly selected from lists of GPs in the MRC GP Research Framework and whole households invited to participate. Information on respiratory hygiene behaviour was obtained through questionnaires. Data were analysed using Stata version 10. Results are presented stratified by age, gender, household rurality, IMD quartile and healthcare worker status.

RESULTS

From 2006-2008, 1,450 people representing 567 English households participated, with ages ranging from 0-93 years. Children reported less hygienic behaviour than adults across all variables ($p < 0.001$) including frequency of handwashing, frequency of covering the mouth/ nose when sneezing, using a clean tissue to wipe their nose and likelihood of washing hands after coughing or sneezing. Men also reported less hygienic behaviour than women across all these variables ($p < 0.001$). Rurality and socio-economic status were not associated with differences in respiratory hygiene. Healthcare workers were more likely to wash hands frequently and cover their mouth and nose when sneezing than non healthcare workers ($p < 0.001$).

CONCLUSION

Though self-reported measures of respiratory hygiene are potentially prone to reporting bias, children and men consistently reported less hygienic behaviour than women. This has implications for targeting of respiratory hygiene messages during an influenza pandemic.

PRESENTER: WARREN-GASH

20090113

Session: A5.9

Track: Influenza

Piloting the Danish part of I-MOVE: Measuring influenza vaccine effectiveness in the 2008/09 season

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BACKGROUND

We conducted a pilot project during the influenza season 2008/09 in Denmark as part of I-MOVE, a European project aiming to get real-time estimates of seasonal and pandemic influenza vaccine effectiveness (VE). The Danish population of 65 years and above is offered free yearly influenza vaccinations; the vaccination uptake is 50-55%.

METHODS

This case-control project was carried out within the Danish influenza sentinel surveillance system. General Practitioners (GPs) collected respiratory specimen along with clinical and vaccine-history data and data on potential confounding factors from all patients ≥ 65 years presenting with influenza-like illness (ILI). Patients with rt-PCR influenza-positive specimen were categorized as cases, and influenza-negatives as controls. Logistic regression was used. A population control group with similar age and geographical spread as cases was interviewed to gain a timely estimate of vaccination coverage.

RESULTS

Twenty-nine GPs recruited eligible patients for the project. Out of 49 recruited ILI-patients; 22 had a positive sample for seasonal influenza (45%). Eleven of these 22 cases (50%) were vaccinated and 20 out of 27 ILI-controls (76%). The VE adjusted for chronic illness was 74% (95%CI 5-93%). Vaccination coverage among the population controls was 49%.

CONCLUSION

The VE against laboratory-confirmed influenza among people ≥ 65 years consulting their GP due to ILI was satisfactory in the 2008/09 season in Denmark. However, this study population has higher vaccination coverage than the population controls, perhaps due to an increased health-seeking behaviour. Generalizations of results need to be made carefully. The small sample size did not allow for precise VE estimates, this issue was addressed by pooling of data with other countries participating in I-MOVE. The design could be used to calculate VE of a pandemic vaccine.

PRESENTER: WIDGREN

20090196

Session: A5.10

Track: Influenza

An outbreak of Oseltamivir-resistant Influenza A (H1N1) among HIV-infected Children in an Orphan Shelter-Thailand, November 2008

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BACKGROUND

Information on influenza A (H1N1) infection, particularly, with oseltamivir-resistant strain in HIV-infected children is limited. In November 2008, an influenza outbreak among HIV-infected children in an orphan shelter was notified. This investigation aimed to characterize clinical manifestations of the disease in HIV children, identify risk factors, and implement control measures.

METHODS

Active case finding and medical record reviews were conducted. A suspect case was defined as a child in the shelter who had fever with two of the following symptoms: sore throat, cough, rhinorrhea, headache, or myalgia during 1st-15th November 2008. A confirmed case was a suspect case with positive for influenza A by RT-PCR from throat swabs. A retrospective cohort study was done to identify risk factors for influenza illness.

RESULTS

Forty-six (27.5%) of 167 children met the case definition with 28 confirmed cases. The highest attack rate was in HIV children house (58.92%). Of 16 throat swabs sent for viral isolation, 81.25% were positive by PCR. Six isolates were characterized as A/Brisbane/59/2007 (H1N1)-like AH1 and tested positive for the H274Y mutation which is resistant to oseltamivir. Median duration of viral shedding was 3 days (range: 1-17 days). No statistical difference between clinical symptoms of HIV and non-HIV children. Strong risk factors were being a resident in HIV children house (adjOR=9.78, 95%CI=1.87- 50.95), and exposure to nasal secretion of sick children before an illness (adjOR=5.24, 95%CI=1.42-19.34).

CONCLUSION

An outbreak of oseltamivir-resistant influenza A (H1N1) resulted in a high morbidity among HIV children. Influenza vaccination for non-sick residents, isolation of cases and health education were provided in the shelter. Enhanced surveillance was implemented in the adjacent schools to facilitate school outbreak containment.

PRESENTER: WUTTHANARUNGSAN

20090002

Session: A5.11

Track: Influenza

Effective use of popular internet video broadcast site Youtube for dissemination of information about the potential pandemic of H1N1 influenza

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BACKGROUND

The outbreak of H1N1 influenza in April-May 2009 across different regions of North America has created a significant concern for a pandemic causing panic amongst people. We look into the effective use of popular internet streaming video site YouTube by health organizations (CDC, UN and WHO) as a information source during the peak time of H1N1 outbreak in April-May 2009

METHODS

Youtube was searched using key words "swine flu" or "H1N1 influenza" or "influenza" for videos that have been uploaded in past one month containing pertinent information on prevention, symptoms, treatment or recent update of the disease. The search and screening was done by 2 independent observers and inclusion was done on the basis of mutual agreement. Total viewership, no of days since upload and total duration of the videos that were uploaded by CDC, United nations and WHO and independent users were noted. A qualitative assessment scoring of the videos was done using a scorecard. Different aspects of the video were scored with 1 point and then a total aggregate score was obtained by summation of individual scores.

RESULTS

Total viewership per day for CDC, UN/WHO and independent user videos was 24863, 26931 and 77770 respectively. CDC broadcasted videos had a significantly higher no. of viewership per day and per video as compared to UN/WHO broadcasted (p value<0.05) and independently uploaded video (pvalue<0.05). Mean qualitative assessment scores of CDC videos was significantly higher than that of independent videos (pvalue <0.05).

CONCLUSION

CDC broadcasted videos have more comprehensive coverage on different aspects of H1N1 influenza outbreak and are being used in increasing proportion by the viewers as a source of useful information.

PRESENTER: PANDEY

20090021

Session: A6.1

Track: International health

An assessment of therapeutic management of vaginal and urethral symptoms in an Anonymous Testing Center in Luanda, Angola

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BACKGROUND

Syndromic management algorithms should be assessed and adapted to specific characteristics of the regions where they are being implemented. The aim of this study was to estimate the prevalence of *Neisseria gonorrhoeae* infections and assess therapeutic management of vaginal/urethral discharge and dysuria in patients attending an Anonymous Testing Center (ATC) for HIV in Luanda, Angola.

METHODS

Socio-demographic and medical data were obtained from 436 individuals, and clinical examination was performed in 104 symptomatic women and 8 symptomatic men. Vaginal/cervical and urethral specimens were collected for observation of *T. vaginalis*, yeasts and bacterial vaginosis. Urine samples were collected from 415 patients - 221 symptomatic and 194 asymptomatic. The diagnosis of *N. gonorrhoeae* was carried out by polymerase chain reaction (PCR) assay and positive samples were subsequently confirmed by restriction fragment length polymorphism (RFLP).

RESULTS

The prevalence of *N. gonorrhoeae* identified by PCR techniques was 6% (25/415), and of the 25 cases 8 were treated. All men and women who presented a positive wet mount/Gram stain were etiologically treated in accordance to the microscopy result. In contrast, 53,3% of female patients and 33,3% of male patients who presented negative results were treated for urinary infection or by syndromic approach, and amongst non-examined patients only 15% of women and 52,5% of men were treated without etiological results. Syndromic treatment was preferentially given to non-examined males over females (Fisher's Test, $p < 0.01$), and treatment coverage was incomplete in both men and women.

CONCLUSION

Syndromic management of STIs as recommended by the WHO is not being consistently and correctly applied, and risk factors linked to these infections should be identified for incorporating risk assessment.

PRESENTER: GUIMARÃES

20090234

Session: A6.2

Track: International health

Communicable disease control at the borders: The need for Public Health (PH) law training

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BACKGROUND

Under Greek law, the Ministry of Health possesses legal authority for issuing regulations regarding traveller movement for PH protection, whilst communicable disease (CD) control at the borders falls within the operations of the Prefectural PH Authorities (Ministry of Internal Affairs). Questions have arisen regarding the legal authority and powers of PH partners during declared emergencies, recently Novel H1N1. These could be due to legal gaps or lack of legal competencies of those implementing the law. The aim of this study was to define whether PH officers are familiar with existing legal requirements pertinent to CD control.

METHODS

110 questionnaires were sent to randomly selected PH officers in Prefectural PH Authorities: 6 questions focused on legal requirements using a case-based approach. One open question inquired whether PH officers felt confident about their legal knowledge.

RESULTS

70 questionnaires returned completed (63.6%).

1. Land-crossings: traveller processing during a pandemic: 70% accurate, 17% erroneous, 13% did not answer (NA) (N=70)
2. Sea-travel: TB cluster on ship arriving in international port: 43% accurate, 50% erroneous, 7% NA (N=70)
3. Air-travel: PH preparedness in international airports: 23% accurate, 61% erroneous, 16% NA (N=70)
4. Traveller entry restrictions: 79% accurate, 20% erroneous, 1% NA (N=70)
5. Traveller quarantine/isolation: 78% accurate, 19% erroneous, 3% NA (N=70)
6. Imported disease surveillance: 36% accurate, 58% erroneous, 6% NA (N=70)
7. Only 7% felt confident about their legal knowledge, whilst 61% would value training. 2% NA

CONCLUSION

There are gaps in the legal knowledge that PH officers need for implementation of public health policies in the field of border CD control. This study underlines the need for training in PH Law, to clarify responsibilities, promote efficient use of legal powers and prevent unjustified barriers to traveller movement.

PRESENTER: HATZIANASTASIOU

20090037

Session: A6.3

Track: International health

Development of a hospital-based active surveillance system for rotavirus infection in Northwest Russia

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BACKGROUND

Although rotavirus infection is notifiable in Russia, the available incidence data are difficult to use for decision making on vaccine introduction. We aimed to create a basis for estimating the disease burden of rotavirus infection in Northwest Russia.

METHODS

In a generic protocol, WHO has recommended active rotavirus surveillance to measure the proportionate morbidity of rotavirus infection among children <5 years of age hospitalized for acute diarrhea. To apply this method in Russia, we contacted the St Petersburg Pasteur Institute and several children's infectious disease hospitals in Northwest Russia through the EpiNorth network. A surveillance system was piloted in one hospital in St Petersburg during November 2006-October 2007. Subsequently, we visited the hospitals to evaluate their suitability for the study.

RESULTS

We adapted the WHO protocol to the study settings in collaboration with the Pasteur Institute, hospitals and the Federal public health authorities after several rounds of negotiations on contents and organisation. Five hospitals and five laboratories, located in Arkhangelsk, Kaliningrad, Murmansk, Syktyvkar and St Petersburg were finally chosen for surveillance. Rotavirus test kits and training in surveillance methods will be provided. In a pilot study in the St Petersburg hospital, 576 out of 1739 (33%) of hospitalized diarrhea cases were positive for rotavirus with seasonal increase to 60% in spring.

CONCLUSION

Despite several bureaucratic hurdles, it was possible to set up a new sentinel surveillance system for rotavirus infection in Russia by using a well established network and a WHO generic protocol. The system is expected to enrol around 4600 children over two years starting from the 2009-2010 rotavirus season. Surveillance data will provide better estimates on rotavirus morbidity to support decisions on vaccine introduction in Russia.

PRESENTER: JUNUSSOVA

20090074

Session: A6.4

Track: International health

Systematic literature review on the transmission of communicable diseases in public ground conveyances

Gabriele Poggensee, O. Mohr, M. Poorbiazar, T. Eckmanns, G. Krause

Robert Koch Institute

BACKGROUND

Symptomatic cases of infectious diseases on international flights trigger international contact tracing (CT). However, the initiation of CT in ground conveyances such as railway, bus and metro is seemingly not done routinely. The rationale to omit CT may be based on logistic reasons (e.g., unavailability of passenger data) or lack of scientific evidence. A literature review was carried out to compile available evidence on transmission of infectious diseases in public ground conveyances

METHODS

A systematic literature review was carried out using the databases PUBMED, SCOPUS, Google Scholar, and Web of Science to retrieve relevant literature on transmission of infectious diseases and on CT in public ground conveyances.

RESULTS

Totally, 13 scientific publications were identified describing the results of CT after the occurrence of communicable diseases in passengers using busses or trains (10x tuberculosis, 3x meningococcal disease). CT of children using school busses is the most frequently described event (tuberculosis and meningitis). 11% (n = 559) up to 35% (n = 232) of the traced children riding with index tuberculosis cases in school busses showed seroconversion. Furthermore, transmission of tuberculosis occurred in a company commuter bus (n = 49; 10%) and in a train (n = 40; 2%).

CONCLUSION

Repeated exposure in ground conveyances (school bus, commuter bus) to individuals with a communicable disease can lead to high transmission rates of contact persons (tuberculosis). The public health impact of transmission of communicable diseases during travels in railways or coaches remains unknown. This publication arises from the project REACT which has received funding from the EU, in the framework of the Public Health Programme

PRESENTER: POGGENSEE

20090083

Session: A6.5

Track: International health

Passenger flow with different means of transport in Europe: Is the risk of transmission of infectious diseases in ground conveyances a neglected issue?

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BACKGROUND

Europe is well connected with public transport networks that allow high mobility. Travelling with public transport can be associated with close contact to persons in confined spaces. Thus, risk of disease transmission is increased. So far public health efforts regarding contact tracing in public passenger transport have been focusing on air travel. Furthermore, scientific evidence on infectious disease transmission in public ground conveyances (GC) is scanty. We examined passenger transport data to describe passenger streams in public GC in Europe.

METHODS

Analyses were based on European passenger transport data from Eurostat (1995-2006). Passenger transport performances (TP) were calculated for 27 European Union member states (EU27). TP is defined as the number of passengers multiplied by travelled distance, in billion passenger-kilometres (Bpkm).

RESULTS

Total passenger TP in EU27 member states increased from 5277 in 1995 to 6333Bpkm in 2006. Public ground transport generated by bus/coach and railway make up 501 to 522Bpkm (1995: 9.5%; 2006: 8.3%) and 348 to 384Bpkm (6.6; 6.1%), respectively. The public ground TP accounted for 14.4% of the total TP in 2006; however, the highest proportion of TP was generated by passenger cars (3923 to 4602Bpkm, 73; 72.7%), followed by air transport with 335 to 547Bpkm (6.3; 8.6%).

CONCLUSION

Data on passenger TP demonstrate that passenger streams in GC are considerable and that the performance in 2006 is nearly twice as high as the share of air transport TP. Presuming that the risk of transmission of infectious diseases in GC might be as high as in air crafts, further research on the risk of transmission of infectious diseases in GC is needed. This project is funded by the European Union (DG-SANCO).

PRESENTER: POORBIAZAR

20090173

Session: A6.6

Track: International health

Cerebrospinal meningitis outbreak investigation in Jigawa state Nigeria 2009

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5. University of Ibadan

BACKGROUND

Cerebrospinal Meningitis (CSM) is a fatal infection with high morbidity and mortality. Jigawa State lies within the nation's meningitis belt. We conducted a descriptive study of the outbreak.

METHODS

Records were review from the health facilities, cases as well as health care workers were interviewed, laboratory and CSM weekly report data in the state was reviewed.

RESULTS

There was a pre-epidemic preparation such as community mobilization/advocacies and health staff sensitization / motivations to enhance CSM surveillance. Free drugs were made available for patients. The index case was a 13 years old male who presented in the clinic on the 23rd of December 2008. The most affected age group was 5 - 15 years (>65%). As of the epidemic week seven, 26 of the 27 Local Government Areas (LGAs) in the state were affected and 7 had crossed the alert threshold. The number of cases rose from 12 in week one to 303 in week seven. The state expected vaccines and drugs from the Federal government to supplement the one they had prepositioned.

CONCLUSION

Prepositioned drugs/vaccine was in short supply both at the state and Federal level. The Federal Emergency Preparedness and Response (EPR) committee was inactive. LGAs that have crossed alert threshold and schools that had experienced outbreaks were immediately vaccinated through the assistance of medicine san frontiers. Most cases had lived in overcrowded rooms and had not been vaccinated for the past three years. The laboratories lacked pastorex. Inadequate supply of drugs hampered effective case management. The recommendations from this investigation have led to an active Federal EPR committee and the decision by the states to preposition vaccines and drugs independent of the Federal Government.

PRESENTER: AKHIMIEN

20090064

Session: A6.7

Track: International health

Lessons learned from chikungunya epidemic in southern Thailand, 2008-2009

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BACKGROUND

The chikungunya outbreak started in the southernmost provinces of Thailand and has been spreading over half of the country in 2009. One controversial epidemic factor is that patients did not seek care from health-care providers under the disease surveillance system of the Public Health Ministry. Thus, health authorities could not detect the outbreak early. We investigated healthcare-seeking behaviors among the patients and control and prevention measures that were taken.

METHODS

A survey was conducted in two provinces where the epidemic started. A total of 421 patients participating in the study were interviewed by trained health personnel. Documents were retrieved from relevant meetings/seminars and the responded agencies. Health personnel who were involved early on in the epidemic control were interviewed.

RESULTS

Among the patients, 62.9% worked in orchards and their median age was 36.0 years (range, 12-78). The median length of illness before seeking care was 2 days (range, 0 to 60). 50.8% of them sought health care twice (range, 1 to at least 5 times). The majority of them sought health care from health care workers/physicians and almost of them was diagnosed as chikungunya infection. 91.7% of them worked outdoor during peak mosquito biting time, 30.0% did not protect themselves, and a few traveled outside their provinces and region.

CONCLUSION

The outbreak was detected early. The factors contributing to epidemic include outdoor working during peak mosquito biting time, no or inappropriate self-protection, and delays in implementing prevention/control measures. Although the vector is the same as those of dengue, the natures of diseases are different. The high risk areas need to be identified and appropriate prevention/control interventions need to be launched promptly, particularly a health education of appropriate self-protection.

PRESENTER: THAIKRUEA

20090238

Session: A6.8

Track: International health

Dengue Antibodies in Blood Donors: Low Prevalence in Eastern Regions of Taiwan

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BACKGROUND

Dengue (DG) is the most important arthropod-borne virus in terms of human morbidity and mortality worldwide. Healthcare-related transmission, including blood transmissions, has been documented, although the frequency of these occurrences is unknown. In this study, we evaluated the incidence and prevalence of anti-DG antibodies in blood donors living in the eastern regions of Taiwan.

METHODS

A total of 300 plasma samples were collected in the years 2007-2009. These samples were derived from Taiwanese blood centers (200x) and local volunteers (100x) residing three major cities in the eastern parts of the island Taiwan: Yi-Lan, Hua-Lien, and Tai-Tung. All samples were collected by informed consents and/or IRB approval and tested for specific dengue antibodies. The standard Enzyme-Linked Immunosorbent Assays (ELISA) protocols for IgG/IgM/IgA detection were applied with inactivated cell-culture-derived antigens. IgG titer was quantitatively measured according to different reference standards (100 U/ml, 250 U/ml, 500 U/ml and 1000 U/ml). Acute dengue infections were serologically judged by presence of IgM and IgA titer.

RESULTS

We found that only 1.6% (5/300) of donors were reactive to anti-DG IgG with low titers of antibodies (<100 U/ml). None (0/300) of them were reactive to anti-DG IgM and IgA suggesting that none of them were viremic at the time of donation. Most anti-DG IgG positive donors declare no symptomatic histories in the past.

CONCLUSION

Although dengue transmission by blood transfusion had not been confirmed in highly endemic regions of southern part, the finding of a low prevalence of anti-DG in blood donors of the eastern Taiwan suggests that this route of transmission might be impossible. However, the chance of transmission by bloods donated from asymptomatic RNA carriers with negative antibodies remains to be discussed.

PRESENTER: WANG

20090118

Session: A7.1

Track: Molecular epidemiology

Molecular typing of the HIV-1 epidemic in Greece: a nationwide study

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BACKGROUND

The high evolutionary rate of HIV allows the investigation of transmission networks by phylogenetic analysis. Our objective was to study the contact structure of HIV-1 transmissions, in Greece, using a dense sample of HIV-sequences.

METHODS

HIV-1 subtypes were estimated from 1799 individuals sampled during 1998-2007, comprising 21% of the total HIV-1 infected population in Greece. Phylogenetic analysis of the HIV-1 sequences in pol was performed by NJ and Bayesian methods. Transmission networks were assigned as those consisting of more than 4 sequences.

RESULTS

Subtype B sequences from 707 out of 1072 subjects (66%) fell within 51 local transmission networks. Similarly, most of the subtype A sequences (346, 93%) fell within a monophyletic cluster. On the other hand, however, most of the non-A/non-B infections were the result of multiple introductions in the population. The distribution of transmission risk groups differed significantly among individuals infected with different subtypes ($p < 0.001$). Notably the prevalence of heterosexuals was lower among subtype B infections within local networks versus those who didn't start new outbreaks and also among subtype A infections (8.5% versus 15% and 15% respectively; $p = 0.001$). The percentage of heterosexuals was the highest (35%) among individuals infected with non-A and non-B subtypes. On the other hand the prevalence of men having sex with other men (MSM) was higher among clustered subtype B (51%) and A infections (54%) versus non-A/non-B (21%) and non-clustered B (47%), respectively.

CONCLUSION

Our detailed molecular epidemiology study provides a new insight about the extent and the factors associated with the local dispersal of the HIV-1 epidemic. References 1 Paraskevis et al, Increasing prevalence of HIV-1 subtype A in Greece: estimating epidemic history and origin. J Infect Dis. 2007;196:1167-76.

PRESENTER: PARASKEVIS

20090159

Session: A7.2

Track: Molecular epidemiology

Molecular epidemiology of Listeriosis cases in the Czech Republic

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BACKGROUND

The number of reported human listeriosis increased recently in the EU. While some of the outbreaks have been reported and linked to a specific food vehicle, the majority of reported cases are generally classified as sporadic ones for which no source was identified. Identification of human outbreaks of listeriosis is generally more difficult than identification of other food-borne disease outbreaks. Subtyping methods play important role in listeriosis outbreak investigation and allow the linkage of dispersed cases caused by the identical source. The aim of this study was to characterize human isolates of *Listeria monocytogenes* isolated in the Czech Republic by selected typing methods and to use the results for the epidemiological investigations.

METHODS

117 human isolates from the strain collection of National reference laboratory for listeria collected in the period of 2001-2009 (June) has been characterized by serotyping (combining slide agglutination and multiplex PCR method) and macrorestriction analysis with the use of endonuclease *AscI* (PulseNet Europe protocol).

RESULTS

Human strains came from patients considered as sporadic or suspected outbreak related cases of listeriosis. Serotype 1/2a was the predominant one, serotype 1/2b was second in rank and 4b was detected only rarely. DNA macrorestriction analysis yielded more than 30 pulsotypes. The strains of dominant serotype 1/2a were the most heterogeneous.

CONCLUSION

Macrorestriction analysis of *L. monocytogenes* strains contributes in early stage of outbreak investigation and together with the identification of food source participates in preventing large listeriosis outbreaks. Using this typing scheme allowed to detect one large (in 2006-2007) and two small outbreaks (in 2008-2009) and the suspected food source.

PRESENTER: PRIKAZSKA

20090157

Session: A7.3

Track: Molecular epidemiology

Investigation of *Clostridium difficile* outbreaks using MLVA-typing

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BACKGROUND

PCR ribotyping is widely used to subtype *C. difficile*, but may lack discriminatory power in outbreak investigations. Over one thousand Scottish isolates have been ribotyped since November 2007. Sixty-nine percent belong to one of three ribotypes (001, 027 or 106). MLVA has been suggested to further subtype *C. difficile* isolates. This study evaluated MLVA-typing to sub-type Scottish isolates of *C. difficile* ribotype 027 in the context of a hospital outbreak where epidemiological links to two other hospitals were suspected, as frequent patient transfers occurred between these hospitals.

METHODS

Fourteen cases of CDI were detected in Hospital A over a 6-week period using toxin testing of diarrhoeal specimens. Ten of 14 cases were in-patients while 4 cases were diagnosed in the community. Five isolates from the in-patient group and two from the community were PCR ribotyped. The 5 hospital isolates (all ribotype 027) were sub-typed by MLVA and the relationship to 34 other Scottish ribotype 027 isolates (including isolates from 2 associated hospitals B & C) were determined using eBURST.

RESULTS

The 5 isolates from the in-patients were all ribotype 027 while the community isolates were of other ribotypes. MLVA types from the 5 in-patients split between 2 groups; one unique to this hospital and one closely related to isolates from hospitals B and C in a neighbouring region (Hospital B was a tertiary referral centre serving hospitals A & C). This suggests the suspected outbreak in hospital A was actually two concurrent outbreaks, one of which has links to two other hospitals.

CONCLUSION

MLVA-typing was valuable and highly discriminatory to distinguish between Scottish *C. difficile* ribotype 027 isolates and to support epidemiological investigation of hospital outbreaks of *C. difficile*.

PRESENTER: WIUFF

20090054

Session: A7.4

Track: Molecular epidemiology

Norovirus outbreak strain clusters: quantifying the potential relatedness of clustering strains

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BACKGROUND

Noroviruses are highly prevalent causative agents of community-acquired viral gastroenteritis. Transmission is mostly person-to-person but can occur via contaminated food. Given the globalisation of the food-market, contamination early in the food-chain is likely to result in diffuse outbreaks, potentially with international consequences, complicating the recognition of such common source outbreaks. There is a need for an algorithm to quantify the variability of strains, and the likelihood of norovirus outbreak strains to be related. Such an algorithm allows for gaining more insight in the health burden of food-borne norovirus infections.

METHODS

We analyzed sequences and epidemiological data of 5499 outbreaks collected in Europe between 1999 and 2008. Clusters of aligned sequences were compared with respect to their similarity, frequency, size, transmission mode, time span, and number of countries involved, with p-values for cluster characteristics based on random draws from the background population as the null hypothesis.

RESULTS

Analysis showed that in between the overwhelming number of norovirus genogroup (G)II.4 strains, GI and GII-non-4 strains were relatively more frequently associated with sequence clusters including food-borne outbreak strains. The probability for potential links between outbreaks differs considerably between genotypes. We retrospectively identified 10 potential common source outbreaks due to contamination early in the food chain and separated in time and/or place. The genotype-specific sequence similarity necessary for linking outbreaks is being determined in ongoing analysis.

CONCLUSION

Phylogenetic analysis needs to be based on a large collection of background data and can be useful to discern diffuse potential international common source outbreaks. This novel epidemiological approach in phylogenetic comparisons is likely to supply an algorithm for assessing the probability of a common source to outbreaks caused by similar strains.

PRESENTER: VERHOEF

20090253

Session: B1.1

Track: Public health methodology and new approaches

New perspectives after the transition of EPIET to ECDC - looking into the future of the programme

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BACKGROUND

The European Programme for Intervention Epidemiology Training (EPIET) was integrated into the ECDC on November 1, 2007. We reviewed recent changes within EPIET after this transition in order to provide an outlook on its future.

METHODS

We reviewed changes in the EPIET governance structure and the number of EPIET fellows trained abroad and in their own country (EPIET associated programmes) and the number of available training sites and coordinators between 2002 and 2009. The yearly supervision time of host sites was estimated by multiplying the number of fellows with the number of supervision weeks, assuming an average time of 4h weekly supervision in 2008.

RESULTS

The EPIET Training Site Forum was created to allow continued input from member states. ECDC salaries have been replaced by individual grants starting in 2009. The number of salaries increased from nine in 2002 to 19 grants in 2009. In addition to Germany, four more MS started EPIET associated programmes. Between 2002 and October 2009, the total number of fellows in training will have increased from 28 to 58. During the same time, the number of coordinators increased from 1.8 to 4.4 full time equivalents. The number of available host sites increased from 15 to 30 during the same time. Of these 12 are regional sites. In 2008, host site supervision totalled 7600 supervision hours.

CONCLUSION

The move of EPIET to ECDC has resulted in increased resources for the programme, allowing long-term planning. Increasing the number of fellows and EPIET associated programmes are essential to respond the training needs, particularly of new member states. This requires parallel increase in trainers. The upcoming programme evaluation will provide advice for the future strategy and growth.

PRESENTER: BREMER

20090179

Session: B1.2

Track: Public health methodology and new approaches

Outbreak analysis with MALDI-TOF Mass Spectrometry - potentials and limits - an outlook

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BACKGROUND

Between January and December 2008 *Klebsiella pneumoniae* producing a carbapenemase was isolated from 9 patients of a university hospital. Due to this still uncommon resistance pattern an outbreak was suspected, confirmed and subsequently contained.

METHODS

Ten isolates from the outbreak patients - one patient was colonised with two phenotypical different isolates - underwent typing with PFGE. Additionally all outbreak isolates and epidemiological unrelated *K. pneumoniae* isolates were analysed with MALDI-TOF MS. Strains were cultivated on blood agar, extracted with a formic-acid/ethanol method and a series of 24 spectra for each strain was generated. Using the Bruker Daltonics microflex mass spectrometer and the standard software package (MALDI Biotyper 2.0) three types of analysis were performed: dendrogram generation, subtyping and composite correlation index.

RESULTS

All three methods correctly differentiated the outbreak strains from epidemiologically unrelated strains. However, relationships between the members of the outbreak group differed from method to method.

CONCLUSION

MALDI-TOF MS looks like a promising tool for outbreak investigations.

PRESENTER: BURCKHARDT

20090216

Session: B1.3

Track: Public health methodology and new approaches

Disease Detectives: The Board Game

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BACKGROUND

Playing games is one of the primary means of learning for humans and other mammals. 'Reality' gets simplified down to a level that is less dangerous and more manageable in time. Most people can remember the games they played during childhood (we do not know about other mammals).

METHODS

'Disease Detectives: The Board Game' puts the three child detectives Lucy, Michael and Thomas in charge of an outbreak investigation near Broad Street, Lambeth district, London. Players have to cover the research areas of epidemiology, environmental investigation and laboratory testing and finish their investigation before the looming press conference. They have to show tactical skills and teamwork, allocate resources, schedule priorities and compete with other players under time pressure. Players build up experience and can acquire special abilities. Event cards are (mostly) based on true events and enhance reality immersion (although similarities to living persons is purely coincidental). Knowledge cards can be included for players with an epidemiological background.

RESULTS

'Disease Detectives: The Board Game' was designed to make the complex issue of outbreak investigations accessible for a larger, non-scientific audience in a playful manner and to create subliminal memory hooks in order to influence future career choice.

CONCLUSION

Play and enjoy.

PRESENTER: BURCKHARDT

20090119

Session: B1.4

Track: Public health methodology and new approaches

Spread of *Staphylococcus aureus* in a nursing home; prospective network study with social network methods and biological assessment

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BACKGROUND

Infections spread by social contacts. *Staphylococcus aureus* (SA) is a micro-organism which can cause serious infections, especially in the vulnerable group of elderly living in crowded settings of long term care facilities (LTCF).

METHODS

We conducted a prospective cohort study among personnel and residents of three wards in a LTCF in The Netherlands, October through November 2008. The aim was to identify spread of SA in social contact networks by gathering social and biological network data. (1) Personnel registered hygiene practices and amount and intensity of their contacts with residents and colleagues for one to four subsequent days. Group activities among residents and visits from relatives and friends were registered. (2) At week 0, 1 and 5 biological material from nose and hand was taken. Molecular typing will be done on positive samples. To identify contact patterns and hygiene practices, SA carriage and their relation, we used social network analyses methods (UCINET), and epidemiological methods including (logistic) regression analyses.

RESULTS

Response was high; 91% (71 staff, 60 residents) were biologically tested and 87% reported their contacts. SA persistent carriage was 30% in nose and 17% on hands. Transient carriage was 18% in nose and 26% on hands. One MRSA was found. Analyses reveal dense contact patterns with several persons serving as bridge persons between the wards. Results from SPA typing will detail the role of specific contact patterns in SA spread. Few risk factors were identified, also indicating relatively uniformly distributed infection patterns. Longitudinal analyses are underway.

CONCLUSION

Combining social and molecular network data will reveal unique and important insight in transmission patterns and can be used to construct a model for infectious diseases spread in LTCF.

PRESENTER: DUKERS-MUIJERS

20090065

Session: B1.5

Track: Public health methodology and new approaches

Contribution of Laboratory Data and the Role of Communicable Disease Notification Committee in Improving Notifications in Ege University Hospital

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BACKGROUND

Laboratory surveillance does not exist for most notifiable communicable diseases in Turkey. In a previous study using laboratory data, serious undernotification by clinicians was found in Izmir, like 12.1% of hepatitis B, 25.9% of syphilis, 31.6% of hepatitis A and 31.8% of brucellosis cases notified in 2003. Lower ratios were obtained for our hospital. A Communicable Disease Notification Committee was established in the hospital in July 2007. Our aim was to evaluate the contribution of laboratory data into notifications and the role of the committee in improving clinicians' notifications in Ege University Hospital in January 2007 - July 2008.

METHODS

The study is an operational study with two interventions: 1. Finding cases of notifiable disease using serology laboratory data and notifying them, 2. Trying to increase clinicians' notifications by making feed-back to clinics through committee meetings. The numbers and ratios of cases notified before and after the interventions have been compared with chi-square test.

RESULTS

The ratio of cases notified from Ege University Hospital among notifications from all facilities in Izmir has increased from 0.6% to 8.5% (20 cases in 2006 vs. 150 in 2007, $p=0.0000$). This ratio significantly increased for brucellosis, mumps, measles, syphilis, hepatitis A, B, C. Clinicians' notification rate has increased by 12 times, from 1.3% to 15.4% ($p=0.0000$). Clinicians have notified brucellosis, hepatitis A and B significantly more. Clinics that had not notified before have started to notify and there was an increase in the types of diseases notified.

CONCLUSION

Laboratory data have made an important contribution to notifications. Committee meetings have been effective in improving clinicians' notifications. Surveillance based on laboratory data and feed-back to clinics about cases they did not notify could provide a solution to the serious undernotification problem in Turkey.

PRESENTER: DURUSOY

20090168

Session: B1.6

Track: Public health methodology and new approaches

The use of a web based decision support system in the management of an outbreak of E.coli O157 in England

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BACKGROUND

2 cases of E.coli O157 came to the attention of a local Environmental Health Department (Bradford) in May 2007. Prompt investigation showed that both cases had purchased meat products from the same butcher. By the following day, 11 more cases emerged. Over the next 11 days, a total of 52 people in the area had been investigated for an acute gastro-enteric infection. 3 people died and one young person developed haemolytic uraemic syndrome.

METHODS

Three main strands of investigation and management were instigated. 1. Environmental Health Officers inspected the premises assessing all aspects of meat handling and collected samples for microbiology. 2. Local doctors were made aware of the outbreak and asked to report any suspected cases. 3. Data was systematically collected and entered onto HPZone - a web based decision support system for infectious disease control, which facilitated the detection of related cases, collation of laboratory data, undertaking of dynamic risk assessments and display of the geographical distribution of cases around the implicated butcher's shop.

RESULTS

32 people fully met the case definition used for this outbreak with E.coli O157 isolated from faecal samples, symptoms of gastro-enteric upset. All had consumed meat from the same butcher. HPZone has facilitated a very timely integrated and multi-disciplinary response based on good quality and contemporaneous epidemiological data which prompted appropriate actions.

CONCLUSION

Experiences gained from this outbreak demonstrated the value of HPZone which coupled with good environmental health and health protection practice resulted in the prompt bringing to an end of a serious outbreak.

PRESENTER: SCHWEIGER

20090041

Session: B1.7

Track: Public health methodology and new approaches

Oral polio vaccine out of the cold chain - a possible practice for vaccination campaigns?

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BACKGROUND

Vaccines are heat-sensitive and recommended to be stored under low temperatures (2-8°C). Assuring this continuous "cold chain" constitutes an operational challenge, especially in settings where resources, electricity and equipment are scarce. The Oral Polio Vaccine (OPV) vial comes with a vaccine vial monitor (VVM) that monitors cumulative heat exposure. It indicates whether the vaccine has been exposed to excessive temperature over time and whether it is likely to have been damaged. We aimed to investigate the feasibility, benefit, and safety of OPV kept out of the cold chain (OCC) i.e. without icepacks.

METHODS

We did a crossover intervention trial during the latest polio vaccination campaign in Mali. Thirty-nine vaccination teams in four out of six areas of the Sinkasso district participated in the study. Vaccination activities comprised cold chain and OCC conditions for OPV on alternating days. The temperature in and outside the vaccine-carriers was continuously registered, information on VVM status, daily vaccine-handling practices and perceptions of OCC were collected through questionnaires.

RESULTS

A total of 14,913 children were vaccinated in the study area, 53.1% of these with OPV kept OCC. On average, daily activities lasted 6.8 hours; the ambient temperature was 25-40°C with a mean of 27°C. No VVM reached the discarding point during vaccination activities. Eighty-nine percent of participants preferred the OCC procedure due to weight reduction, work facilitation and cost and time reduction.

CONCLUSION

We conclude that under certain conditions OPV can be kept OCC without being damaged despite high ambient temperatures. OCC can be an adequate alternative in campaign settings. It should also be further explored for routine use as a potential to relieve the cold supply chain in view of new vaccine introductions.

PRESENTER: HALM

20090015

Session: B1.8

Track: Public health methodology and new approaches

Evaluation of serological methods used in European countries for the detection of diphtheria anti-toxin antibody in seroepidemiologic investigations

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BACKGROUND

Immunity against infections caused by toxin-producing *Corynebacterium diphtheriae* depends primarily on the presence of specific antibody directed against the diphtheria toxin. Routine serological diagnostics of immunity to diphtheria in European countries is still based on a variety of different methods. In an effort to evaluate the results obtained in different countries and to compare the different serological methods for the detection of anti-toxin antibodies the Diphtheria Surveillance Network undertook an External Quality Assurance study.

METHODS

A standard panel of 150 sera was tested by eleven participating laboratories from ten different countries using at least one in vitro assay of their choice between five different methods and six different commercial ELISA. The data produced from the participating laboratories have been compared using different statistical approaches with the results obtained from the VERO neutralization cell assay (reference test, NT) in the reference centre.

RESULTS

Comparison of results showed that none of the in vitro immunoassay tested showed a full interchange ability with the VERO cell assay. The diagnostic accuracy of some methods was below 80% and although routinely used in laboratories overall Europe, many of the commercial ELISA kits are not suitable to assess the correct titre of the sera, especially when it is a low titre serum.

CONCLUSION

Our inter-laboratory analysis suggested that some of these methods are still not accurate enough for routine usage. In particular the ELISA kits can be used only for screening purposes, sera with a concentration of IU/ml lower than 0.1 should be confirmed by NT. Thus far, the dDA-DELFI and DAE, despite the difficulties to implement, remain the in vitro immunoassays that better correlate with NT.

PRESENTER: NEAL

20090181

Session: B1.9

Track: Public health methodology and new approaches

Mathematical analysis of malaria disease transmission model with waning immunity and optimal control applications

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BACKGROUND

Malaria is still a major cause of mortality and morbidity in the tropical and subtropical areas of the globe, where around 200 million persons are at constant risk of infection, with some parts of Africa being the worst affected.

METHODS

We consider and analyse a deterministic malaria disease transmission model using the two incidence law (mass action and standard incidences) and apply stability analysis theory to find the conditions in which the disease free is asymptotically stable. We applied optimal control methods by formulating an appropriate cost function to the model and then used the Pontryagin's Maximum Principle to solve the optimal control problems

RESULTS

Mathematical analysis in the first part shows that backward bifurcation in the mass action model is induced by the vaccination, the standard incidence model exhibit backward bifurcation. Analysis shows that these combined strategies can effectively slow down the development and transmission of malaria in a community. The optimal control shows the results of optimal control vaccination and treatment in infected humans with Malaria. The importance of the combined strategies in reducing the number of actively infected humans with Malaria was further emphasized by the results. The results further show that vaccination policy combined with treatment will be optimal in eradicating the disease

CONCLUSION

i) The model in addition exhibits the phenomenon of backward bifurcation, where a stable disease free equilibrium co-exists with a stable endemic equilibrium for certain parameter values when $R_0 < 1$. We further find the conditions for the eradication of the disease in the existence of an efficient vaccine
ii) the results show that a possible vaccination combined with effective treatment regime would result in a significant reduction in the spread of Malaria

PRESENTER: OKOSUN

20090164

Session: B2.1

Track: Epidemic intelligence activities

An investigation into the potential of social networking sites to predict disease outbreak

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BACKGROUND

Epidemic Intelligence (EI) is being used by public health authorities to gather information regarding disease activity, early warning and infectious disease outbreak. EI systems such as the Global Public Health Intelligence Network (GPHIN), Medysis and Promed systematically gather official reports and rumours of suspected outbreaks from a wide range of sources to identify information about disease outbreaks. A potential improvement to these systems is to analyse people's online behaviour, as demonstrated by Google's Flu Trends research that has estimated flu activity via aggregating online searches relating to flu.

METHODS

The increase in user-generated content on the web via sites such as Facebook, MySpace, del.icio.us, last.fm and Flickr provides EI systems with a highly accessible source of real-time online activity. One of these services, Twitter, a micro-blogging service that allows people to post and read other users' short messages, called "tweets", currently has over 15 million unique users per month. We have conducted a study, which collected over 500,000 tweets during May and June 2009, which contained the word "flu".

RESULTS

We found that there were around 2,000 users who posted messages containing the phrases "I have flu" or "I have the flu" and a number who included their location in their profile as well as their real name (as opposed to their user name). We then investigated whether those users were registered on other social networking sites such as MySpace and found that 76% of those usernames were found on one or more of eight other websites.

CONCLUSION

We conclude by discussing what level the related activity on those sites can also be used to predict, detect and explain disease outbreak.

PRESENTER: KOSTKOVA

20090103

Session: B2.2

Track: Epidemic intelligence activities

The Improvement Of The Early Warning and Response System

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BACKGROUND

This pilot project is implemented in three cities to detect and control diarrhoeal illnesses in the early stages. The aim of the project is to develop an applicable EWRS that can be implemented throughout the country

METHODS

Research is report of the diarrhoeal illnesses that were indicated in between 01/08/2008 - 01/10/2008. The weekly cases were calculated by moving averages of three week time in the same period of time in 2007. Then the results were converted to daily counts after adding 10% of the average of weekly counts. The daily case counts with ICD10 code were collected. Having analysed the data in SPSS 15.0, pearson's correlative statistics were done. 4 phases of EWRS Precautions Warning Early Detecting Response

RESULTS

140 warnings in Kocaeli, 91 warnings in Trabzon have been recorded. According to the findings, these were not epidemic cases. 206 warnings were recorded in Malatya. The incidence was 0.2-23.2 per 1000 population/week. The incidence of the invasive E.coli outbreak which was experienced in Battalgazi was 22.1 per 1000 population/week. With the help of the EWRS, the risk of epidemi was determined 18 days in advance, then retrospectively EARS_X programme has statistically confirmed the case as an "epidemi". It was also confirmed that there was a statistical significant relationship between the weekly measured amount of chlorine residue and the warnings with pearson's correlation. ($r = 0,45; p < 0,001$).

CONCLUSION

Because of the high sensitivity and lower specificity in determining threshold, too many false alarms were recorded, it caused more workload. The epidemic attack was confirmed in a single region by measurements of phase 2. It is suitable to generalize 4 based algorithm however it is recommended to use programs such as EARS-X, Sat-Scan for the threshold

PRESENTER: GOKTEPE

20090189

Session: B2.3

Track: Epidemic intelligence activities

The use of International Epidemic Intelligence to guide public health decisions during the A(H1N1) crisis in France, April 21 - July 1, 2009

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BACKGROUND

On April 21, 2009 signals regarding the occurrence of two human cases of Novel A(H1N1) virus (A(H1N1)v) in the United States were detected through routine International Epidemic Intelligence (IEI) activities. On April 24, the IEI team described a suspected link between the ongoing Mexican influenza epidemic and seven Novel A(H1N1)v confirmed cases in the United-States. Following this alert, a Novel A(H1N1)v multidisciplinary crisis situation team was implemented at InVS. From April 24 to July 1, within this crisis team, the specific objectives set for the IEI team were to describe the trends and dynamics of the epidemic and to qualify the morbidity and severity of the disease in order to assist French decision-makers and international partners in adapting case definitions and control measures.

METHODS

Hence, the IEI team adapted its routine methodology. It progressively shifted from event detection to international monitoring of national surveillance systems. The process included detection of new countries affected; validation and confirmation of the signals through different international networks; analysis of trends and specificities of the A(H1N1)v epidemic and case characterisation; communication to decision-makers and various national and international institutional partners. Data and analyses were communicated through recommendation messages, daily situation reports and scientific notes on InVS' website.

RESULTS

From April 25 to July 1, a total of 92 daily situation reports in French and in English and six scientific notes were released. The French case definition was updated ten times, including new countries where community transmission had been described.

CONCLUSION

The coming influenza seasons and the threat of a second wave of the A(H1N1)v pandemic constitute new challenges for the French IEI with a special focus on countries endemic for avian influenza A(H5N1).

PRESENTER: DEGAIL

20090256

Session: B2.4

Track: Epidemic intelligence activities

Epidemic intelligence activities during the Beijing 2008 Olympic Games

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BACKGROUND

Mass gatherings (MG) represent a public health challenge. The 29th Beijing Olympic Games (BOG) (August 2008) was one of the largest international MGs. The European Centre for Disease Prevention and Control enhanced epidemic intelligence (EI) activities around the BOG to ensure rapid detection of potential public health threats to European Union citizens.

METHODS

We defined a public health event associated with the BOG as an event which could lead to public health threats for those travelling to China during the BOG or that could spread to other when returning to country of origin. We collected and verified events by screening websites in Chinese and European languages, using internet scanning tools and contacting with different stakeholders. A meeting was held daily during the BOG to review collected events and take decision on further actions.

RESULTS

We monitored 26 public health events associated with the BOG including single cases or clusters of cases of specific infectious diseases. Of those, 24 (92%) were verified, including 5 events regarding food poisoning and 3 events regarding dengue fever. No infectious disease outbreaks that had a direct impact on the BOG were identified. Twenty-one (81%) monitored events were captured from sources in Chinese language.

CONCLUSION

The EI activities had captured public health events associated with the BOG, which had high proportion of verification. Although no major events occurred in China during the BOG, the EI activities had the sensitivity to capture a large number of minor events which ensured rapid detection of potential public health threats. The screening of sources in Chinese contributed to the EI activities during the BOG. The experience of the EI activities during the BOG will be useful for future similar MGs.

PRESENTER: CAI

20090174

Session: B3.1

Track: Outbreaks

Recurrent *Candida albican* infection among female students in a dormitory in Adventist Technical Secondary school in Ebem-Ohafia Nigeria

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BACKGROUND

On 22/06/09 the management of Adventist Technical Secondary School Ebem-Ohafia sought the assistance of the Abia state ministry of health to identify the cause of recurrent vulvo-perinea itching and vaginal discharge among female students housed in the school dormitory for the past four years. A descriptive study of the outbreak was carried out.

METHODS

We carried out case search, Key informant interview and hospital record review at Mbem Specialist Hospital and Ohafia General Hospital both in Ohafia. Due to ethical concern we could not interview the students directly.

RESULTS

Only female students were affected and they were all aged 10 - 17 years. Newly admitted students were also affected. First case was in 2005 and there after virtually all the students continue to have the symptoms while in school. Of the 184 current female students in the dormitory, 120 (65%) had received treatment for vulvo perinea candidiasis more than twice this year at Mbem hospital and 50 (27%) other visited Ohafia General Hospital for similar complaint. About 20 female non students who worship regularly in the school chapel have had similar symptoms. *Candida albican* was isolated as the causative organism. The toilets facilities in the dormitory were unhygienic and shortage of water in the school premises makes it impossible to flush the toilet after use.

CONCLUSION

The toilet facility was the source of the outbreak and *C. albican* the causative organism. All the affected female worshipers at the school chapel had used the same toilet facilities in the school. Poor water supply also reduces the level of personal hygiene. The students were treated, health educated and availability of water enhanced so that toilets can always be flushed.

PRESENTER: AKHIMIEN

20090154

Session: B3.2

Track: Outbreaks

Large long-lasting monophyletic outbreak of Hepatitis A occurred in 2008-2009 in Rome, Italy, involving HIV-infected men who have sex with men

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BACKGROUND

Hepatitis A outbreaks among men who have sex with men (MSM) have been reported in Europe, but the extent of HIV coinfection in these outbreaks is not known.

METHODS

Between 01/07/2008 and 30/04/09, 121 cases (104 males) of hepatitis A were reported at our institution in Rome, Italy, representing a fourfold increase compared with the previous 10 months. Median age was 36 (range 19-84yy). The high male-to-female ratio (M:F=6.1) indicated the possibility of an ongoing outbreak among MSM, thus we performed a phylogenetic analysis, using Neighbor-Joining method, based upon the VP1-2A junction of HAV genome

RESULTS

To date, HAV isolates from 35 patients (30 males) have been sequenced. Phylogenetic analysis shows one large monophyletic cluster (genotype 1A), including 2 females and 26 males. Among males, 73% (19/26) reported having sex with men (MSM). One woman was a close contact of a HAV infected person and the other reported only raw shellfish consumption. Eleven/28 (39.3%) patients, all MSM, were HIV-positive, one with concomitant HIV and HAV acute infection. Other 7 HAV isolates (4 males) appeared not phylogenetically correlated with the cluster: 6 were genotype 1A and 1 was genotype 1B (woman coming from Siria). None of these patients reported same gender sex and only one female, reporting intravenous drug use, was HIV positive.

CONCLUSION

Our results show a large and long-lasting (≥ 8 months) monophyletic outbreak of hepatitis A occurred in Rome since July 2008, that probably is still ongoing, involving high proportion of HIV-infected individuals. Association of HIV and HAV acute infection is poorly described so far. Factors favouring HAV spread among HIV-infected persons, such as high risk behavior and prolonged fecal excretion, need to be further elucidated.

PRESENTER: CAPOBIANCHI

20090079

Session: B3.3

Track: Outbreaks

Mumps outbreak in school P, Nonthaburi province, June-September 2008

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BACKGROUND

Mumps outbreak in School P was investigated during 29th August - 8th September 2008. The objectives were to verify diagnosis and outbreak, to describe epidemiological characteristics of the outbreak, to give prevention and control measures and to evaluate vaccine efficacy in this school.

METHODS

Descriptive study was performed. Suspected case was defined as student or teacher who had swelling and/or tenderness of salivary glands during 1st June-30th September 2008. Data collections included review vaccine logbooks and interview the suspected cases about demographic data, signs and symptoms, risk behaviors, past mumps history. Blood samples were collected from suspected cases in grade four and six for mumps IgM ELISA.

RESULTS

There were 46 suspected mumps cases in school P. A case developed orchitis. Forty-five cases were students. Median age was seven year olds (range 5 - 12). Six from 15 clinical specimens were seropositive for mumps IgM. Most of the cases had symptom of salivary gland swelling (93.5%), tenderness of salivary gland (84.8%), and fever (82.6%). Of all cases, 57% did not have previous history of mumps, 53.3% shared drinking glass, and 11% took school bus. MMR vaccination history among kindergarten was reviewed. The vaccine effectiveness was 60%.

CONCLUSION

This is mumps outbreak confirmed by mumps IgM positive. Case isolation and supplementary immunization were implemented to control the outbreak. Low vaccine efficacy was found in this setting.

PRESENTER: JONGCHERDCHOOTRAKUL

20090149

Session: B3.4

Track: Outbreaks

A Rubella Outbreak in Austria 2008-2009

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BACKGROUND

In Austria, rubella has been a notifiable disease since 2007. A nationwide two-dose measles, mumps and rubella (MMR) vaccination programme was introduced in 1994. A cluster of 32 rubella cases occurred between October 2008 and February 2009 in Styria and Burgenland. In these Austrian provinces, no rubella cases had been reported since February 2007.

METHODS

An epidemiological investigation was conducted to describe the cluster by time, place and person. A confirmed outbreak case was defined as a person (1) with a febrile generalised rash illness, who was laboratory confirmed or epidemiologically linked to a laboratory confirmed case and (2) who fell sick after October 15, 2008 in the affected provinces. A probable outbreak case was defined as any person meeting the clinical criteria and the criterion 2 of a confirmed outbreak case. All cases were telephone interviewed on demographics and vaccination status.

RESULTS

A total of 328 outbreak cases (including 231 confirmed cases) occurred in Styria (n=315) and Burgenland (n=13) from mid-October until end of June peaking mid-March. The two most-affected age groups were 15-19 years (44%) and 20-24 years (32%). Of the 133 (40.5%) female cases, a laboratory-confirmed rubella infection in one pregnant 18 year old native Austrian resulted in voluntary abortion. The vaccination status was available for 233 cases; 29 (12%) cases received one MMR vaccine dose. No cases had received two doses.

CONCLUSION

Similar vaccination coverage (11%) was observed in the measles outbreak in Austria, 2008. Comparable to the measles outbreak, the age shift in this rubella outbreak to >10 years indicates that age-group targeted vaccination activities are needed to achieve the 2010 target for measles and rubella elimination in the WHO European Region.

PRESENTER: KASPER

20090003

Session: B3.5

Track: Outbreaks

A foodborne outbreak of norovirus gastroenteritis in Porto, Portugal

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BACKGROUND

An outbreak of acute norovirus gastroenteritis was detected and epidemiologically linked to a Christmas dinner reunion of 22 recent graduate students in a restaurant in Porto, Portugal.

METHODS

A retrospective cohort study was carried out using online standardized questionnaires in order to assess the full extent of the outbreak, to identify the possible source, mode of transmission and causative agent. Primary and secondary cases were identified and the odds ratio for each food item was calculated. Stool and emesis samples were obtained from two primary cases. Stools were tested for enteric bacteria and parasites according to standard procedures, examined for rotavirus and adenovirus by a commercial immunoassay, and tested for GI and GII norovirus by conventional RT-PCR followed by sequencing and phylogenetic analysis.

RESULTS

The response rate to the online questionnaires was 96%. The outbreak met all 4 Kaplan criteria and the attack rate was 76%. Soup and lettuce salad were identified as the most likely sources of infection among primary cases (Risk Ratios of 1.63 and 1.31, respectively). Three secondary cases were reported with person-to-person the most likely mode of transmission. Norovirus GI.4 was detected in both stools and emesis samples of two primary cases.

CONCLUSION

Contamination of soup or lettuce salad was the most probable source of this norovirus outbreak. Our investigation demonstrates the multiple routes of transmission of norovirus starting with foodborne exposure followed by secondary spread via the person to person route. To our knowledge this is the first study identifying norovirus as the causative agent of a foodborne outbreak in Portugal.

PRESENTER: MESQUITA

20090076

Session: B3.6

Track: Outbreaks

Outbreak of Hepatitis A in Northern Ireland among men who have sex with men, October 2008-May 2009

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BACKGROUND

Hepatitis A is a notifiable disease in Northern Ireland. Zero to seven cases of hepatitis A have been reported annually since 2004 to CDSC (NI). Thirteen cases were reported in MSM between week 40/2008 and week 1/2009. An outbreak control team was formed to start enhanced surveillance activities and control measures.

METHODS

A case was defined as a NI resident with positive IgM anti-HAV since October 2008. Questionnaires seeking significant environmental exposures were completed by Environmental Health Officers and sexual risk behaviours by Genito Urinary Medicine clinics. STI comorbidity data were collected and samples submitted for HAV genotyping.

RESULTS

Thirty-nine cases, 92% males and 69% MSM, were reported until May 2009. Seven of sixteen had sexual contact in the two months before becoming ill. Two Syphilis, one Gonorrhoea associated with HIV infection and three Non-Specific-Urethritis were newly diagnosed STIs in six of the cases. Two female cases were household contact of an MSM case and sexual contact of heterosexual male frequenting gay venues. The genotype IA outbreak strain has not been previously seen in the UK. The number of reported hepatitis A cases decreased to two in May 2009.

CONCLUSION

In Northern Ireland hepatitis A is mainly a sexually transmitted disease, MSM associated. The present outbreak crossed over MSM community limits. Careful descriptive epidemiology and virological genotyping data were of great importance in understanding transmission from MSM to general population. Early control measures: prompt vaccination of contacts, outreach activities at gay venues and ongoing HAV and HBV vaccination of cases at GUM clinics, appear to have contained spread to limited person to person in the MSM community.

PRESENTER: SFETCU

20090143

Session: B3.7

Track: Outbreaks

Foodborne gastroenteritis outbreak in a restaurant caused by Salmonella enteritidis in tiramisù

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BACKGROUND

A gastroenteritis outbreak among 25 persons (21 ill/4 non-ill) was investigated.

METHODS

A retrospective cohort study was performed using a standardized questionnaire about sex, age, risk factors (e.g. 15 food items, drinks) and disease characteristics. Case definition: diarrhoea (3 loose stools) 6-72 hours after dinner. Ten stools and 7 different food samples were tested for Campylobacter, Salmonella, Yersinia and Shigella.

RESULTS

Questionnaires were completed one week after the restaurant meal by 19 persons (response rate 76%), 63% male, average age 46 (range 31-56). The attack rate was 95% (18 cases). All cases mentioned tiramisù consumption, whereas the non-case did not, resulting in a RR>18 for tiramisù, varying from 0.7-1.3 for other food. Later it became clear that none of the 4 non-ill had eaten tiramisù, and all 21 ill had. Symptoms were 100% diarrhoea, 72% headache, 67% fever, 11% vomiting, 6% blood in stool. Mean incubation time was 36 hours (range 10-64), 4 visited their GP, 3 took symptomatic medication. Stool culture and typing (6 cases/1 non-case) identified Salmonella enteritidis phage type 21 in 83% (5 cases), being also isolated from tiramisù.

CONCLUSION

This comprehensive outbreak study showed a point source infection with Salmonella enteritidis phage type 21 transmitted by tiramisù containing raw eggs. Each egg is potentially contaminated with Salmonella. Therefore, sufficient heating or pasteurization is highly recommended. In Europe Salmonella enteritidis is among the most common serotypes: phage type 4 was most identified in 1998 (21630 cases, 61.8%), decreasing to 8794 (32.1%) in 2004, replaced by 1, 8, 14B, 21, the latter one being associated with eggs/poultry and increasingly seen in The Netherlands. Recognizing and investigating Salmonella outbreaks is important to identify trends and take prevention measures.

PRESENTER: TER WAARBEEK

20090108

Session: B3.8

Track: Outbreaks

Outbreak of hepatitis A among men who have sex with men in Barcelona, Spain

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BACKGROUND

Between September 2008 and July 2009, 285 cases of hepatitis A were reported in Barcelona representing a threefold increase compared with the same period in previous two years. The majority of the cases occurred in adult men, and most of them reported having sex with men (MSM) as a factor of risk. This indicated the possibility of an outbreak among MSM collective. The outbreak is still ongoing.

METHODS

Case definition: man over 18 years, MSM, resident in Barcelona, with symptoms onset from 1 September 2008 and laboratory confirmation. A questionnaire with questions on sexual behaviour was used.

RESULTS

From 1 September 2008 to 2 July 2009, 285 confirmed cases were reported. Of those, 268 (94%) were older than 18 years, and 238 of them (83% of the total) were men. Of the 238 adult males, 211 were interviewed. 174 auto reported as MSM and 37 as heterosexual. 174 persons fulfilled case definition. Median age was 34 (IC 95%: 33-36) years. Thirty-eight (22%) were HIV-positive. Mean number of sexual partners was 3 (IC 95%: 2-4) and 36 (20%) visited bathhouses. The virological analysis showed HAV genotype IA in sera from 14 patients. Control measures: Vaccination and gammaglobuline was offered to contacts. E-mail alerts were sent to the reporting centres. Information was transmitted to Gay organisations and published on some gay websites. Recommendation for vaccination were strengthened by distributing fliers and posters in pharmacies, GP offices and gay locals. The vaccination program for hepatitis A and B in gay bathhouses, which has been working since 2004, was reinforced.

CONCLUSION

Vaccination of MSM is crucial in preventing future outbreaks. Information campaigns and immunisation programmes which effectively reach the MSM community are needed.

PRESENTER: TORTAJADA

20090102

Session: B3.9

Track: Outbreaks

Outbreak investigation in two groups of bus passengers with gastro-enteritis travelling from Germany to Holland in February 2009

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BACKGROUND

In February 2009, an outbreak of gastroenteritis occurred in two groups of Dutch bus passengers (A and B), travelling back from Germany to The Netherlands. Their journey started 9th and 11th February, respectively. Both groups visited the same hotel, initiating an outbreak investigation.

METHODS

A retrospective cohort study was performed among 87 passengers using a self-administered questionnaire assessing illness, food-intake and contact with ill travelers. Microbiological investigation was performed to confirm the causative pathogen. Cases were defined as ≥ 1 time of diarrhea and/or ≥ 1 time of vomiting within 24 hours. We distinguished early and late cases, with symptoms starting within or after 72 hours of arrival in the hotel, respectively. Relative risks including 95% confidence intervals (95%CI) were calculated.

RESULTS

The response rate was 75/87 (86%), including 36% men and 64% women with a mean age of 65. Norovirus genotype II.4 was detected in 2/2 bus A and 2/2 bus B passengers tested. Overall attack-rate was 28/75 (37.3%). Attack rate among early cases was 29% and 22% in bus A and B, respectively; and among late cases 29% and 34%, respectively. Risk of becoming a case was not associated with food, however, when distinguishing early cases in group B, univariate analysis revealed potential risk from drinking juice on day of arrival (juice at lunch RR 3.88; [95%CI: 1.28-11.70], dinner RR: 5.45; [95%CI: 1.64-18.14]). No clear association was found with visiting toilets or contact with ill travelers.

CONCLUSION

This outbreak is probably caused by juice which was served in large containers with a tap for self-service, with person-to-person transmission taking over. The role of either contaminated juice or contact with a contaminated juice container is to be discussed.

PRESENTER: VISSER

20090166

Session: B3.10

Track: Outbreaks

An outbreak of gastroenteritis among visitors to a Norwegian wildlife reserve: challenges in attempting to identify the vehicle of infection

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BACKGROUND

In March and April 2009, the Norwegian Institute of Public Health was notified about two groups of schoolchildren with gastroenteritis following a stay at a wildlife reserve.

METHODS

We performed a retrospective cohort study among the schoolchildren visiting the reserve in week 11 and 13 to identify the potential outbreak vehicle. A web-based questionnaire was distributed by email. A case was defined as a person with diarrhoea or at least two of the following: vomiting, nausea, abdominal pain, fever, and duration of illness >1 day and onset of symptoms during the visit the reserve in March 2009 or two weeks afterwards; or presence of *Cryptosporidium* in a faecal sample. Local food safety authorities inspected the premises, sampled food, water, animals.

RESULTS

We received 118 replies; 51 cases were identified. *Cryptosporidium* was detected in 9/12 (75%) patient stool samples and in 2/15 employees. One helped in the kitchen slicing bread, cutting carrots for breakfast also assisted in preparing dinners. No single food-item could be identified as a risk-factor. Pathogens were not detected in water samples in week 12 were free of pathogens. *Escherichia coli*, but not *Cryptosporidium* were detected in water samples taken one month later. Problems with low-water-pressure were reported.

CONCLUSION

Although the vehicle for *Cryptosporidium* was not definitively identified, neither the food handler, nor water, nor contact with animals could be excluded as vehicle of infection. Additional complexity was caused by detection of more than one pathogen. Recommendation: We recommended to increase awareness about hand hygiene routines and staying away from work when ill among employees (especially food-handlers) and visitors. Additionally, boiling drinking water and checking for leaks and pressure problems in the water supply was recommended.

PRESENTER: RIMSELIENÉ

20090081

Session: B4.1

Track: Surveillance

Pilot Denominator Study for Virological Surveillance of Acute Respiratory Infections in the United Kingdom

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BACKGROUND

Viral respiratory infections contribute to excess mortality and morbidity in winter. In the UK, national surveillance systems provide virological and epidemiological data for community cases of influenza and respiratory syncytial virus (RSV). In addition, clinical specimens from patients hospitalised that yield positive results in tests for respiratory pathogens are forwarded to the Health Protection Agency (HPA), Centre for infections (CfI). However, there are no denominator data for the hospitalised cases and little information regarding other circulating pathogens is available. This study evaluated the feasibility of a denominator surveillance scheme for acute respiratory viral infections.

METHODS

From October 2008 to March 2009, the HPA laboratories in Birmingham, Cambridge, Leeds and Manchester extracted, from their information systems, a standard set of virological and epidemiological data for respiratory samples tested by PCR for influenza A and B viruses, parainfluenza virus, adenovirus and RSV. Descriptive analyses were done and weekly reports were sent to key stakeholders.

RESULTS

A total of 7421 samples were tested for respiratory pathogens; of those, 35% yielded positive results. RSV was the most commonly detected pathogen in young children (70%) and influenza viruses in the other age groups (56%). 5009 samples were collected from hospitalised cases, 841 of which were from intensive care units. Among the hospitalised cases, 66% were positive for RSV, 17% for influenza and 13% for adenovirus. Regional differences were noticed in the detection of viruses which may be explained by differences in PCR methods and/or in specimen origin.

CONCLUSION

The study provided additional information regarding hospitalised influenza cases and temporal patterns of circulating respiratory viruses. However, to allow further automation of the process, standardisation, and extraction of the data need to be improved.

PRESENTER: CALATAYUD

20090267

Session: B4.2

Track: Surveillance

Effect of PrP polymorphisms on the susceptibility to classical and atypical scrapie in the Italian sheep population

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BACKGROUND

Scrapie of sheep belongs to prion diseases. Polymorphisms of the prion protein (PrP), are the main determinants of sheep susceptibility either to classical (CS) and atypical (AS) scrapie. Current EU strategies for CS eradication are mainly based on breeding programmes aimed at increasing the frequency of resistant PrP genotypes in sheep populations. Herein, the genetic susceptibility to CS and AS of the Italian sheep population has been evaluated and discussed in light of the current breeding selection strategies.

METHODS

Odds Ratio (OR) point estimates were calculated to evaluate the risk of CS and AS associated to each PrP genotype. Scrapie cases (N=819) were identified by the national surveillance programme between 2004 and 2008. Control population included 17078 sheep from the National Official Registered Herdbooks.

RESULTS

Concerning CS, the ARQ/ARQ genotype was associated with the highest risk (OR=1), while the ARR/ARR and ARR/ARQ genotypes conferred strong protection (OR=0.002). As to AS, no case carrying the ARQ/ARQ genotype was reported in Italy; moreover, when compared to the ARR/ARR (reference), the ARQ/ARR genotype shows a protective effect against AS (OR=0.10). The AF₁₄₁RQ/AF₁₄₁RQ genotype resulted at highest risk for AS (OR=169).

CONCLUSION

Our results confirm the protective role of the ARR allele in CS and highlight the different host genetic target of AS and CS. In particular the ARQ/ARQ genotype seem to play an opposite effect against the two different scrapie strains. The effect of the current EU breeding programme on the occurrence of CS and AS in Italy must be evaluated considering the alternative genetic targets of CS and AS and that the ARR and the ARQ are the most frequent alleles in the Italian sheep population.

PRESENTER: CIARAVINO

20090007

Session: B4.3

Track: Surveillance

Survey of existing systems for monitoring excess mortality in Europe: A EuroMOMO initiative

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BACKGROUND

The EU project 'European monitoring of excess mortality for public health action' (EuroMOMO) aims to develop a routine public-health mortality monitoring system for detecting, in a timely manner, excess deaths related to public-health threats in Europe. As a first step, existing mortality monitoring systems must be identified.

METHODS

To map existing and planned mortality monitoring systems in Europe, a questionnaire was sent to reference persons in 32 countries, focussing on: data flow, specific data collected, timeliness, and geographic coverage.

RESULTS

Nine systems were identified in 7 countries: Belgium, Germany, France (n=2), Italy (n=2), Portugal, Spain, and Switzerland. All are managed by a health or statistics institute. All receive individual data. Data are provided by civil authorities (e.g., General Registrars Office) in all but one system. Four systems have national coverage. All systems record: gender, age, and date and place of death. Four systems collect data on climate and 2 on influenza. Most systems are rapid (range of median delay between death and registration: 4 hours to 10 days). The most common strong points were: timeliness; coverage; individual data, linkage with influenza and climate data; data quality; low cost; and ease of management. The most common weak points were: delay and lack of data on cause of death (collected by 1 system).

CONCLUSION

With nine operational systems (plus six pilot and three planned systems), the development of rapid mortality monitoring in Europe is in progress. The added value of pooling the data from these systems needs to be explored, and common analytical methods to make outcomes from the different systems comparable need to be applied. These issues will be addressed by EuroMOMO, and countries for a pilot study will be identified.

PRESENTER: CONTI

20090182

Session: B4.4

Track: Surveillance

Workforce analysis for the Surveillance and Control of Communicable Diseases in Provinces of Turkey

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BACKGROUND

As part of a recent project to strengthen epidemiological surveillance and control of communicable diseases system in Turkey, a workforce analysis of the Ministry of Health's provincial health directorates was conducted. The aim was to determine some characteristics of the managers and staff working in communicable disease departments.

METHODS

A survey questionnaire was prepared for this descriptive study and sent to all 81 provinces of Turkey in summer 2007. Responses were received from 78 provinces (96% coverage). Main topics included sociodemographic characteristics, profession, position, trainings undertaken, working years and reasons of leave.

RESULTS

Managers were mostly physicians: 97% for vice directors responsible for communicable diseases and 80% for chiefs of the communicable disease departments. Seven provinces had no chief. 58% of chiefs and 29% of vice directors had participated in a training of trainers and 7% and 1% had an EPIET-like training. 40% of chiefs were in that position for less than two years and 54% of vice directors less than three years. Only 23% of chiefs had worked previously as a staff in the department. A total of 518 staff and mean 6.7±4.4 staff were working in departments. 40% were health officers, 14% nurses, 11% midwives and 9% physicians. 38% were working for less than 3 years. Half of the physicians were working as temporary staff while most others were permanent. A shift to family medicine in the province has been an important factor in physicians' leaves.

CONCLUSION

Manager and staff turnover is high and this might be contributing to a lack of in-service training and experience in the field of communicable diseases. Some measures must be taken to prevent this turnover to effectively deal with surveillance and control.

PRESENTER: DURUSOY

20090138

Session: B4.5

Track: Surveillance

An evaluation of the surveillance system for influenza in Norway

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BACKGROUND

The Norwegian surveillance system for influenza was implemented in the 1970ies. In order to describe the system, assess its performance, and make recommendations for improvement, we evaluated both the epidemiological and virological part of the system.

METHODS

We used documents and the surveillance database, including weekly reports from the system, and interviewed staff at the Norwegian Institute of Public Health (NIPH) and selected external users. For the performance evaluation we concentrated on the attributes simplicity, flexibility, acceptability and timeliness.

RESULTS

Description: The surveillance system is run by NIPH and comprises two partly integrated systems. 201 sentinel GPs and emergency rooms, covering 15% of the population, mails weekly aggregated reports on influenza-like illness (ILI). Forty-three of these practices plus 36 others submit respiratory tract specimens from patients with ILI. Additionally, 22 laboratories report weekly aggregated numbers of confirmed influenza viruses and provide virus-containing specimens. A joint report is published every following week on the NIPH web site. Performance: Users find the system simple as the weekly reports are automatically generated from the electronic records. Almost 80% of the sentinel practices submit weekly reports on ILI. The sentinel practices seldom need to be replaced. Flexibility was demonstrated in 2007-8 when the system was used as basis for a study of the risk factors for and outcome of oseltamivir resistant influenza, and in 2009 when the system was prolonged through the summer in response to the pandemic

CONCLUSION

Norway has a reliable and flexible influenza surveillance system. However, better integration of the epidemiological and virological parts would ease administration and reporting and facilitate studies of vaccine effectiveness and validity of ILI diagnoses. Automatic collection of reports through Internet would make data timelier and less expensive.

PRESENTER: HAUGE

20090169

Session: B4.6

Track: Surveillance

Retrospective analysis of notified cases of infectious diseases in Western Greece

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BACKGROUND

The purpose of this study was to estimate the incidence of various infectious diseases and to investigate the completeness of notifications in the Region of Western Greece.

METHODS

Hospital records relating to infectious diseases were retrospectively collected from three major hospitals in the period 1999-2004 and compared to the records of the corresponding public health department (PHD).

RESULTS

After record-linkage and cross-validation a total of 1143 hospital documented cases were identified, of whom 707 were reported to the PHD, resulting in an observed under-notification of 38% during the six-year study period. In addition to the 707 cases reported to the PHD further 259 cases were notified by other sources, probably by office-based physicians or other hospitals, resulting thus in a total of 966 reported cases to the PHD. Taking into account both, the hospital documented cases (1143) and the additional 259 registered cases, the total number of notifiable cases was at least 1402 cases. Hence the average annual incidence was found to be at least 31,5 per 100000 population. Among the reported diseases the most common was meningitis (56,6%), followed by tuberculosis (9,5%), brucellosis (6,6%) and salmonellosis (6,2%). During the study period clustering of specific diseases was observed, indicating possible epidemics.

CONCLUSION

The study demonstrates increasing and descending trends for specific infectious diseases and furthermore a substantial underreporting in Western Greece. This leads to underestimation of the disease burden and from there to the loss of opportunities for early interventions. The notification system needs to be strengthened, in order to achieve appropriate prevention and control strategies, especially in the face of massive influx of immigrants and refugees from regions with high disease burden.

PRESENTER: JELASTOPULU

20090014

Session: B4.7

Track: Surveillance

Resurgence of group A streptococcal disease in England, 2008/09

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BACKGROUND

Elevated reports of invasive group A (*Streptococcus pyogenes*) streptococcal diseases above the seasonally expected during the winter of 2008/09 prompted a number of public health actions in England, including cascaded alerts to frontline medical staff and national enhanced surveillance.

METHODS

Enhanced surveillance of severe disease diagnosed from 1st January 2009 was initiated according to the following case definition: isolation of *S. pyogenes* from a normally sterile site or non-sterile site in combination with a severe clinical presentation. Preliminary results from the surveillance were analysed alongside microbiological profiles of isolates submitted to the national reference laboratory.

RESULTS

Between November 2008 and May 2009, 953 cases of invasive GAS infection were identified through isolate submissions, a 56% increase over the same period in 2007/08. Just over a fifth of cases were in children. A wide range of clinical presentations were identified, including pneumonia (8%), cellulitis (24%) and necrotising fasciitis (5%). Twenty-two per cent of patients died within 7 days of diagnosis, 13% in children <15y, 16% in adults 15-64y and 32% in patients over 64y. Case fatality rates varied over time, being highest in March (27%). Thirty-seven per cent of patients had no predisposing risk factors, with the remainder having a range of acute and chronic risk factors. Characterisation of isolates identified an increase in emm3, which constituted just over 60% of cases in January.

CONCLUSION

The epidemiological patterns of severe GAS infections, along with the substantial increases in scarlet fever, suggest the 2008/09 increase may be attributable to the emergence of a novel or unfamiliar strain in the population. The persistence of increased GAS activity during the emergence of swine influenza A (H1N1v) raises concerns for the coming season.

PRESENTER: LAMAGNI

20090176

Session: B4.8

Track: Surveillance

Evaluation of human papillomavirus infection and cervical cancer burden for evidence-based immunization in the North-West Russia

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BACKGROUND

Human papillomavirus (HPV) infection and cervical cancer (CC) are socially important challenges all over the world. HPV vaccines were introduced in several European countries. Prevalence of HPV infection in Russia wasn't investigated properly. To cover this gap, epidemiological studies was conducted in the North-West Russia.

METHODS

Patients referred themselves for medical care to gynecologists and skin and venereal physicians were recruited in the study. Total number of persons tested in Saint-Petersburg and Karelia was over 3,000 persons of both genders. PCR was used to test for HPV genotypes, real-time PCR was used for viral load detection. Both test-kits were approved by the Russian Ministry of Health. CC incidence rates in 1990-2008 were also analyzed.

RESULTS

HPV (16, 18, 31, 33, 35, 45, 56 genotypes) prevalence rates among women in 2002-2008 in Saint-Petersburg and Karelia were almost equal ($p > 0.05$). Males and females of 15-29 years was the main risk group. Prevalence of these genotypes in Saint-Petersburg varied from 26.3% in 2005 to 43.6% in 2008 ($p > 0.05$). Number of partners in females correlated with HPV prevalence rates. High oncogenic risk HPV patients were co-infected with other sexually transmitted infections (Chlamydia, Trichomonas, Gonococci) in 88.2%, anogenital warts were observed in 34.4%. CC incidence among young women has been increasing in the recent years. Among 30-34 years old females in Karelia incidence rates were 17 times higher in 2005-2007 in comparison to 1990-1992.

CONCLUSION

High burden of HPV infection and CC in the North-West Russia provide evidence for routine HPV surveillance and enhanced immunization programme.

PRESENTER: LYALINA

20090233

Session: B4.9

Track: Surveillance

Early Results of a Surveillance Program of Bloodstream Infections Associated with Short- and Long-Term Central Venous Catheter Use

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BACKGROUND

Programs that target surveillance have been effective in diminishing central venous catheter (CVC) related infections (CRI). We have initiated a surveillance program in our hospital for the prevention of CRI associated with short- and long-term CVC use, including the observation of current evidence-based recommendations compliance for catheter insertion (RCCI). We describe the early results after the first four months of program initiation.

METHODS

We studied prospectively all CVCs inserted between February and May 2009. Measures included the following: unit where the CVC was inserted, CVC characteristics (type, location, number of lumens), rate of infection per 1000 catheter-days, and isolated pathogen. We directly observed RCCI in a sample of catheter insertion procedures, collecting use of maximal sterile barrier precautions, hand hygiene and chlorhexidine skin antiseptics.

RESULTS

During the observed time period, 897 short-term and 95 long-term CVC were inserted. Short-term Catheters: median duration 7 days (range: 1 - 46); insertion site: jugular 49.9%, femoral 18.4%, subclavian 19.5%, Other 11.5%; there were 5.55 CRI per 1000 catheter-days (S. epidermidis 52%, other gram-positive 12.5%, gram-negative bacilli 28% and yeasts 7.5%). Long-term Catheters: median duration 104 days (range: 1 - 162); CVC type: Port-a-cath 33.7%, Hickman 32.6%, Permcath 32.6%; there were 0.23 CRI per 1000 catheter-days (Corinebacterium sp. and S. epidermidis). Of 44 CVC insertions observed during the time period, appropriate hand hygiene occurred in 96.6%, use of chlorhexidine in 10.3%, use of sterile gown in 76.0%, and sterile technique break in 20.0%.

CONCLUSION

The incidence of CRI in our hospital is similar to other hospitals in Spain, and there are significant areas for improvement. We anticipate a progressive decline in incidence with continued surveillance program implementation.

PRESENTER: MARTÍNEZ

20090211

Session: B4.10

Track: Surveillance

Trend evaluation of meningococcal disease and impact of vaccine strategy in children 1-4 years in Italy, 2000-2008

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BACKGROUND

In Italy, from 2001 to 2003 the first cause of meningococcal disease was *N. meningitidis* serogroup B (75% in 2001, 60% in 2002, 56% in 2003). In 2004, *N. meningitidis* serogroup C (Men C) prevailed with a peak of 63,3% of cases in children 1-4. Vaccination against MenC was recommended from 2003, by the National Vaccine Plan 2003-2005, leaving the decision and the implementation to the 21 regional Authorities. In this study we evaluate trends of meningococcal disease and the impact of the different regional vaccine strategies.

METHODS

Local Health Units report the regional and national institutions of cases of invasive meningococcal diseases. All cases have been confirmed by laboratories but only a part has been confirmed and subtyped by the National Reference Laboratory. Data on immunization coverage and vaccine strategies adopted by the regions have been taken from ICONA 2008 (birth cohort 2006), a national cluster sampling survey.

RESULTS

The data shows that since 2006 invasive MenC has decreased in favor of MenB. Incidence * 100,000 of MenC in the pre-vaccination period(2000-2005) is 0,63 and in post-vaccination(2006-2008) is 0,34. Incidence of MenB is constant over time (in average 0,55). In the country immunization coverage is 37% but, at regional level, it ranges between 8,4% to 84,3%.

CONCLUSION

The variability of regional vaccinal strategies makes difficult to analyze the data, but the importance of vaccination against MenC in reducing cases of meningococcal disease seems to be confirmed at the national level. A further improvement of surveillance and a more homogeneous vaccine coverage are a target for the next 3 years.

PRESENTER: MOLLO

20090128

Session: B4.11

Track: Surveillance

Results from a pilot surveillance programme of Intensive Care Associated Infections conducted in Scotland

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BACKGROUND

To evaluate the feasibility of carrying out surveillance of ICU acquired infection (ICUAI) in Scotland using the Hospital in Europe Link for Infection Control through Surveillance (HELICS) protocol and definitions, and an existing electronic system for data collection.

METHODS

Patient based surveillance comprising of HELICS Level 2 surveillance of Blood Stream Infections (BSI), Catheter Related Infections (CRI) and Pneumonia (PN 1-5) was piloted in five Scottish ICUs. ICUAI surveillance data were collected through a existing WardWatcher audit system which collected demographics, diagnoses and severity of illness scores. In consultation with Consultants in Intensive Care Medicine, Microbiologists and Infection Control staff WardWatcher was developed to facilitate the collection of the data items required for surveillance of ICUAI according to the HELICS protocol. The surveillance methods were evaluated by means of questionnaires that were sent to pilot ICUs to determine their experience with aspects of the study, including surveillance methodology, applicability of the HELICS protocol and definitions and the data collection system.

RESULTS

During the pilot period a total of 386 patients were admitted to 5 pilot ICUs, 199 patients stayed for two days or more. A total of 32 (16%) patients developed 44 episodes of infection according to the HELICS infection definitions Data collection using the existing electronic data collection system was simple and straightforward and the quality of the data was deemed to be acceptable by staff from the pilot ICUs.

CONCLUSION

Surveillance of infections acquired in ICU in Scotland using electronic data capture and the HELICS definitions for infection is a feasible process with a minimal requirement for additional staff resources.

PRESENTER: MULLINGS

20090175

Session: B4.12

Track: Surveillance

Excess incidence of aseptic neuroinfections as an indicator of tick-borne encephalitis endemic areas in Poland?

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BACKGROUND

Tick-borne encephalitis (TBE) and aseptic neuroinfections (AN) are mandatory notifiable in Poland. In 2007, 2,187 AN cases were reported (incidence 5.74/100,000), of which 233 were diagnosed as TBE (0.61/100,000). TBE cases are registered in less than 20% of administrative districts. In our study we attempted to identify regions, where TBE cases might be under-diagnosed and underreported, using incidence of aseptic neuroinfections.

METHODS

Physicians notify hospitalized neuroinfections, based on symptoms and laboratory results. Local public health officers report aggregated data on incident AN cases bi-weekly to the National Institute of Public Health. Based on AN incidence in 2007, exceeding threshold of 7.5/100,000, we defined areas "Suspected of Endemicity" (SoE). We compared SoE areas with districts reported TBE, with the accessibility of TBE laboratory diagnostics and available indirect indicators of TBE presence from previous studies as specific antibodies in goats or virus in ticks. We assumed that in those districts TBE cases are under-diagnosed and underreported.

RESULTS

Out of 379 districts, 93 notified AN incidence exceeding 7.5/100,000. In 49 districts, where TBE was reported in 2007, 33 (67.3%) were ascertained as SoE. In 330 districts, with no TBE case registered, 60 (18.2%) were SoE. Laboratory diagnosis on TBE was provided in 40% (37/93) SoE districts, and indirect indicators from animals or ticks studies were present in 25/93 (27%). Forty five of 93 SoE districts were assumed as previously undetected areas suspected of TBE endemicity.

CONCLUSION

Using excess incidence of AN as a tool doubled the number of previously detected TBE endemic areas. However, this method could be only an additional tool in estimating TBE endemicity. We need to further validate this indicator by implementing active surveillance in selected areas.

PRESENTER: ORLIKOVA

20090049

Session: B4.13

Track: Surveillance

Evaluation of the Performance of Brucella Surveillance System in Terms of Sensitivity and Timeliness in Ankara and Izmir, 2005-2006

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BACKGROUND

Brucella as a zoonotic illness, can be diagnosed countrywide. Due to this reason, we felt the need of performing such a study in the goal of being able to measure the timeliness and sensitivity of the notification of the cases by the way of Brucellosis surveillance in two metropol, This study is a chance to prove how many of the cases has been confirmed by laboratories and notified.

METHODS

This is a cross-sectional study. The brucella cases held by the surveillance system and the microbiology laboratories have been included in the study. The Surveillance records of Ankara and Izmir have been revised and compared by the laboratory records of the confirmed cases. We found out the positive predictive values.

RESULTS

526 cases in Ankara and 539 cases in Izmir has been found as confirmed. 266 cases in Ankara and 319 cases in Izmir, have been found as recorded. The sensitivity of Ankara and Izmir provinces have been assessed respectively %18,1 and %27,6. Positive Predictive Values of Ankara and Izmir are %35,5 and %46,7. The median for the timeliness is 4 days in Ankara. The timeliness in Izmir is 19 days. According to the period of timeliness between the probable and laboratory confirmed cases, there is no meaningful statistical difference.

CONCLUSION

1.Surveillance data don't reflect the real prevalence, 2.The sensitivity and positive predictive value of the surveillance system is low, 3.The timeliness period has been extended too much to come into action, 4.Establishment of a web based notification system between the laboratories and PHDir. should be considered, 5.In case the brucellosis is a sample for the laboratory confirmed diseases, it is expected that this study causes recovery in the notification system,

PRESENTER: OZDEMIRER

20090227

Session: B4.14

Track: Surveillance

Incidence and risk factors for Surgical Site Infection in Latium, Italy

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BACKGROUND

Surgical site infections (SSI) represent a significant problem in terms of morbidity, mortality, and costs. Aim of this regional prospective multicenter study was to assess the incidence of in-hospital and post-discharge SSI and associated risk factors.

METHODS

In April-June 2008 a SSI surveillance was conducted in 19 centers including 3 Research and 2 University hospitals in Latium Region, Centre-Italy. SSI were assessed according to the CDC definition and NNIS system. Twenty different interventions were monitored and information on diagnosis, class, type, duration, ASA score were collected up to 30 days post-intervention. Association of SSI with selected characteristics was assessed through multivariate logistic regression odds-ratio (OR) after adjustment for gender, age, elective admission, NNIS and pre-hospitalization before intervention.

RESULTS

A total of 3081 interventions were surveilled (27.8% males, median age 41: interquartile range: 33-63 years). Only 282 (9.2%) patients were surveyed for less than 28 days (mean 10 days). Eighty-five SSI were observed (2.8% of all interventions), mostly superficial (72%). Fifty-four (63.5%) SSI occurred post-discharge. Fourthly-one SSI occurred despite antibiotic peri-operative exposure (i.e. covering surgical incision). In 131 case antibiotic prophylaxis was indicated but not used, and 3 SSI occurred. Risk factors found to be significantly associated with SSI were age (OR=1.2 for each 10yrs increase), NNIS score >2 (OR=2.1) and non elective admission (OR=2.3). These findings did not vary when antibiotic use was included in the model.

CONCLUSION

The study is consistent with national data and stresses the relevance of the 30-day post-intervention SSI surveying. Efforts should be made for a more appropriate antibiotic use. Future surveys should auditing the application of preventive bundle for SSI, in order to verify the observed associations adjusted for this important variable.

PRESENTER: PURO

20090022

Session: B4.15

Track: Surveillance

Antibiotic consumption in a university hospital displayed as defined daily doses - A challenging tool?

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BACKGROUND

Antibiotic consumption is a risk factor for developing antibiotic resistance and consumption is high on intensive care units (ICU). In order to ascertain and evaluate the antibiotic consumption of all ICU of the Hannover Medical School (HMS), the orders for antibiotics were analysed and compared with the outcomes of the German project for surveillance of antibiotic usage and antibacterial resistance on ICU (SARI).

METHODS

The orders for antibiotics from all ICU for adults (6 surgical, 2 medical units) at the HMS were collected from the hospital pharmacy. Defined daily doses (DDD)/1000 patient-days (pd.) were calculated for all antibiotics ordered from January 2004-December 2008. The consumption of all antibiotics was stratified by specialty and compared with the outcomes of SARI (48 ICU).

RESULTS

At the HMS overall 1799.6 DDD /1000 pd. were used. Compared to SARI the consumption for all antibiotics was 25.5% higher. From 2004 to 2008 the overall consumption rose from 1879.6 to 1934.7 DDD/1000 pd. Stratification by specialty revealed a consumption of 1859.7 (SARI: median 1214.6, 19 ICU) on the surgical and 1573.7 DDD/1000 pd. (SARI: median 1481.1, 12 ICU) on the medical units.

CONCLUSION

Compared to SARI the consumption for all antibiotics was high at the HMS. The HMS is one of the biggest transplant centres in Germany with almost 400 transplants per year and a great number of critically ill patients. SARI included 17 ICU from university hospitals, but case mix and complex procedures undertaken in different hospitals are not taken into account. Although the DDD is a useful tool for monitoring antibiotic consumption and future drug use interventions, comparisons with other hospitals need to be well thought about.

PRESENTER: SCHRAUDER

20090200

Session: B4.16

Track: Surveillance

Hepatitis E Virus Antibodies and Antigens in Blood Donors, Germany

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BACKGROUND

Hepatitis E virus (HEV) is a non-enveloped, single stranded RNA virus associated with enterically transmitted epidemic of acute, self-limiting hepatitis. Recently, HEV was shown to be an etiologic agent of chronic hepatitis in organ-transplant recipients. Due to prolonged viremic phase after infection, HEV has emerged as a member of transfusion-transmitted infection (Wang CH et al, Lancet 1993; Colson P et al, Emerg. Infect.Dis 2007). In this study, we took an attempt to evaluate the current presence of HEV antibodies and antigens in healthy german blood donors.

METHODS

A total of 300 plasma samples collected in 2007-2009 from healthy blood donors were analysed for HEV antibodies (IgM/IgG/IgA) / antigen by Enzyme-Linked Immunoassays and RNA by Reverse-Transcription Polymerase Chain Reaction (RT-PCR). IgG titre was measured according to different reference standards (100-400IU/ml).

RESULTS

Overall 15% were found to be positive for Hepatitis E Virus IgG antibodies. 25% of these samples had high (> 300 IU/ml) and 75% low avidity (< 200 IU/ml). In addition, 2% of the plasma was shown to be positive IgM as well as antigen. In our hands, all antigen positive samples could be confirmed by RT-PCR. Viral loads are semi-quantitated to be inbetween $10E2-10E5$ copies/ml.

CONCLUSION

Our study showed a higher prevalence of HEV antibodies in healthy german blood donors. Presence of HEV antigen and RNA suggests the infectious nature of the donated plasma. Sub-clinical donors carrying infectious HEV may be present in our regions. Transfusion by bloods derived from those persons could associate with HEV infection and serious diseases. To prevent any possible transmission, therefore, it may be appropriate to include an EU-wide screening for HEV in the pre-transfusion blood testing schedule.

PRESENTER: WANG

20090240

Session: B5.1

Track: Tuberculosis

A country-wide database for tuberculosis research in Portugal

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BACKGROUND

Portugal has the fourth highest tuberculosis (TB) incidence rate in the European Union with a significantly high proportion of multidrug resistant (MDR) and extremely resistant (XDR) cases. Genotyping data (MIRU-VNTR, SNPs, or spoligotyping) of clinical samples are generated in different reference laboratories around the country, and demographic/clinical information is dispersed throughout district hospitals and health-care centres. Combining all this data from their various sites into one centralized and openly accessible database will help characterize the infected population as a whole, aid public health decisions regarding interventions in TB as well as drive new research questions from the scientific community.

METHODS

Our database (DB) was designed using MySQL and will be implemented using Django. The structure of our DB consists of different tables containing demographic, clinical, treatment and genotypic MIRU-VNTR and SNPs information. Using the R package, we statistically analyzed and plotted the demographic and clinical data contained in DB.

RESULTS

The number of TB cases has been gradually decreasing from 5,412 cases in 2000 to 4,510 in 2008, with an off-shoot in 2002 of 6,193 cases. The percentage of cases is higher in males (~62%) than in females, and the most affected age-groups are 30-40 and 40-50, both with proportions above 20%. Among the infected immigrant population (11.5%), 30.6% are from Angola and 19.2% from Cape Verde - other countries of origin include the Ukraine and former colonies Brazil, Mozambique, Guiné Bissau and São Tomé.

CONCLUSION

Our results indicate an important effect of demographic factors in the prevalence of TB. The implementation of this DB will allow the integration and analysis of the effect of genotypes on the prevalence of TB in different risk groups.

PRESENTER: ABECASIS

20090082

Session: B5.2

Track: Tuberculosis

Low BCG vaccination coverage after the end of compulsory vaccination in Ile-de-France (France), a region of high tuberculosis incidence

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BACKGROUND

In January 2006, multipuncture device, used for infant BCG vaccination was withdrawn from the market, leading to an estimated 54% decrease in BCG coverage. In July 2007, mandatory BCG vaccination for all children was replaced by a strong recommendation to vaccinate those at high risk of tuberculosis, among whom all children living in Ile-de-France region, the most affected region of mainland France (18.4/105).

METHODS

We used several methods to evaluate the impact of this policy change on the BCG vaccine coverage in this region. We performed a cross-sectional survey in February 2008 in a sample of general practitioners and paediatricians working in private medical practices. We analyzed vaccine sales trends between 2005 and 2008. We conducted a two-stage random sampling survey in May 2009 in Maternal and Child Health Clinics (MCH) (35% of BCG vaccinations).

RESULTS

Among the 259 children born after the end of compulsory vaccination and followed by private practitioners, 68% had been vaccinated. Among the 481 children born after the end of compulsory vaccination and followed in MCH clinics, 89.8% (84.5-93.5) had been vaccinated [2-12 months: 86.8% (78.6-92.1), 13-23 months: 95.0% (90.1-97.5)]. An overall decrease in vaccine sales of 35% was observed between 2005 and 2008 (private sector: -42%, public sector: -17%).

CONCLUSION

These results suggest that, except in the public sector, vaccination coverage remains insufficient in high risk children. The emphasis given in 2007 to vaccination of those children did not allow to catch up for the decrease in coverage created by the disappearance of the multipuncture device. Priority should be given to continuing to train doctors in intradermal vaccination and to strengthen the communication concerning the new vaccination policy.

PRESENTER: GUTHMANN

20090184

Session: B5.3

Track: Tuberculosis

Clinical features of Tuberculosis patients in the Italian region Emilia-Romagna (1996-2006)

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BACKGROUND

Since 1996 a programme of Tuberculosis epidemiologic surveillance, dedicated to incident cases of tuberculosis (TB) and consisting in the registration of the main characteristics of the disease, is active in the Italian Emilia Romagna Region (RER). This study aims to highlight the clinical differences between the Italy-born patients (IBP) and the non-Italy-born ones (NIBP) incident in the RER (1996-2006).

METHODS

The RER tuberculosis data for 1996-2006 were retrospectively analysed, retrieving data from the regional TB notification form. They include both personal details of the patients and characteristics of TB at its clinical appearance. Data were analysed and sorted between IBP and NIBP. Comparison between groups required the Chi-square test with calculation of relative risk (RR) and its 95% confidence intervals (IC95%) (RR for IBP = 1).

RESULTS

NIBP are more frequently diagnosed as "new cases" of TB (RR 1.5 IC95% 1.4-1.7; $p < 0.001$) rather than "relapsed" cases (RR 0.7 (0.5-0.8)). They are identified by positive Chest X-ray (RR 1.6 (1.5-1.8)), by positive tuberculin test (RR 1.9 (1.8-2.1)) or by clinical features (RR 1.9 (1.8-2.1)). In addition, NIBP showed a higher positivity both at sputum (RR 1.9 (1.8-2.1)) and at cultural examinations (RR 1.8 (1.7-1.9)). Non-Tubercular-mycobacterium infection was frequent among NIBP (RR 1.5 (1.0-2.3)). NIBP had higher risk of tuberculous lymphadenitis (peripheral lymph nodes: RR 1.5 (1.4-1.6) and intrathoracic lymph nodes RR 1.7 (1.3-2.2)) and peritoneal tuberculosis (RR 1.4 (1.1-1.7)). On the other hand, NIBP showed lower risk for genitourinary tuberculosis (RR 0.2 (0.1-0.3)).

CONCLUSION

TB has often a difficult and complex diagnosis due to various and non-specific signs and symptoms. In our data the NIBP, notified by the RER, show specific clinical features, probably determined by a different infectious natural history.

PRESENTER: ODOONE

20090150

Session: B5.4

Track: Tuberculosis

AIDS and Tuberculosis in Italy: data from the National AIDS Registry

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BACKGROUND

According to the most recent ECDC surveillance Report, the coinfection tuberculosis and HIV continue to be a severe problem in the European Region. We estimated the extent of this phenomenon in Italy, describing and analysing the characteristics of persons with AIDS and TB reported to the National AIDS Registry.

METHODS

We analysed the cases of tuberculosis reported to the National AIDS Registry in Italy since 1993, the year in which tuberculosis was introduced as an AIDS-defining disease.

RESULTS

From 1993 to 2008, 43,124 cases of AIDS were reported; among these 3,809 (8.8%) had tuberculosis. Since 1993, there has been a progressive increase in the proportion of persons with tuberculosis, from 7.2% in the period 1993-2004 to 10% in 2007-2008. Males accounted for 76.2%; the median age at diagnosis was 35 years (IQR 30-40 years), and 31.6% were non-nationals. The proportion of non-nationals increased, from 13.4% in 1993-94 to 61.1% in 2007-08. About 50% of these persons were from Africa, and this proportion remained stable over time, whereas the proportion of persons from Eastern Europe has increased from 4% in 1993-94 to 21% in 2007-08. With regard to HIV exposure categories, 45.0% of the persons with AIDS and tuberculosis were infected through injecting drug use and 31.4% through heterosexual contacts.

CONCLUSION

These data suggest that the occurrence of tuberculosis among persons with AIDS is also increasing in Italy, with an increasing proportion of non-nationals, and stress the need early diagnosis and treatment, especially among high-risk foreigners.

PRESENTER: CAMONI

20090268

Session: B5.5

Track: Tuberculosis

Using a neural-network model for classification of HIV-status of tuberculosis cases in Portugal

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BACKGROUND

In Portugal, approximately 50% of notified tuberculosis (TB)-cases between 2000-2004 had no recorded HIV-status, which is why WHO uses UNAIDS estimates of HIV-prevalence to calculate TB-detection rates and incidence. However, TB-notifications come with supplementary demographic, clinical, and laboratory information that might be used to improve HIV-status classification, thus enabling more accurate estimates of TB-detection rates and incidence. For 2004, WHO calculated 96% TB-detection rate and 35/100,000 incidence in Portugal. With 85% TB-cure rates, these estimates should lead to a 7%/year decrease in TB-incidence, but TB-incidence in Portugal is stable.

METHODS

We used a classification tree to identify variables that best classified TB-cases in HIV-negative or positive. Identified variables were used as input parameters in a neural-network model. An equal number of TB-cases with and without HIV co-infection were selected to train and validate the model. The neural-network was then applied to all notified TB-cases. Sensitivity and specificity were 83% and 84%.

RESULTS

Injection drug users, age below 46 years, Mantoux-test ≥ 1.5 mm, TB-treatment above eight months, and normal or non-cavitated chest X-ray were the most relevant variables classifying TB-cases in HIV-positive. This enabled HIV-classification of further 32% TB-cases. The neural-network classified 23% TB-cases as HIV-positive, a proportion much higher than the 11% WHO uses to calculate TB-detection rates in Portugal. The WHO-calculated TB-detection rate of 96% for 2004 would be corrected to 73%, leading to an estimated TB-incidence $\approx 45/100,000$.

CONCLUSION

Portugal's non-decreasing TB-incidence can be explained by inaccurate estimations of HIV-incidence among TB-cases and consequently of TB-detection rates. The proposed neural-network uses supplementary data of TB-cases to correct these estimates. However, accurate calculations can only be achieved by comprehensive documentation of HIV-status in TB-notifications.

PRESENTER: PAULO

20090028

Session: B6.1

Track: Vaccine preventable diseases

Knowledge, Attitude and Practice of German Pupils aged 11-17y regarding Measles Vaccination

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BACKGROUND

Measles eradication through vaccination by 2010 remains an important if somewhat optimistic public health goal of WHO. We conducted a study among pupils from Hauptschule, Realschule and Gymnasium in Hassloch, Rhineland Palatinate with Hauptschule being the lowest education level. We assessed students' knowledge, attitude and practice regarding measles vaccination in order to identify vaccination-gaps and their causes.

METHODS

A structured questionnaire covering demographics, vaccination status, reasons for non-vaccination was handed out to 220 pupils from 5th and 9th grade. Descriptive analyses of vaccination rates depending on school type and grade, reasons for non-vaccination and information sources were complemented by a multivariable regression looking for factors conducive to vaccination.

RESULTS

All questionnaires were returned. 201 of 213 (92%) pupils with known vaccination status were vaccinated against measles. Of 12 unvaccinated pupils, 5 (42%) had forgotten to get their immunisation. 94 (96%) of males and 107 (93%) of females were vaccinated. Vaccination rates were 90% (45/50) in Hauptschule, 95% (69/73) in Realschule and 97% (87/90) in Gymnasium. 92% (122/132) of 5th-graders were vaccinated against measles compared with 98% (79/81) of 9th-graders. 51 (23%) pupils named their GP as a source for information on measles followed by TV (n=37, 17%) and school (n=31, 14%). The internet was only named by five pupils (2%) as an information source. In multivariable regression, having tetanus vaccination, higher grade, being male and visiting a higher school type was positively associated with being vaccinated against measles, although only tetanus vaccination was statistically significant on the 0,05 level.

CONCLUSION

We observed different vaccination rates depending on age/grade and school type. Vaccination campaigns should especially focus on pupils entering Hauptschule to bring vaccination levels above the 95% threshold needed for long-term eradication of measles.

PRESENTER: BURCKHARDT

20090265

Session: B6.2

Track: Vaccine preventable diseases

Epidemiology of tetanus in Serbia, 2000-2008

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BACKGROUND

Tetanus is a severe and often fatal disease that is preventable through routine vaccination. Despite widespread availability of effective and safe vaccine, the disease is still present in Serbia. Our aim was to analyze Serbian surveillance data on tetanus to improve vaccination activities.

METHODS

Tetanus is a mandatory reportable disease under Communicable Disease Law in Serbia. We undertook descriptive epidemiology of tetanus cases reported to IPH of Serbia, in last 9 years. Additional epidemiological data were provided by regional IPH.

RESULTS

From 2000 through 2008, a total of 109 cases of tetanus were reported in Serbia, annual incidence rates ranged between 0.09/100.000 and 0.33 /100.000. 84% of cases diagnosed were aged over 60 years. Women were more affected than men, being 74% of reported cases. There were 53 deaths among cases, the overall case-fatality rate was 49%. No neonatal tetanus cases were reported. For most of the cases information about the mode of transmission (majority of cases had minor injuries, puncture, abrasion, laceration) and vaccination status were available.

CONCLUSION

The majority of tetanus cases occurred in rural areas, who sustained an acute injury, among persons inadequately vaccinated or with unknown vaccination status. We observed a decrease in incidence and mortality over the period of 9 years. Adults aged >60 years were most affected with tetanus and tetanus-related death. Health care providers should be encouraged that every visit of the elderly should be used to review vaccination status against tetanus.

PRESENTER: DIMITRIJEVIC

20090180

Session: B6.3

Track: Vaccine preventable diseases

Evaluation of mumps IgG assay to retrospectively identify asymptomatic cases among vaccinated individuals for public health use

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3. Municipal Health Service "Midden-Nederland", Zeist, The Netherlands

BACKGROUND

Mumps infections in vaccinated individuals are not uncommon and since the vaccine and wild-type mumps infection both induce IgG antibodies, it is difficult to identify asymptomatic infections based on antibody responses. The study aims to elucidate if an ELISA for mumps IgG detection is capable of identifying vaccinated children with an asymptomatic mumps infection, using oral fluids because of their acceptance in population based studies.

METHODS

The ELISA (Microimmune) was validated using three groups available at the Centre for Infectious Disease Control: 1) vaccinated and mumps virus PCR-positive 2) non-vaccinated and mumps virus PCR-positive 3) vaccinated and unexposed persons; to assess the sensitivity and specificity for public health use rather than individual diagnostic. The identified cutoff was applied to oral fluid samples collected during two epidemiological studies conducted to investigate vaccine effectiveness and transmission, respectively.

RESULTS

In the initial validation the specificity of the assay could be increased from 52% to 97.4% after identifying a new cutoff, taking vaccination status into account. With this adapted cutoff, about 10% of infections could be identified among the vaccinated, compared to about 2% and 0% when only relying on clinical symptoms in the epidemiological studies.

CONCLUSION

Applying different cutoff criteria has important public health consequences, as it substantially increases the estimates for attack rates when laboratory data are included in the analysis. This underlines the importance of critically assessing a laboratory test through validation for specific public health use.

PRESENTER: DITTRICH

20090005

Session: B6.4

Track: Vaccine preventable diseases

Diphtheria Surveillance Network (DIPNET): overview and results

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BACKGROUND

DIPNET is one of the newer dedicated surveillance networks established officially in 2006. The 3 year programme has significantly expanded activities of the European Laboratory Working Group on Diphtheria (ELWGD) formed in 1993 at the request of WHO EURO during the devastating diphtheria epidemics in the Newly Independent States of the former Soviet Union. DIPNET brings together both microbiological and epidemiological expertise within Europe for the prevention and control of diphtheria and related infections caused by toxigenic and non-toxigenic *Corynebacterium diphtheriae*, *C.ulcerans* and *C.pseudotuberculosis*.

METHODS

There is global participation from more than 40 countries, together with ECDC and WHO EURO. DIPNET comprises six scientific work packages (WPs); 1) assessment of surveillance and disease burden 2) *C.diphtheriae*, *C.ulcerans*, screening studies amongst European populations 3) evaluation of diphtheria diagnostics and EQA 4) molecular epidemiology of *C.diphtheriae* and *C.ulcerans* in Europe 5) development of DIPNET integrated database and website and 6) serological immunity.

RESULTS

Significant efforts in microbiological diagnostics and surveillance with expansion to other countries in the EURO Region and beyond. EQAs have been established for laboratory diagnostics, molecular typing and serology. State of the art genome sequencing has revealed novel targets for rapid typing and information on pathogenicity. Web-enabled surveillance databases have been established (www.dipnet.org.uk). Evaluation of surveillance and screening has revealed that the *C.diphtheriae* epidemic strain is still circulating amongst European populations along with potential new reservoirs of disease linked to domestic animals.

CONCLUSION

DIPNET has enabled countries to re-address their epidemiological and microbiological strategies for diphtheria and has provided the infrastructure essential for harmonised and improved public health management across the EU and beyond. Continuation of these activities is crucial for the detection of this uncommon disease.

PRESENTER: EFSTRATIOU

20090142

Session: B6.5

Track: Vaccine preventable diseases

Introduction booster vaccination against whooping cough to the Czech vaccination schedule

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BACKGROUND

The vaccination against pertussis in the Czech Republic started in 1958 and led to progressive and rapid reduction in pertussis incidence. Compulsory routine vaccination represented five doses. Despite of the fact the disease still circulates in the Czech population especially among school children. Since 1993 the pertussis incidence has been increased especially in age cohort 10-14 years. To understand epidemiological characteristics of this situation a descriptive analysis was undertaken.

METHODS

All cases of pertussis were notified in nationwide communicable diseases mandatory reporting system to the National Institute of Public Health through regional public health offices. All cases were laboratory confirmed by serology or culture. Every reported case was closely investigated, especially number of the doses of the vaccination against pertussis, that preceding disease.

RESULTS

From 1974 to 1995 the pertussis incidence did not exceed 1/100000 population. The lowest pertussis incidence rate was recorded in 1989 - 0.05/100 000 population. Since 1993 an increasing pertussis incidence and change in the age trend of reported cases have been recorded. The majority of cases have been reported among children in 10-15 years of age. In 2008 data indicate the highest increase in the reported cases from the 1980' - 767 cases, altogether 668 persons with reported pertussis were vaccinated by 2 and more of doses against pertussis. The peak incidence was recorded in the age cohort 10-14 years - 380 cases, 365 children were vaccinated 3 and more of doses, 186 children obtained 5 doses.

CONCLUSION

A descriptive analysis of situation of pertussis incidence led to changes in immunization policy. Changes in pertussis incidence were noticed by the national authorities and introduction of booster dose for children of 10-11 years was accepted.

PRESENTER: FABIANOVA

20090020

Session: B6.6

Track: Vaccine preventable diseases

Increasing the accessibility of science-based information on vaccine safety through the internet

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BACKGROUND

The internet is an important source of information on vaccine safety. The quality varies, some websites provide incorrect and misleading information. To facilitate the access to reliable information, the World Health Organization created the Vaccine Safety Net (VSN) in 2003. Through this project the WHO Global Advisory Committee on Vaccine Safety developed criteria for good information practices, covering credibility, content, accessibility and design (www.who.int/immunization_safety/safety_quality/vaccine_safety_websites/). An external evaluator carries out evaluations. Sites that meet all credibility and content criteria are accredited. One of the objectives in the project Vaccine Safety - Attitudes, Training and Communication (VACSATC) is to improve web-based information on vaccine safety. The project is funded both by VACSATC partners and the European Commission Directorate-General for Health and Consumers.

METHODS

A best practices document has been developed by VSN staff to provide guidance on compliance with the VSN criteria. This document has been shared with VACSATC partners. VACSATC partners with accredited sites (www.immunisation.nhs.uk/, www.siemprevacunados.org/ and www.vacunas.org/) have shared their knowledge and expertise.

RESULTS

Results by June 2009 Austria (www.bmg.gv.at/): Improved information, Additional documents posted Hungary (www.oltasbiztonsag.hu/): Improved information Norway (www.fhi.no/vaksine/): Improved information, Under VSN evaluation Poland (www.szczepienia.pzh.gov.pl/): Improved information, Under VSN evaluation Romania (www.cpcb.ispb.ro/colaborare.php?op=vaccinesafety/): Improved information Sweden (www.smi.se/amnesomraden/vaccinationer/): Improved information, Submitted for VSN evaluation Turkey (www.asiguvenligi.net/): Website established

CONCLUSION

A collaborative project has proved to be a constructive approach for improving internet-based information on vaccine safety. Knowledge and best practices have been shared between partners. The collaboration should be extended, with the long term goal of making timely and science-based information on vaccine safety available to public health authorities, health professionals and the public in all EU member countries.

PRESENTER: HEIJBEL

20090048

Session: B6.7

Track: Vaccine preventable diseases

Diphtheria in Latvia: lessons learnt from DIPNET

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BACKGROUND

Diphtheria is a mandatory notifiable disease in Latvia. Immunization against diphtheria commenced in the 1950s and there were no registered cases in Latvia from 1968 to 1985. In the middle of 90-ies diphtheria epidemic affected Latvia as many other countries. In recent years Latvia still remains the only country in the EU with regularly registered indigenous diphtheria cases.

METHODS

Available data on registered diphtheria cases during period 2004-2008 were analysed and compared with results of screening undertaken within the DIPNET project.

RESULTS

119 diphtheria cases (incl. 12 deaths) were registered from 2004 to 2008. Cases were unequally distributed within Latvian administrative territories: most were notified from Riga and close surroundings. Most patients were adults, however the highest incidence was observed in those aged <10 years. The majority of diphtheria patients belonged to professional or social risk groups. 72.3% of 119 diphtheria patients were unvaccinated adults. None of the fatal cases were vaccinated. Most patients had a localized form and moderate course of disease. The severe course was observed in the unvaccinated adult patients. The majority of cases were bacteriologically confirmed. The DIPNET screening study confirmed the circulation of toxigenic as well as non-toxigenic corynebacteria strains in different parts of Latvia.

CONCLUSION

Geographical spread of diphtheria is influenced by the level of adult vaccination coverage within the country and social factors. Extensive spread of diphtheria occurred amongst the low-income population and social risk groups in territories with low adult's vaccination coverage. The persistence of diphtheria spread confirms the necessity to intensify all preventive measures. The DIPNET project screening results highlighted the need to maintain a heightened level of epidemiological surveillance and laboratory expertise, as well as increase awareness of diphtheria amongst clinicians.

PRESENTER: LUCENKO

20090093

Session: B6.8

Track: Vaccine preventable diseases

Hepatitis B immunisation programmes in European Union, Norway and Iceland: where we are?

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BACKGROUND

In 1992, the World Health Assembly recommended the inclusion of hepatitis B vaccine to the national immunisation programmes. Although a majority of European Union (EU) member states (MSs) have introduced the vaccine as universal childhood vaccination, some countries with low hepatitis B prevalence have selective immunisation programs for risk groups.

METHODS

We conducted a web-based survey in January 2009 to describe hepatitis B vaccination policy, to identify country-specific recommendations for risk groups and to obtain the latest available data on vaccine coverage in 26 EU MSs, Norway and Iceland.

RESULTS

The response rate to the survey was 96% (27/28). Hepatitis B vaccination is included in the routine childhood vaccination in 20 (74%) countries; twelve of them (60%) implemented catch-up programmes for older cohorts. Seven countries (26%) have selective immunisation programs for risk groups. Hepatitis B vaccine is recommended for individuals at risk in 28 countries; however vaccination policy varies between them. HBV vaccine is recommended for health care workers (HCWs) in all countries, while for carers of individuals receiving blood or blood products it is recommended in 19% of countries. Screening of pregnant women for HBsAg is recommended in 85% countries. Vaccine coverage for children at one and two years was measured in 19 countries with reported coverage from 16.8% to 99.9%. Four countries provided vaccine coverage for HCWs (range 75% -100%).

CONCLUSION

The information obtained from the survey provided updated baseline information on current hepatitis B immunisation policy in EU MSs, Norway and Iceland. Although there are two hepatitis B strategies evident in Europe, common target groups are identified for whom vaccine is recommended. In most countries implementing universal vaccination, the vaccine coverage meets the WHO targets.

PRESENTER: MERECKIENE

20090069

Session: B6.9

Track: Vaccine preventable diseases

Investigation of measles outbreak among university students-Phrae province, Thailand, 2008: Risk factors and seroprevalence of antibodies to measles

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BACKGROUND

During 2004-2008, 0-2 cases of measles were reported per year in Rong-Kwang District. In June 2008, Bureau of Epidemiology received report that seven students from Maejo University, Rong-Kwang District, were suspecting measles and hospitalized. We aimed to confirm diagnosis, evaluate severity, and control outbreak.

METHODS

We did medical record review, active case finding, and environmental survey. Measles cases were defined as students of Maejo University who developed fever with rash plus one symptom of: cough, conjunctivitis, coryza, and Koplik spot, during 26th May to 28th June 2008. We collected saliva, urine and serum samples for laboratory confirmation. A 1:4 case-control study among first year students was conducted. Controls were randomly selected from asymptomatic first year students with negative IgG and IgM antibody titers.

RESULTS

Totally 51 cases were identified with no deaths. Overall attack rate was 2.8% (51/1832), highest among the first year students (5.5%) and in Department of Food Technology (5.6%). Among cases, 20% experienced diarrhea. The environmental study showed crowding and sharing of drinking glasses. Caring for measles cases (OR=10.90, 95%CI=2.35-50.21) was identified as a risk factor. Of 14 students who met the case definition and had serum tested, 4 had positive and 2 equivocal IgM titers. Of asymptomatic students, 8.1% (3/37) were negative to measles IgG. Urine and throat swab cultures yielded no viral isolates.

CONCLUSION

This measles outbreak in Maejo University was attributable to close contact with suspected cases. Health Education for students, provision of masks for suspected case, and strict isolation of cases was employed. In order to prevent further transmission, 77% (1,417) of asymptomatic students were vaccinated in a mop up campaign. The last case occurred 10 days after the campaign.

PRESENTER: NGOC LONG

20090092

Session: B6.10

Track: Vaccine preventable diseases

HPV Infection among Scottish Adolescents - Preliminary Results of a National Schools-Based Survey

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BACKGROUND

In September 2008 the bivalent HPV-vaccine was introduced into the Scottish immunisation schedule for girls aged 12-13 years. In order to provide baseline data for the evaluation of the programme; between January and May 2008, we conducted an anonymous survey of 11-18 year olds to determine the prevalence of, and factors associated with, HPV infection.

METHODS

Using probability proportional to size, we sampled educational authorities and invited all state and independent schools and further education colleges within them to participate. We stratified our sample of schools by deprivation and school-years by age (weighted to older age-groups), recruiting students from selected years. We purposively sampled college students on campus. Consenting participants provided demographic data and a urinary sample for HPV testing and typing. Weighted-stratified analyses were conducted.

RESULTS

Of approximately 14786 invited students, 2575 (17%) submitted samples of which 1866 (72%) were valid for HPV detection. Of these 1866, 138 (7.4%; 95%CI:6.2-8.6) tested HPV positive, 54 (2.9%, 95%CI:2.1-3.7) with vaccine-types; 63 (3.4%, 95%CI:3.4-4.2) with multiple types. Among the 1121 females, the weighted prevalence was 8.4% (95%CI:5.2-11.2); it increased with age (0.4% (95%CI:0-1.3) at 11-12 years, 1.4% (95%CI:0-4.1) at 13-14 years; 8.1% (95%CI:4.3-11.9) at 15-16 years and 22.9% (95%CI:15.7-30.2) at 17-18 years) and ranged from 15.1% (95%CI:5.7-24.5) in the least socially-deprived quintile to 34.1% (95%CI:7.4-60.8) in the most deprived. Results from males and multivariable analyses will be presented.

CONCLUSION

HPV prevalence was low but increased with age and social deprivation. These data on current HPV infection in a population-based sample of unvaccinated adolescents will enable us to monitor the impact of HPV immunisation in Scotland and to answer key questions on type-replacement, herd-immunity and prevalence among high-risk groups.

PRESENTER: O'LEARY

20090062

Session: B6.11

Track: Vaccine preventable diseases

Middle-Aged Mumps: Outbreak among Ministry of Public Health Staff who Missed National Immunization Program - Thailand, November 2008

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BACKGROUND

Under Thai EPI, first graders will be immunized with MMR vaccine since 1997. On November 13, 2008, four suspect mumps cases occurred among workers in the Department of Disease Control, the Ministry of Public Health. We went to investigate and enhance control measures on November 13.

METHODS

We conducted a retrospective cohort study and enrolled all 55 people in that office. Suspect mumps cases were people who had swelling or tenderness of salivary glands between September 1 and November 18. Serum samples were tested for mumps IgM ELISA. Saliva and buccal swab samples were collected for viral isolation.

RESULTS

There were eight mumps cases. One developed orchitis and no one was hospitalized. Median age was 29 years (range 25-41). Main symptoms were parotitis and fever. Attack rate was 14.5%. Epidemic curve resembled a common source outbreak. The index case spread mumps to seven coworkers because they worked within 2 meters from him (adjusted RR=5.3, 95%CI=1.6-17.6). Before the outbreak occurred, 38% of staff had mumps. No one got mumps vaccination before. Four (80%) of five serum samples were positive for mumps IgM. Mumps virus genotype J was isolated from 40% of saliva and 66.7% of buccal samples. So, five cases were confirmed.

CONCLUSION

A common source outbreak of mumps virus genotype J occurred in the Thai Ministry of Public Health. Major risk factor was a low percentage of immune staff. We enhanced isolation of cases and provide mumps vaccination to 14 workers. It increased proportion of the staff who were immune to 76%. All cases were isolated for 5-10 days after parotitis onset. No secondary cases among household members.

PRESENTER: POONAKLOM

20090104

Session: B6.12

Track: Vaccine preventable diseases

Vaccination coverage among orthodox protestant denominations (OPD) in The Netherlands

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BACKGROUND

The Netherlands has recently experienced epidemics of vaccine preventable diseases largely confined to an orthodox protestant minority. The orthodox Protestants form a closed hard to reach community. Moreover they are divided in various denominations each having its own interpretation of the Bible, influencing their acceptance of vaccination. In this study we assess the vaccination coverage within the various OPD. Detailed knowledge on this subject is important for management of future epidemics.

METHODS

In order to gain reliable results on this hard to reach population we integrated the results of three study designs (triangulation): study A an open internet survey, study B a national sample study and study C an orthodox protestant village study. Study populations were respectively orthodox protestant youngsters, Dutch citizens under 55, and pupils of the village primary schools and their siblings. In all three studies participants filled out a written questionnaire on religion and vaccination status. First, in each study for every OPD vaccination coverage was analysed. Second, differences in results of the studies were analysed using a multivariate regression model, correcting for age and gender.

RESULTS

Response: study A 1713, study B 2129 and study C 627 persons. Characteristics of the respondents (e.g. age, denomination) varied per study. Three clusters of denominations could be distinguished with high (>85%) intermediate (50-75%) and low (< 25%) vaccination coverage. However after correction for age and gender there are still significant differences in vaccination coverage between these studies for individual denominations.

CONCLUSION

OPD in The Netherlands vary largely in their vaccination coverage. Prevention and control of infectious diseases should therefore focus on the intermediate and low vaccination coverage cluster.

PRESENTER: RUIJS

20090160

Session: B6.13

Track: Vaccine preventable diseases

Pertussis among infants in continental Portugal: time for new action?

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BACKGROUND

In Portugal, vaccination against diphtheria-tetanus-pertussis (DTP) was introduced in 1965 with 5 DTP doses. The vaccination schedule at 2, 4, 6, 18 months and 5-6 years of age is recommended since 1990. Vaccination coverage (VC) for 3 doses varied from 93% to 99% between 1990 and 2008. VC for 5 doses was 91% in 2007 and 97% in 2008. In order to assess the epidemiological situation of pertussis in Portugal, we describe the trends observed from 1999 to 2008.

METHODS

Data from the statutory reporting system (SRS) were retrospectively analysed. Annual Pertussis incidence [/100,000 population] were calculated using mid-year population estimates. SRS pertussis definition is based on biological confirmation (culture or PCR) or clinical features (catarrhal disease with two-weeks cough with paroxysmal coughing or inspiratory/convulsive "whoop" or post-tussive vomiting).

RESULTS

From 1999 to 2008, a total of 272 pertussis cases were reported. Average annual notification rates varied from 0.08/100,000 in 1999-2003 to 0.43/100,000 in 2004-2008. Age distribution of cases was 0-2 months (49.3%), 2-5 months (36.7%), 6 months-5 years (8%), 6-19 years (5%) and >20 years (2 cases). Out of 240 cases with vaccination data available, 165 (69%) were not vaccinated (81% aged 0-2 months), 54 (22%) received less than 3 doses and 21 (9%) at least 3 doses.

CONCLUSION

Bordetella pertussis continues to circulate in the community. Annual incidence increased during the last 5 years but may be linked to laboratory diagnosis improvement. Infants not eligible for vaccination and children not fully immunised were the most affected. Non-diagnosed adult cases may be responsible for transmission in non-school-aged-children. Systematic contact tracing of reported cases could be envisaged to explore potential new strategies for disease control in Portugal.

PRESENTER: SAUVAGEOT

20090120

Session: B6.14

Track: Vaccine preventable diseases

Surveillance of adverse events following immunization: Slovenia, 2007

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BACKGROUND

An adverse event following immunization (AEFI) is a medical incident that is temporally associated with and could be causally related to immunization. Monitoring vaccine safety plays an important role in maintaining public confidence needed to keep vaccination coverage levels above disease prevention thresholds. The Slovenian AEFI Registry at the National PH Institute collates mandatory reports about AEFI from health care providers. Our aim was to analyze 2007 AEFI surveillance data in order to monitor vaccine safety in Slovenia.

METHODS

Dose-based AEFI reporting rates were calculated using number of vaccine doses distributed as the denominator. Definition for serious AEFI included: death, life-threatening illness, hospitalization or prolongation of hospitalization and permanent disability.

RESULTS

In 2007, 617,358 doses of different vaccines were distributed in Slovenia. The AEFI Registry received 216 reports, a dose-based reporting rate of 34.9/100,000. The majority of reports were received after vaccination with DTP/Hib/IPV (41.7%, dose-based reporting rate 116.5/100,000) and tetanus diphtheria (24.5%, dose-based reporting rate 71.9/100,000). Eight reports (3.7%) included serious AEFI with dose-based reporting rate of 1.3/100,000. No deaths after vaccination were reported. Because one report can contain several different AEFI per person, 599 AEFI altogether were reported. Overall, the most commonly reported AEFI were local injection site reactions (64%), fever (12%), tiredness (5%), headache (4%) and rash (4%).

CONCLUSION

The low reporting rate of serious AEFI is comparable to the results from other surveillance systems and suggests a high safety level of vaccines used in the Slovenian immunization program. Sustaining the surveillance of AEFI will be even more important in the future because of ongoing licensure of new vaccines and implementation of expanded vaccine recommendations.

PRESENTER: UČAKAR

20090075

Session: B6.15

Track: Vaccine preventable diseases

Free vaccination access for mobile Roma children and current spread of measles in Europe: EpiSouth project results

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BACKGROUND

Population mobility and migration are common features of modern times in Europe. Intensive movement contributes to the spread of communicable diseases including vaccine preventable diseases (VPD). This study aims at assessing the vaccination access of mobile Roma population in countries participating to EpiSouth.

METHODS

An ad hoc structured questionnaire was defined and used to collect information among the EpiSouth countries. Internet search on measles outbreaks in mobile population and in particular in Roma people across Europe since 2006 was performed.

RESULTS

9 EU and 5 Balkan countries participating in the project confirmed that Roma people are traditional mobile groups for them. Programmes / approaches, which facilitate the access and acceptance of immunizations for Roma people are in place in 8/14. Immunizations are free for Roma children in all 14 countries. Immunization coverage and VPD morbidity of Roma children are included in the national data, and conclusions could be made on the basis of specific studies only. Just 3 / 14 presented information for studies about immunizations or VPD outbreaks among mobile groups, which is consistent to our findings through Internet search. Since 2006 measles outbreaks are reported from 9 countries in the "EpiSouth European region". In some countries the initial case belongs to mobile Roma people and local/national VPD outbreak is a result of outbreak started in mobile population.

CONCLUSION

Immunization service in almost all EpiSouth countries is free of charge for children of mobile populations. Probably, because of behavioural or traditional reasons, not all the mobile populations benefit the right of vaccine prevention and the recent outbreaks of measles recommend to consider and address those aspects which may improve vaccination access.

PRESENTER: VLADIMIROVA

20090016

Session: B6.16

Track: Vaccine preventable diseases

A review of the international issues surrounding the availability and demand for diphtheria antitoxin for therapeutic use

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BACKGROUND

Diphtheria is an acute bacterial disease with a considerable case fatality rate caused by toxigenic corynebacteria. Treatment requires early administration of diphtheria antitoxin (DAT), an immunoglobulin preparation that neutralises circulating diphtheria toxin. Whilst diphtheria is an uncommon disease in many developed countries, severe, sometimes fatal sporadic cases have been reported. Problems with obtaining supplies of DAT treatment have been reported recently; this study sought to investigate this area and discuss future options.

METHODS

A questionnaire enquiring about national facilities for maintaining stocks of DAT, as well as issues with supply, was developed and sent to 57 countries, the majority within Europe, during 2007 and 2008.

RESULTS

Questionnaires were returned from 44 countries. 57% of countries surveyed held a stock of DAT. Four companies that supply internationally were identified; three other countries are supplied internally by a national institute, state-owned, or private company. 50% of countries had experienced recent difficulties in obtaining a supply. Some countries do not maintain a stock because of the low prevalence and hence perceived risk of diphtheria. 97% of countries thought it would be useful to maintain a central list of suppliers on a website.

CONCLUSION

These data highlight an issue of serious public health concern. The potential for importation of a diphtheria case into any country exists globally, since diphtheria remains endemic in many regions of the world. It is therefore important that DAT be readily available - particularly since waning diphtheria immunity has been observed among adult populations in countries with good vaccination coverage. Possible solutions include maintaining a central stock for Europe, or developing a product with a longer shelf-life.

PRESENTER: WAGNER

20090215

Session: B7.1

Track: Vector borne diseases

Mediterranean Spotted Fever (MSF) - a Re-emerging Tick-borne Disease in Bulgaria: Clinical, Epidemiological and Histopathological Features

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BACKGROUND

MSF caused by *Rickettsia conorii* is a tick-borne SFG rickettsiosis. In Bulgaria the disease was first recognized in 1948 and no cases were reported within 1970-1993. The disease re-emergence has been observed since 1994 and affected thousands of people residents in endemic areas.

METHODS

Our study spans a 15-year period. It is focused on the features of MSF in the largest endemic region in Bulgaria - the city and the suburbs of Plovdiv. Between 1994-2008, 1139 patients with MSF were studied. All of them presented with a positive epidemiological history and typical clinical features of the disease Indirect IFA, a reference method widely accepted in diagnosing rickettsiae was employed.

RESULTS

Most patients with MSF (67.56%) were farmers, pensioners or unemployed. The disease was marked by a typical triad: black spot (77.04%), fever, and rash (99.27%). Conjunctiva injection - a possible portal of entry, was seen in 5.10%. The rash was mostly maculopapular and palm and sole involvement were frequent -77.98%. The MSF clinical forms were categorized as mild - 41.16%, moderate - 32.79%, severe 16.03% and "malignant" - 10.02%. The late form presented with CNS and multiple organ involvement with 34.55% lethality rate. Organ involvement includes: Interstitial pneumonia in 10.01%; Mild and moderate liver functional test disturbances in 60.29%; Gastrointestinal hemorrhages in 3.28% ; Acute renal failure in 3.09%; Meningeal signs in 7.83%; Meningoencephalitis in 3.46%. The histological sequels of vasculitic process, due to *R.conorii* replication in the endothelial cells were most evident in the skin papules but most of the internal organs were not spared.

CONCLUSION

The re-emerging cases of MSF are characterized by a more severe course with multiple organ involvement and a high fatality rate.

PRESENTER: BALTADZHIEV

20090266

Session: B7.2

Track: Vector borne diseases

The role of rodents as vectors for Haemorrhagic Fever with Renal Syndrome and Leptospirosis in Albania

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BACKGROUND

Small mammals are the main hosts of hantaviruses and leptospira. Their identification and distribution, the environmental structure of their habitat and the prevalence of hantavirus and leptospira infection among them are important information for Public Health Services to control and prevent vector borne diseases in Albania

METHODS

The study was carried out by the Rodent lab of Institute of Public Health in Albania from June 2006 to November 2006 in 22 of the 36 Albanian districts. Killing spring-traps were set in forests, upper border of the forests, human inhabited areas, shrubs, meadows, lawns, clearings. Latitude, longitude and altitude of the stations have been recorded. Their tissues from vital organs were homogenized and tested by molecular methods such as RT-nested PCR in for a probable hantavirus and further on for leptospira infection.

RESULTS

We trapped in total 96 small mammals. They belonged to 7 species (6 of Rodentia and one of Insectivora order). The most predominant species was *Apodemus flavicollis* (60/96, 62.5%), and it was found mainly in forests. Results from molecular methods showed that 6 out of 60 (10.0%) *A. flavicollis* were carrying Dobrava/Belgrade hantavirus RNA, and 2 out of 60 (3.4%) were carrying leptospira DNA. All other small mammals were negative for those agents.

CONCLUSION

A. flavicollis was the most common captured species; The presence of Dobrava/Belgrade hantavirus and leptospira respectively in 10% and 3.4% of them suggests the increased risk for severe disease of hemorrhagic fever with renal syndrome and leptospirosis in rural and forestry areas of Albania.

PRESENTER: BINO

20090260

Session: B7.3

Track: Vector borne diseases

Results of the vaccination campaign against Bluetongue virus serotype 8 in Germany

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BACKGROUND

In January 2008, the European Commission decided to implement a mass vaccination program against Bluetongue virus serotype 8 (BTV-8). At that time inactivated vaccines against BTV-8 were not yet available. As the manufacturers could not provide sufficient information regarding the safety of the vaccines, Germany carried out a safety study before starting the compulsory mass vaccination.

METHODS

In May 2008 the compulsory vaccination program was launched for cattle, sheep and goats with three vaccines tested in the study. In 2009 the vaccination program was continued.

RESULTS

The results of the safety study showed that all three tested vaccines were safe. Mass vaccination were carried out. Approximately 18 million doses were applied to cattle, about 2.6 million doses used in sheep. The number of BTV-8 outbreaks decreased from more than 20,000 cases in 2007 to about 3,000 cases in 2008. Most cases occurred in a ring-shaped area adjacent to the former epidemic area of 2007. In 2009 the number of cases decreased further. Between 1st of May and 15th of July only 4 cases were reported.

CONCLUSION

An analysis of the pharmacovigilance reports in the Paul-Ehrlich-Institute showed that side effects were rare. These results confirm that the vaccines are safe. Because of the late availability of the vaccines the immunisations could not start before May 2008. Therefore, a large proportion of the animals was not fully protected until the end of August and more than 3,000 BT cases occurred despite the compulsory mass vaccination program. However, a high vaccination coverage was achieved until the end of the year in both cattle and sheep. As the vaccination program is continued in 2009 it can be expected that only few cases will occur.

PRESENTER: GETHMANN

20090178

Session: B7.4

Track: Vector borne diseases

A survey on species and prevalence rate of bacterial agents isolated from cockroaches in the hospitals

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BACKGROUND

There are health implications such as nosocomial infections from the cockroaches, as they move freely from areas that they may harbor pathogenic organisms. The goals of this study were to determine species of bacteria isolated from cockroaches and distribution of potential vectors by species and sex.

METHODS

The type of study is descriptive laboratory research. After cockroaches transportation to the laboratory, the separation of the whole-homogenized suspension was performed. Identification of the isolated bacteria was done according to Burgey's manual.

RESULTS

In this study, 305 cockroaches in 3 species were trapped and identified including *Periplaneta americana* (65.6 percent), *Blattella germanica* (12.1 percent) and *Blatta orientalis* (22.3 percent). From these potential vectors, nineteen species of bacteria were isolated and identified.

CONCLUSION

The most common species of bacteria isolated from cockroaches were *E coli*, *Streptococcus* Group D, *Bacillus* spp, *Klebsiellae pneumoniae* and *Proteus vulgaris*. This study showed that, no statistical significance was found between sexes and species of cockroaches carrying bacteria ($P > 0.05$), but significance was found for sexes in *Citrobacter freundii*, *Staph. aureus*, *Strep. non group A&B* ($P < 0.05$).

PRESENTER: KARIMI ZARCHI

20090137

Session: B7.5

Track: Vector borne diseases

Trends in Malaria, Finland, 1995-2008

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BACKGROUND

Imported malaria has increased due to an increase in travelling to endemic countries. It is a life-threatening disease but the risk can be reduced with prophylaxis. Our aim was to characterize the epidemiology of malaria and to describe travelling trends to endemic countries.

METHODS

We analysed malaria cases reported to the National Infectious Disease Register during 1995-2008. Data on travelling was obtained from Statistics Finland and the Association of Finnish Travel Agents during 1997-2007. Descriptive and time series analyses were performed.

RESULTS

A total of 484 malaria cases were reported (average annual incidence, 0.70/100,000 population); 283 Finnish and 201 non-Finnish residents. Median age of cases was 32 years and 31% were females. *P. falciparum* (61%) and *P. vivax* (22%) were the most common species isolated. Infections were mainly acquired in Africa (76%) and South East Asia (12%). In 60% of the cases (389/484) both the place of infection and country of birth were available. Among non-Finnish, 89% cases (129/144) acquired the infection in the same region as the country of birth. No trend in number of cases was observed, but 2 peaks have occurred in 1997 and 2000/2001 and a new increase since 2007. Travelling outside Europe increased mainly to Eastern Mediterranean and South East Asia.

CONCLUSION

A considerable proportion of malaria infections are acquired in the same region as the country of birth. Probable reasons are: misconceptions on life-long immunity, lack of pre-travel advice and inaccurate prophylaxis. Because of self-organized trips and use of international agencies or web resources for travel booking, use of non-conventional data sources for complementary information is necessary. However, this information is only useful if accurately collected.

PRESENTER: GUEDES

20090009

Session: B8.1

Track: Zoonoses

Psittacosis outbreak after a participation in a bird fair, Western France, December 2008

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BACKGROUND

In December 2008, three suspected psittacosis cases were notified by clinicians to the French "Pays de la Loire" Interregional Epidemiology Unit. These cases attended a bird fair by the end of November 2008. We carried out an investigation to describe the outbreak and to identify potential risk factors in relation to this fair.

METHODS

A questionnaire exploring symptoms, biological results and bird fair-related exposures was sent to the 86 exhibitors and organisers. We identified suspected cases as participants with fever or one respiratory symptom in December 2008. We defined confirmed cases: positive PCR or four fold increase in IgG (serology IFI) or seroconversion between 2 serum samples; probable cases: IgG \geq 128 or IgM \geq 16 and possible cases: IgG: 32-64 or stable between 2 samples or epidemiological link with a confirmed case. A retrospective cohort study was conducted among exhibitors and organisers. Environmental and veterinary investigations were implemented to trace potential sources of infection.

RESULTS

Overall, 48 suspected cases were identified: 26 exhibitors, 7 organizers, 9 family members and 6 visitors. We identified 2 confirmed cases, 2 probable cases and 44 possible cases. The attack rate among exhibitors and organisers was 38%. There was an association between being located in 2 sectors of the show room and psittacosis (RR: 3.64 [95%CI: 1.24-10.72]). Pooled faecal samples of birds belonging to a possible case exhibitor were PCR positive for Chlamydiaceae. Conditions of the show room ventilation were insufficient.

CONCLUSION

Psittacosis outbreaks after bird fair have been rarely described. This cluster was detected through the study on human psittacosis currently implemented in Western France. This investigation was useful to formulate recommendations for prevention of psittacosis in bird exhibitions which are held weekly in France.

PRESENTER: BELCHIOR

20090155

Session: B8.2

Track: Zoonoses

Social and demographic characteristics of VTEC infections in England, 2009

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BACKGROUND

Our knowledge of the current social, cultural and environmental determinants of diseases caused by verotoxin-producing *Escherichia coli* (VTEC) in England is limited, obscuring potential associated health inequalities. Information from 1995-1998 show the highest incidence in England is among children 1-4yrs of age. In the US, counties with <50% of the population living in urban centres have higher incidence rates of *E. coli* O157.

METHODS

A national surveillance system for VTEC has operated in England since 01 January 2009. Data are captured on patients' demography, symptoms, outcome and exposures. Based on their postcode, and population data, the demographic characteristics of these cases were compared. The Index of Multiple Deprivation combines weighted measures of income, employment, health, education, skills, housing, environment and crime. Relative incidence was calculated by fitting generalized linear models, controlling for population.

RESULTS

Between 01 January 09 and 30 June 09, there were 254 symptomatic VTEC cases. Compared with the 60+ yr age group, disease is associated with being in the 0-4yr age group (RR 5.60, 95% CI 3.78 - 8.29); while risk is lower in the 20-59 year age group (RR 0.63, 95% CI 0.43-0.94). People living in towns or smaller settlements (RR 2.00, 95% CI 1.51-2.65) are more at risk of VTEC infection than those in urban settlements. Of the 181 cases for whom ethnicity is recorded, 91.8% are White British. No gender differences were apparent, and socioeconomic group did not affect incidence.

CONCLUSION

These data already show that health protection policies may benefit from being targeted to particular populations. Continued collection over time of this data allows an improved ecological understanding of this disease, in terms of risks for particular subtypes and age groups.

PRESENTER: BOXALL

20090194

Session: B8.3

Track: Zoonoses

Antibiotic therapy for Q fever in The Netherlands in 2007 and 2008 and its relation to clinical course

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BACKGROUND

Since 2007, increasingly large Q fever outbreaks occurred in The Netherlands. Doxycyclin is the treatment of choice for acute Q fever but clinical evidence from large cohort studies is lacking. We described changes in antibiotic prescriptions between 2007 and 2008 and associations with the clinical course in patients diagnosed with Q fever in primary care.

METHODS

Data were obtained by primary care medical record review from Q fever patients that were notified in the southeast of The Netherlands in 2007 and 2008. A complicated clinical course was defined as 5 or more general practitioner (GP) consultations or hospital admission.

RESULTS

Data were available for 438 Q fever patients. Doxycyclin was the most commonly prescribed initial antibiotic in 2007 as well as in 2008. Time between onset of illness and start of antibiotic therapy was significantly longer in 2007 (10 days) than in 2008 (6 days) while mean defined daily dose and duration of therapy for doxycyclin was similar in both years. Doxycyclin (OR=0.29, 95% CI 0.17-0.49) and male sex (OR=0.61, 95% CI 0.39-0.96) protected against a complicated clinical course while the risk was higher for patients with onset of disease in 2007 (OR=2.12, 95% CI 1.11-4.05). Initial prescription of other antibiotics than doxycyclin did not significantly protect against a complicated clinical course.

CONCLUSION

Doxycyclin was the antibiotic of choice of GPs for the treatment of Q fever in 2007 and 2008. The data suggest that doxycyclin protects against a complicated clinical course and that it should remain the recommended treatment for acute Q fever.

PRESENTER: DIJKSTRA

20090059

Session: B8.4

Track: Zoonoses

Extensive *Streptococcus suis* outbreak resulting of raw pork in Chiang Mai and Lamphun provinces, Thailand, in June-July 2008

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BACKGROUND

On June 7, 2008, seven cases of *S. suis* infection were reported in northern Thailand. FETP and local staff undertook an investigation to identify its source and provide recommendations for control measures.

METHODS

We conducted a cross-sectional survey. A suspect case was defined as a person in Chomthong, Wiangnonglong or Banhong districts, who had been exposed to pigs or consumed raw pork or pig blood from June 27, to July 10, and also had diagnosis of meningitis, septicaemia, streptococcal toxic shock syndrome (STSS), endocarditis, myocarditis or arthritis. Cases were confirmed by PCR. Active case finding was conducted. We reviewed medical records and interviewed cases, sellers, butchers and farm managers. From trace backs of implicated foods, we surveyed markets, slaughter houses and farms. Using PCR results, we evaluated criteria for clinical case criteria

RESULTS

We interviewed 358 people who participated in local funerals or a traditional ceremony, in which implicated pork was consumed. Totally, there were 44 confirmed cases (attack rate of 12.3%). No case had history of direct contact. Case fatality proportion was 6.8%. The most common clinical manifestations were septicaemia and meningitis, 61% each. Hearing loss occurred in 39.5% of surviving cases. One asymptomatic case was identified. We found overcrowded slaughter houses with poor sanitation. Consumption of an implicated food source (adjusted OR=4.26, 95%CI=1.15-15.74) was associated with the disease. The standard clinical criteria used for suspect case definition had sensitivity, specificity and PPV of 90.9%, 91.7% and 60.6%, respectively.

CONCLUSION

S. suis outbreak was attributable to consumption of implicated pork products. Intensive education was undertaken to promote eating of well-cooked pork. Regular quality control of slaughterhouses, including testing of raw pork and blood products was recommended.

PRESENTER: JATURAPAHU

20090226

Session: B8.5

Track: Zoonoses

The Prevalence of Human Cryptosporidiosis in South-Western Romania

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BACKGROUND

The recognition of the involvement of *Cryptosporidium* spp. in the severe pathology of HIV/AIDS infection, has led to a disregard of its prevalence in the general population.

METHODS

This study, carried out from May to December 2008, is the first investigation of the prevalence of human cryptosporidiosis in prone or unprone population segments in the territory served by the Institute of Public Health Timișoara, namely south-western Romania. 221 subjects were tested, divided in the following groups: I.- 51 infants hospitalized in the Dystrophic Unit of the Emergency Clinic for Children, Timișoara; II.- 49 children institutionalized within the Neuropsychiatric Recovery and Rehabilitation Complexes of Lugoj and Timișoara; III.- 51 children belonging to the general population, referred to the main private lab in the territory with the presumptive diagnosis of Giardiasis; IV.- 49 adult patients and 21 children hospitalized in the Infectious and Pneumo-Tuberculous Disease Hospital in Timișoara, for infectious pathologies other than HIV/AIDS. The coproparasitological examination of spontaneously produced feces was performed by the ELISA method, using BIODIA kits (BIO X DIAGNOSTIC Belgium).

RESULTS

The cumulative prevalence identified was 2.26%, determined by the discovery of 4 asymptomatic cases - 2 infants with 2nd degree dystrophy, 2 teenagers with severe mental retardation and a symptomatic case of one infant hospitalized for invasive acute enterocolitis. The infestation occurred nosocomially (for the dystrophic patients) or through contact with community animals, in the context of improper hygiene.

CONCLUSION

Although the prevalence is limited, the characteristics of the 5 cases show the epidemic potential of this parasitosis, with many potential hosts for zoonotic transmission, with possible inter-human transmission in daytime centres or medical units, and with asymptomatic infections significant for their carrying characteristic.

PRESENTER: POPOVICI

20090264

Session: B8.6

Track: Zoonoses

Crimean-Congo haemorrhagic fever virus in Mediterranean and Balkans countries from 2002 to 2008

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BACKGROUND

Crimean-Congo haemorrhagic fever (CCHF) is a viral zoonotic disease present in several Mediterranean and Balkan countries. However, data are sparse to assess the epidemiological situation and dynamics in that region. Available data show that CCHF is circulating with particular intensity in 2008 in Turkey, Iran, several Balkan countries and southern districts of the Russian Federation. A synthesis on the CCHF epidemiology in these countries has been done.

METHODS

Public authorities were contacted and 6 countries provided the latest available figures from 2002 to 2008. The data analysis was descriptive and was performed on aggregated data. The data collected are summarized in the table, (* 2008 preliminary data).

RESULTS

2002	2003	2004	2005	2006	2007	2008*	
6	6	6	6	6	5	5	Total N countries
609	432	477	532	827	1196	1148	TOTAL cases 5341
40	31	39	28	40	44	64	Total deaths 286

CONCLUSION

Data collected in Turkey, Iran and the Russian Federation show lower CFRs than those initially documented in endemic settings. This is due to the quality of diagnostic and medical management of cases, and to a sensitive system of detection through systematic screening of people referred for tick bites. The virus has recently emerged on a larger scale in Turkey. This could be due to the multiplication of vectors and reservoir animals in rural areas, and also to temperature changes. CCHF virus is the causative agent of the viral haemorrhagic fever with the widest geographical area of circulation in the world. Evidence of CCHF circulation can also be found in most countries on the Black Sea coastline and does not require specific measures other than those already implemented.

PRESENTER: TARANTOLA

20090171

Session: B8.7

Track: Zoonoses

Large and ongoing epidemic of human Q fever linked to a single localized outbreak in goats at a goat farm

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BACKGROUND

We investigated a point source Q fever outbreak with at least 185 laboratory-confirmed cases, following a recent outbreak in goats on a large dairy farm

METHODS

We performed a prospective study where a primary case was defined as an individual positive for phase 2 IgM to Coxiella using ELISA. Investigation in cases included a standardized questionnaire about sex, age, diseases, pregnancy, Q fever symptoms, possible risk behaviour and family members. A case-control study will follow. Patient material will be matched with veterinary and environmental samples, using PCR.

RESULTS

Preliminary data show high attack rates (AR) of acute infection in farm workers and residents, showing mild symptoms not requiring hospital admissions. AR in this group was 100% (25/25; 3 identified immune; response 68%(28/36)). AR in farm visitors, including two public health officials, was 67% (20/30; response 94% (32/34)). High AR's are in agreement with high concentration of Coxiella found in environmental samples (fomites, air) from the farm and its surroundings. 8 of 16 family contacts with no direct link to the farm were positive, suggesting secondary transmission through fomites (clothes, shoes). An additional 133 cases were notified from neighbourhoods up to 12 km from the farm. Mean age in this group was significantly higher (49 years) compared to farm contacts: 31 years), and so were hospital admission rates and symptom severity.

CONCLUSION

Our region, hitherto virtually Q-fever-free, is a unique study ground for investigation of outbreak dynamics, attack rates in different risk groups, primary and secondary transmission routes, predictors of acute and chronic disease, and geographical spreading. Our investigation will lead to improved hygiene protocols and protective measures for farm workers and others confronted with future Q fever outbreaks.

PRESENTER: HOEBE

Track: Zoonoses

Q-fever in a province of The Netherlands

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BACKGROUND

In the spring of 2007 a community outbreak of Q-fever occurred in the northeastern part of Brabant, a province in The Netherlands. In 2008 and 2009, a further increase in cases was observed in a larger geographical area in the same province.

METHODS

We considered a notification as a case, when there is laboratory evidence of Q-fever infection and at least an episode of fever. We described background information, diagnostic delay (days between illness onset and laboratory diagnosis) and percentage of hospital admissions of Q-fever cases notified in 2007, 2008 and 2009 on a national level and in MHS 'Hart voor Brabant'.

RESULTS

Nationwide, 168 cases were notified in 2007, 1001 cases in 2008 and 1715 (until 15 July) in 2009. Most cases became ill in May and June. 1283 (63%) of all cases were notified by MHS 'Hart voor Brabant'. The median diagnostic delay nationwide shortened from 77 days in 2007 to 29 and 18 days in 2008 and 2009. The awareness among doctors and the introduction of a Polymerase Chain Reaction (PCR) on *Coxiella Burnetii* in 2009 in the regional laboratories and diagnostic guidelines contributed to this. Of the cases notified by this MHS in 2009 77% is diagnosed by a GP. In 2007 62 (47%) of the cases were hospitalized, against 120 (17%) in 2008 and 143 (18%) in 2009. In the center area the hospitalization rate is in 2009 even lower (4-12%).

CONCLUSION

Q-fever awareness among GP's and specialists contributes to early diagnosis, especially in the cluster area of the epidemic. In addition, Q-fever will be diagnosed more often, also when there is a mild clinical picture. Physicians will sooner start adequate therapy and lower the hospitalization percentage.

PRESENTER: RIETVELD

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