ESCAIDE

European Scientific Conference on
Applied Infectious Disease Epidemiology

ABSTRACT BOOK

European Scientific Conference on Applied Infectious Disease Epidemiology

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Edinburgh, UK

ecdc
EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

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

Foreword

Welcome by Chairman of ESCAIDE

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

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

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

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

Johan Giesecke
Chair, ESCAIDE Scientific Committee

Scientific Committee

Johan Giesecke ECDC Chair of ESCAIDE Scientifi

Professor Johan Giesecke is Chief Scientist at the ECDC since 2005 and heads the disease programmes of the Centre in the Office of the Chief Scientist. From a background as infectious disease clinician, his research interests include: epidemic modeling, HIV/STIs and late sequelae of acute infections. He has published some 150 scientific papers, has written a textbook on infectious disease epidemiology and co-edited another.

Aftab Jasir ECDC/EUPHEM

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

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

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

Ines Steffens ECDC

Ines is the Editor-in-Chief of Eurosurveillance journal. Ines joined ECDC in 2006 as Managing Editor for Eurosurveillance, and between 2007-2011 set up ECDC's Scientific Communication Section. Before Joining ECDC, Ines was Editor-in-Chief for Germany's national epidemiological and public health bulletin, the Epidemiologisches Bulletin at Robert Koch Institute, Berlin, Germany. Ines is a trained internist, with broad clinical experience and expertise in infectious diseases. She holds a masters degree in public health, and has a special interest in communication-related issues.

Lorenzo Pezzoli President of the EPIET Alumni N

Lorenzo holds a Degree in Veterinary Medicine and a PhD from the University of Turin. Between 2006 and 2008, as an EPIET Fellow (Cohort 12), he was based at the Health Protection Agency Centre for Infections in London. He currently works as an epidemiology consultant for different international organizations in the area of monitoring and evaluation of vaccination activities mainly in low – and middle-income countries. Since 2009 Lorenzo has been the President of the EPIET Alumni Network (EAN), one of the institutions co-organizing ESCAIDE and the EPIET Seminar before that.

Howard Needham ECDC

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

Andrea Ammon ECDC

Andrea Ammon, MD, MPH is the Deputy to the Director and Head of Resource Management and Coordination Unit at the ECDC. Prior to joining ECDC, Dr Ammon served in several roles at the Robert Koch-Institute, in Berlin, Germany, most recently as Head of Department for Infectious Disease Epidemiology. She has published over 90 peer-reviewed journal articles related to her work.

Andreas Jansen ECDC

Andreas is a medical doctor who worked as an infectious disease clinician and HIV specialist in Germany. From 2005-2006 he was a FETP fellow at the Robert Koch Institute in Berlin, and he joined ECDC in 2009. He is currently the Head of the Scientific Advice Coordination Section, responsible for scientific advice procedures and methodologies, and for evidence-based public health.

Panayotis T. Tassios European Society of Clinical Infectious Diseases

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

Yvan J Hutin ECDC

Dr Yvan J. Hutin is the Chief Coordinator of the European Programme for Intervention Epidemiology Training (EPIET). After an MD and a residency in hepato-gastroenterology, he joined the Epidemic Intelligence Service (EIS) of the United States' Centers for Disease Control and Prevention (CDC). As part of his public health career, he worked in Burkina Faso, Uganda and at the World Health Organization in Geneva, India and China. His areas of expertise include epidemiology and prevention of viral hepatitis and Field Epidemiology Training Programmes (FETPs)

Mike Catchpole ECDC Advisory Forum

Mike Catchpole is the head of national specialist epidemiology and intelligence for the Health Protection Agency in England and is the UK 'State Epidemiologist' on the ECDC Advisory Forum. He has worked in infectious disease epidemiology at the national and international level since 1991, and chaired the EPIET Steering Committee from 2001 to 2006. He has been an Expert Adviser to the National Institute for Clinical Health and Excellence in England, and his primary research interests have included HIV and other sexually transmitted infections, the wider health effects of major incidents, and public health information systems development.

Arnold Bosman ECDC

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

Dr Martin Donaghy Health Protection Scotland

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

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The Scientific Committee warmly thank everyone who participated in the reviewing of the abstracts submitted for ESCAIDE 2012

Plenary Speakers

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

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

Sue Welburn is Professor of Medical and Veterinary Molecular Epidemiology, Centre for Infectious Disease, The University of Edinburgh and Assistant Principal for Global Health at The University of Edinburgh.
Sue has more than 20 years experience working on human sleeping sickness and zoonotic trypanosomiasis in domestic wild and animal populations and the Neglected Zoonoses. Research concentrates on the design and use of molecular diagnostic tools for the study and management of neglected zoonotic diseases; anthrax, rabies, cysticercosis, bovine TB, hydatidosis brucellosis, sleeping sickness and for animal trypanosomiaisis and tick borne diseases. Research has encompassed research ranging from 'grass-roots' fieldwork in Africa to laboratory-based dissection of the problem of trypanosomiasis at the gene level. Experience ranging from the management of high-tech laboratory research to the running of applied field projects in developing countries. Sue started her career at what was the Tsetse Research Laboratories in Bristol, a facility supported by ODA. Sue has projects ongoing in Morocco, Mozambique, Mali, Uganda, Kenya, Nigeria, Zambia and Tanzania collaborating focussing on medical and veterinary sector interventions for disease control (in partnership with the National Institute of Medical Research, Ministries of Health, Ministries of Agriculture) supported by funding from the European Union, World Health Organization, DFID, Wellcome Trust, Leverhulme Trust, Cunningham Trust, NTI, Global Health and Security Initiative BBSRC and NERC. Sue has published over 120 peer reviewed scientific articles, reviews and book chapters.

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

Prof Dr Klaus Stark, Robert Koch Institute, Germ

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

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

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

Dr Dilys Morgan, Health Protection Agency, UK

Dilys Morgan has had an interesting career alternating between medical research in rural Africa and UK public health.

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

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

Dr David Heymann, Health Protection Agency, U

David Heymann is currently Chairman of the Health Protection Agency, UK, Head of the Centre on Global Health Security at Chatham House, London and Professor of Infectious Disease Epidemiology, London School of Hygiene and Tropical Medicine. Previously he was the World Health Organization's Assistant Director-General for Health Security and Environment. He also represented the Director-General for polio eradication. He was Executive Director of the WHO Communicable Diseases Cluster till 2003. From 1995 to 1998 he held the post of Director for the WHO Programme on Emerging and other Communicable Diseases. He served as the Chief of research activities in the WHO Global Programme on AIDS until 1995. Before joining WHO, Dr Heymann worked for 13 years as a medical epidemiologist in sub-Saharan Africa on assignment from the US Centers for Disease Control and Prevention (CDC). He also worked in India for two years as a medical epidemiologist with the WHO Smallpox Eradication Programme. He is a member of the Institute of Medicine of the United States National Academies and the Academy of Medical Sciences (United Kingdom). In 2009 he was appointed an honorary Commander of the Most Excellent Order of the British Empire (CBE) for services to global public health.

Plenary Session B:
Vulnerability in 21st century public health

Dr Tek-Ang Lim, European Centre for Disease Pr Sweden

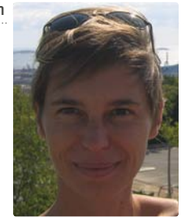
Tek-Ang Lim is a health economist with a specialisation in mathematical and econometrics modelling. He has worked both in academics (Université Paris 1 Panthéon-Sorbonne, Universitat Autonoma de Barcelona) and in public health institutes, where he has assessed the effectiveness of policies and quantified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

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

George Ploubidis has completed his PhD in psychometrics at the National and Kapodistrian University of Athens in 2004 and soon after was appointed as a postdoctoral research associate at the department of psychiatry of the University of Cambridge. While at Cambridge he studied the social determinants of mental health outcomes over the life course, particularly focusing on typologies of mental health and the effect of early life circumstances on shaping mental health trajectories in adulthood. In 2007 he accepted the position of a Lecturer at the Centre for Population Studies, London School of Hygiene and Tropical Medicine and in 2009 he was awarded a Medical Research Council fellowship in Population Health Science to study the underlying mechanism of health inequalities of the older population in England. His current work is focused on understanding the underlying mechanism through which social and structural determinants influence population health in Europe and the development of robust methods to establish causal associations from observational data, with a particular emphasis on the mediating factors that lie on these causal pathways.

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

Dr Laurence Calatayud, EPIET Graduate, Health



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

Dr Satu Kurkela, EUPHEM Graduate, Helsinki Hospital University Laboratories, Finland

Satu Kurkela received MD/PhD at the Helsinki University Medical Faculty, and MPH at the London School of Hygiene and Tropical Medicine. Dr. Kurkela has specialised in clinical microbiology. Her main research interests focus on diagnosis, pathogenesis and epidemiology of zoonotic and vector-borne viruses important in Northern Europe, particularly the mosquito-borne Sindbis alphavirus infection. Dr. Kurkela undertook her EUPHEM fellowship in 2008-2010 (Cohort 1) at the Health Protection Agency , Colindale, London. She presently works as a Consultant Clinical Microbiologist at the Department of Virology and Immunology at the Helsinki University Hospital Laboratory, Finland.

Plenary Speakers

Dr Hannah Lewis, EPIET Graduate Cohort 12, WH

Hannah Lewis has been working as an epidemiologist with WHO in Lao PDR since 2008, assisting the Ministry of Health implement the core capacities of the International Health Regulations, with a focus on emerging infectious disease surveillance and response.

Prior to this she was an EPIET fellow based in Statens Serum Institut (SSI) in Copenhagen (Cohort 12), an Epidemiologist with the Environmental and Enteric Diseases Department of the Health Protection Agency (HPA) from 2004 to 2006 and a Policy Scientist with the Communicable Diseases Branch (Zoonoses) at the Department of Health, England from 1999 to 2003. Hannah Lewis holds a BSc in Biology (1995) from the University of Nottingham, England and a Master of Public Health (2005) from Kings College, University of London.

Dr Giovanna Jaramillo-Gutierrez, EUPHEM fellov Netherlands

Giovanna Jaramillo-Gutierrez, EUPHEM fellow cohort 2010. Giovanna Jaramillo-Gutierrez carried out her PhD research on parasite-vector molecular interactions at the Laboratory of Malaria and Vector research, US National Institutes of Health, Washington DC in collaboration with Université Libre de Bruxelles, Belgium.

After her PhD, Giovanna worked on laboratory capacity building at the Malaria Research & Training Centre in Bamako, Mali. She then joined the influenza epidemiology unit as a surveillance officer at the WHO headquarters in Geneva to support the response to the 2009 flu pandemic.

From 2010, hosted at the Dutch National Institute for Public Health and the Environment (RIVM), as a European Public Health Microbiology fellow with ECDC, she was trained to apply public health microbiology-field epidemiology approaches for surveillance, outbreak detection, investigation and response. In the course of her fellowship she did a mission with the WHO country office and the Ministry of Health in Lao PDR, where she supported activities to strengthen national public health laboratory capacity in order to enhance surveillance and response to outbreaks of emerging infectious diseases.

Dr Helen Maguire, Health Protection Agency, UK

Helen Maguire is Consultant Epidemiologist with the Health Protection Agency (HPA) in London as well as being a the Scientific Co-ordinator for the European Programme for Intervention Epidemiology Training (EPIET). Prior to taking up her part-time post as UK based EPIET Co-ordinator she was an Honorary Senior Lecturer in at St Georges Hospital Medical School London University of London. She has in depth experience of teaching and training on the British public health training scheme having supervised many Specialist registrars and trainees in the London deanery.

Helen was born in Ireland and qualified in medicine at University College Dublin (UCD). Her clinical work was mainly in paediatrics and general medicine before obtaining a Masters degree in Public Health at UCD in 1985. She subsequently moved to the UK to train in communicable disease epidemiology at the then Public Health Laboratory Service (PHLS) Communicable Disease Surveillance Centre (CDSC) and obtain membership of the Faculty of Public Health Medicine in the UK. She was based at CDSC during 1989 to 1992 and was subsequently appointed as Consultant Epidemiologist with the then PHLS, now the HPA. Her specialist expertise and interests are in field epidemiology, hepatitis and other blood-borne disease, tuberculosis (TB) and vaccine preventable disease as well as other infectious diseases of childhood. Helen has been directly involved in management and investigation of many outbreaks in her career to date. She is very experienced in epidemiological methods and has provided practical and active advice and support to many colleagues over the years.

She has a keen interest in surveillance and led the development of and implementation of the first web based surveillance system for monitoring TB in the UK (the London TB register) implemented across 35 National Health Service (NHS) clinics in London in 2002 and a disaggregate surveillance systems for sexually transmitted infections in London Genito-Urinary Medicine clinics. She has also led the evaluation of a variety of surveillance systems.

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

Plenary Session D:
Assessment of adverse events associated with pandemic influenza vaccination

Prof Dr Marion Koopmans, RIVM and Erasmus U Netherlands

Marion Koopmans (DVM, PhD) has completed her training in Veterinary Medicine at the Utrecht University, Veterinary Faculty. She worked as associate professor at the same Faculty to become a specialist in Large Animal Internal Medicine and Nutrition. In parallel, she did a PhD in Veterinary Sciences (Virology; 1990), studying novel enteric viruses and their importance as pathogens for cattle. She continued to study enteric viruses during a fellowship and as visiting scientist at the Centers for Disease Control from 1991 until 1994, and returned to The Netherlands to become section chief of the enteric virus group at the National Institute of Public Health and the Environment (RIVM). She is coordinator of a European research and surveillance network on enteric viruses, and since 2000 holds the chair of the Virology division of the Diagnostic Laboratory for Infectious Diseases at RIVM. Her responsibilities include reference diagnostics, syndromic surveillance and emergency preparedness for viral diseases, including research aimed at improving the response capacity of a public health lab. In 2006 she was appointed as professor of Public Health Virology at the Erasmus University in Rotterdam. Her research interests include enteric viruses, food-borne infections, emerging disease preparedness, and infections at the human-animal interface, with a particular focus on unraveling mechanisms underlying possible emergence of new health threats and optimizing the early detection and response. She has authored over 200 papers in peer reviewed journals.

Prof Androulla Efstratiou, Health Protection Age

Androulla Efstratiou was awarded a doctorate, PhD, in medical microbiology by the University of London in 1987 and appointed to the post of Senior Microbiologist in 1989 to the then Public Health Laboratory Service. In 1994, was appointed Head of the National Streptococcus Reference Laboratory and in June 1998 officially appointed as Head of the newly designated WHO Global Collaborating Centre for Reference and Research on Diphtheria and Streptococcal Infections.

Androulla is a Consultant Healthcare Scientist within the Health Protection Agency Microbiology Services Division and also a Visiting Professor at Imperial College, Faculty of Medicine. Appointments also include WHO Adviser/Consultant on diphtheria and streptococcal infections, project leader for various national and international projects on group A and group B streptococcal infections, project leader for the European Diphtheria programmes, President of the XVIII Lancefield International Symposium on Streptococci and Streptococcal Diseases and the HPA/UK European Public Health Microbiology Programme Supervisor.

Prof Daniel Floret, Claude Bernard Université Ly Santé Publique, France

Daniel Floret – Université Claude Bernard Lyon1, Comité Technique des Vaccinations/ Haut Conseil de la Santé Publique. Professor of Pediatrics, Former Chair of the Pediatric Emergency department of the University Mother and Child Hospital of Lyon. Specialist in pediatric infectious disease, namely in care for severe infectious disease in PICU. Involved in the evaluation of vaccines from 2000 to 2009 at the French regular agency. Member of the Conseil Supérieur d'Hygiène Publique de France 2002 – 2007 and Chairman of the French national Advisory Committee for immunization since 2007.

Dr Scott Halperin, Canadian Center for vaccinology, Dalhousie University, Canada

Scott Halperin is a Professor of Pediatrics and Microbiology and Immunology at Dalhousie University and the Head of Pediatric Infectious Diseases at the IWK Health Centre in Halifax, Nova Scotia, Canada. He was educated in the United States, completing his undergraduate degree in Biology at Stanford University and his medical degree at Cornell University. His postgraduate residency training was in pediatrics at the University of Virginia and his fellowship in pediatric infectious diseases at the University of Virginia and the University of Minnesota. He has lived in Halifax since 1985 where he is the Director of the Canadian Center for Vaccinology. Dr. Halperin is a former Canadian Institutes of Health Research/Wyeth Pharmaceuticals Clinical Research Chair in Vaccines. His research focuses on the diagnosis, treatment, and prevention of pertussis and other vaccine-preventable diseases.

Plenary Speakers

Dr Piotr Kramarz, European Centre for Disease P
Sweden

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

Dr Daniel Weibel, Erasmus University Medical Ce

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

Plenary Session **Abstracts**

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Plenary Session Abstracts

Plenary Session A 09.30 – 10.45 Wed 24

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

Detecting emerging threats – surveillance to assess the risks and monitor the transmission of infectious diseases from animals to humans in Sub-saharan Africa

Presented by:

Sue Welburn

Affiliation:

1 Global Health Acadamy

2 Medical and Veterinary Molecular Epidemiology, in the Division of Pathway Medicine, University of Edinburgh

3 University of Edinburgh International Development Centre

4 Edinburgh Global Health Academy

Abstract

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

This presents a challenge particularly for low resource countries that require improved human, livestock and ecosystem health that will link improvements in livestock production to better human and community health. What are the effects of landscape configurations on the spread of certain diseases, particularly those associated with animal vectors? What landscape and human settlement patterns mitigate disease spread? What strategies can keep systems from becoming pathological?

There are positive indications that national platforms established as a result of HPAI investments may lead to long term intersectoral collaboration for other zoonotic diseases e.g. rabies and brucellosis. After 5 years of cooperation on emerging diseases, One Health is evolving towards the federation of vet and health services. Recommendations that the ad hoc inter-ministerial task forces formed in zoonotic disease outbreaks e.g. anthrax and rift valley fever, be formalised into long-standing platforms for risk analysis and prevention for a range of endemic disease support this evolution and demand joined up platforms and technologies for diagnosis. PREDICT, aims to build a global early warning system for emerging diseases that move between wildlife and people in Africa and across other disease hot spots.

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

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

Presented by:

Dilys Morgan, Health Protection Agency, UK

Affiliation:

Health Protection Agency, UK

Abstract

The majority of emerging infections are zoonoses. Therefore, the identification and assessment of incidents at the human animal interface are crucial when horizon scanning for emerging infectious hazards. Once a potential hazard is identified, a rapid assessment of the risk should be undertaken and the findings communicated in a robust, consistent way. This process is best undertaken in a multidisciplinary, cross-sectoral environment involving human health and veterinary practitioners. The Human and Animal Infections and Risk Surveillance group was established in 2003 and operates across the UK. The members come from range of agencies and have developed a close working relationship, and each has their own professional contacts, collaborators and networks. It provides a useful model for multidisciplinary working between colleagues working in animal and human health

The epidemiological and virological response to an emerging disease – Schmallenberg – a recent case study

Presented by:

Klaus Stark, Robert Koch Institute, Germany

Authors:

Klaus Stark (1), Tanja Ducomble (1,2), Hendrik Wilking (1), Anja Takla (1,3), Mona Askar (1,3), Lars Schaade (1), Andreas Nitsche (1), Andreas Kurth (1)

Affiliations:

1 Robert Koch Institute, Berlin, Germany

2 European Programme for Intervention Epidemiology Training (EPIET), Stockholm, Sweden

3 Postgraduate Training for Applied Epidemiology – German Field Epidemiology Training Programme

Abstract

In November 2011, a novel virus of the genus Orthobunyavirus was isolated from diseased cattle in Germany and was called Schmallenberg virus (SBV). The virus is transmitted by biting midges. It causes severe disease (eg, congenital malformation, stillbirth) in ruminants (sheep, cattle, goats) and results in significant economic losses. Within a few months it spread over large parts of Europe and humans were exposed to diseased animals and to the vectors. After the identification of the virus it could not be excluded that it might also cause infection and disease in humans, although the genetic characteristics of SBV rendered it unlikely. There was a clear need to assess the potential risk the virus may pose to humans. The steps that were taken to answer this question included risk assessments on the European level based on existing knowledge, as well as the timely development of sensitive and specific SBV antibody tests for humans, the epidemiological and virological investigation of appropriate study populations, and the communication of results. We investigated shepherds with various degrees of exposures to diseased and SBV-infected animals with an in-house SBV antibody test. This study and another one from the Netherlands led to the conclusion that the novel animal virus is extremely unlikely to pose a threat to humans.

Keywords: Schmallenberg virus, epidemiological study, antibody test, risk assessment

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Integrated strategies for improving human and animal health

Presented by:

David Heymann, Chatham House, Health Protection Agency, UK

Affiliations:

1. Royal Institute of International Affairs, Chatham House
2. Health Protection Agency, UK
3. London School of Hygiene and Tropical Medicine

Abstract

The majority of emerging infectious diseases in humans have their source in animals, and emergence generally occurs at the human/animal interface, when infections in animals breech the species barrier to infect humans, the population in which they are first identified. The response is often a series of emergency activities to contain the infection in human populations, and to identify the source of the infection in nature. If infection is found to have a source in animals, and if animals cause a continued threat of human infection, culling is often recommended, with severe economic impact.

It may be more cost-effective to place the emphasis on animal infections, by shifting the paradigm from disease detection, surveillance and response in humans to prevention of infection in animals. Factors that influence animal infection, including human-induced changes in natural environments, urban areas and agricultural systems; and global changes related to trade, migration and climate change, are poorly understood. Better understanding of these factors, and modelling of the cost effectiveness of interventions that could result in their mitigation, would provide evidence necessary to better address the political and economic barriers to prevention of infections in animals.

DAY 1

Plenary Session Abstracts

Plenary Session B 14.55 – 16.10 Wed 24

Plenary Session B: Vulnerability in 21st century public health

Measles outbreak in Bulgaria 2009-2010: Poor maternal educational attainment as a risk factor

Presented by:

Tek-Ang Lim

Affiliation:

European Centre of Disease Prevention and Control, Sweden

Abstract

In April 2009, measles re-emerged in Bulgaria after eight years of interrupted indigenous transmission. 24,253 cases and 24 deaths were reported. Molecular epidemiology confirmed virus importation from abroad at a time of health system and socio-economic reform and social marginalization of Roma communities living in crowded housing conditions with a high degree of mobility.

Burgas is a region in Bulgaria where the number of complications following an infection by measles is the highest, over 88% of all measles cases in Burgas have developed a complication. A questionnaire has been designed and administered in the field in Burgas. We collected information from a random selection of 212 individual measles cases living in the region of Burgas, which represents more than 30% of all measles cases in that region. We conducted a logit regression analysis of data from individuals aged 18 years old or lower with measles infections (203 respondents), developing a complication after an infection by measles is our explained variable.

Compared with measles cases without complication, children from educated women had a lower risk of medical complications [odds ratio (OR): 0.24, 95% confidence interval (CI): 0.08 – 0.66). The risk of medical complications of measles was lower among children who have been vaccinated (OR=0.20; 95% CI: 0.06 – 0.63) and with the number of family members in the households (OR=0.74; 95% CI: 0.53 – 1.02).

Poor maternal education, lack of immunization and large household size are associated with more severe measles outcome in Bulgaria. Roma community cumulate these risk factors and may be further at risk because of low vaccination coverage. Intervention targeted towards such vulnerable populations must actively prevent measles and its consequences in Bulgaria.

Keywords: Measles, measles complication, Bulgaria, Roma community, socioeconomic factors, epidemiology, maternal education.

Socio-economic inequalities in tuberculosis rates in Europe

Presented by:

George B. Ploubidis

Authors

George B Ploubidis 1, K Machiyama 1, M J Palmer 1, T A Lim 2, D Manissero 2, A Sandgren 2, S Tsolov 2, J Semenz 2

Affiliations

1 Department of Population Health, Faculty of Epidemiology and Population Health, London School of Hygiene and Tropical Medicine, University of London, United Kingdom.

2 European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden.

Abstract

The 20th century witnessed significant improvements in health in most countries including substantial increases in survival to older ages and large reductions in mortality. However, substantial inequalities or disparities in the health of different socio-economic groups remain and it has recently been shown that the economic costs of socioeconomic inequalities in health are in the order of €1000 billion, or 9.4% of European GDP. With respect to infectious diseases recent findings have revealed a number of high-risk populations in Europe, including those with a low level of education, low occupational class, or low income level. Socio economic inequalities are therefore one of the main challenges for public health and there is a great potential for shifting the overall distribution of risk and improving average population health by eliminating or reducing the socioeconomic health gradient. We argue that the persistence of inequalities in infectious and chronic diseases is partly due to the limited scientific evidence on the individual and macro level mechanisms that underlie these. The empirical challenges in fully grasping the complexity of the causal mechanism of socio-economic inequalities in tuberculosis will be discussed. Results from innovative studies linking income inequality and expected educational attainment with the incidence of tuberculosis in Europe will be presented, along with statistical approaches that have the potential to shed more light on the causal mechanism that underlies socio-economic inequalities in tuberculosis rates in Europe.

Keywords: Socioeconomic Factors, Educational Status, Income, Tuberculosis

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Plenary Session C 09.00 – 10.15 Thurs 25

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

Lessons learnt from an investigation of Pandemic (H1N1) 2009 virus outbreak in a school in London

Presented by:

Laurence Calatayud (1), Satu Kurkela (1,2)

Affiliations:

1. Health Protection Agency, London, UK
2. Helsinki University Central Hospital Laboratory, Helsinki, Finland

Abstract

This presentation highlights some of the key lessons learnt from a Pandemic (H1N1) 2009 virus outbreak investigation in a school setting, specifically focusing on the potential benefits of close collaboration between epidemiologists and public health microbiologists in outbreak investigations. This outbreak took place in April-May of 2009 in London, involving cases in both pupils and staff members, as well as secondary cases in other schools. At the early stage of the outbreak, two parallel and collaborative investigations were initially planned: an observational descriptive epidemiological study and a virological investigation within the school. The investigation revealed room for improvement in the multidisciplinary collaboration at different levels, including the laboratories, public health units, and the affected school, which may have facilitated a more comprehensive set of outcome measures. While good quality data became available from e.g. clinical history and social contacts, some of the other potentially feasible and important outcome measures remained unavailable, including proportion of asymptomatic individuals, association of previous seasonal influenza vaccination with H1N1 infection, proportion of those with previous exposure to H1N1 or phylogenetic analysis of the influenza strain(s) circulating within the school. Based on the experiences from this outbreak, a generic study protocol was developed to facilitate a multidisciplinary approach in the investigation of similar outbreaks in school settings.

Keywords: Swine-Origin Influenza A H1N1 Virus, Outbreaks

Contact details

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Collaboration between field epidemiologists and public health microbiologists in strengthening laboratory capacity in Lao PDR has improved national surveillance and response

Presented by:

Hannah Lewis (1) and Giovanna Jaramillo-Gutierrez (2,3)

Affiliations:

1. World Health Organization, Lao PDR Country Office, Emerging Disease Surveillance and Response
2. Centre for Infectious Disease Control, National Institute for Public Health and the Environment, Bilthoven, The Netherlands
3. European Programme for Public Health Microbiology Training (EUPHEM), European Centre for Disease Prevention and Control (ECDC), Sweden

Abstract

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

Epidemiologists and microbiologists worked together via meetings and informal discussions to identify priority diseases for the national laboratory network and how it should be structured, as well as to develop new Information Education Communication (IEC) materials for specimen collection. Cross-training was conducted to enhance collaboration. Understanding each others' roles and responsibilities has translated into better communication and more efficient work. This collaboration has led to the generation of novel ideas and easier identification of potential obstacles before implementation, both of which have resulted in improvements for surveillance and outbreak response. Early partnership, regular communication and cross-training of epidemiologists and microbiologists have been essential for this process.

Plenary Session Abstracts

Plenary Session D 09.00 – 10.15 Fri 26

Plenary Session D: Assessment of adverse events associated with pandemic influenza vaccination

Vaccination as a tool for Public Health control

Measles epidemics in France: what have we learnt?

Presented by:
Daniel Floret

Affiliation:
Université Claude Bernard Lyon1, Haut Conseil de la Santé Publique, France

Abstract

A large epidemic of measles started in France in late 2008. It seems to have ended, though measles cases are still notified. More than 22 000 cases have been notified including 10 deaths and 26 encephalitis cases.

In 2005, France decided to implement a plan aimed at measles elimination. At that time, the incidence of measles was low, that was considered a "honey moon period". Indeed the vaccine coverage was insufficient and a seroprevalence survey had revealed the existence of an important cohort of susceptible children, adolescents and young adults. Communication relative to the plan was limited and vaccine coverage did not increase significantly.

Paradoxically, inquiries have shown that doctors were mostly in favour of measles immunization and that the proportion of people opposed to this vaccination very low. However, this proportion is higher in the southern France.

During the epidemics the French authorities did not decide to set up vaccination campaigns but to communicate urging people to update their immunization status. The vaccine coverage did increase but the characteristics of the population who benefited to this improvement are presently unknown. Adolescents and young adults accounted for the highest part of measles cases and it appeared that catch up immunization was very difficult to implement without organized vaccination campaigns. Mandatory immunization against measles has been evocated but the general principle is presently on discussion in France.

The epidemics seems to be over, however, most expert think that new waves are expected to occur and that it will not be possible to reach unvaccinated population without official vaccination campaign, that depends on political decisions.

Pertussis: Comparison of national vaccination programmes

Presented by:
Scott Halperin

Affiliation:
Canadian Centre for Vaccinology, Dalhousie University, Canada

Abstract

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

Vaccine safety

Post-licensing monitoring of rare adverse events and safety assessment

Presented by:
Piotr Kramarz

Affiliation:
European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden

Abstract

Monitoring vaccine safety in a transparent way is essential to the success of immunisation programmes and thus to preventing outbreaks of communicable diseases. Vaccines are expected to have an even higher standard of safety than other medicines as they are administered to healthy individuals, mostly children. Adverse events following immunization (AEFI) are often too rare to be detected in the pre-authorization studies and thus post-authorization monitoring of vaccine safety is so important in maintaining public confidence in vaccination. Detection of vaccine safety signals is based on routine spontaneous reporting by healthcare providers or vaccine recipients but is subject to under reporting and biased reporting. Comparison of what is observed through spontaneous reporting to what can be expected to occur without vaccination (background rate of an event) helps in evaluation of signals. So called rapid cycle analyses can be used to monitor the incidence of pre-defined conditions and their potential link with vaccines. To more comprehensively assess the risks of AEFIs, rigorous epidemiological studies are needed. Case-control and retrospective cohort study designs are commonly used but in my talk I will focus more on the so called case-only studies (self-controlled case series, case-crossover). For very rare adverse events, extremely large populations need to be studied in order to have sufficient statistical power which often exceeds the potential of single countries. A European data linkage system using electronic medical databases across several countries can provide the required numbers. Such data linkage should electronically connect information on vaccination with that on clinical diagnoses. As it would primarily use electronic data already collected, it can provide results in a timely manner, which is critical in reacting to vaccine safety concerns.

Keywords: vaccines, vaccine safety, adverse events following immunization, study design

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Post-licensing monitoring of rare adverse events following immunization and vaccine safety assessments in Europe

Presented by:
Daniel Weibel

Affiliation:
Erasmus University Medical Center, Dept medical informatics, Rotterdam, the Netherlands; on behalf of the VAESCO consortium

Abstract:

Background
2009 mass vaccination against pandemic influenza A/H1N1 (A(H1N1) pdm09) was carried out throughout Europe. Authorities called for vaccine safety monitoring especially for Guillain-Barré syndrome (GBS) and narcolepsy. August 2010 reports of a possible association between AS03 adjuvanted A(H1N1)pdm09 vaccine and narcolepsy in children and adolescents emerged in Sweden and Finland. In response the Vaccine Adverse Event Surveillance and Communication (VAESCO) consortium addressed safety concerns with epidemiological studies analyzing data from nine European countries (i.e., SE, FI, DK, IT, FR, NL, NO, UK, ES). Background incidence rates (BIR) for events of interest were assessed to provide information for signal verification, and case control studies, and a self controlled case series (SCCS) assessed the risk of narcolepsy and GBS following A(H1N1)pdm09 vaccine.

Methods
The BIR studies applied a dynamic retrospective cohort study to assess diagnosis rates during the period 2000-2010 using large linked health care databases. The BIR assessments, the case control studies and SCCS are based on a common protocol, common case-report forms, a common Brighton Collaboration case definition (allowing case validation) and automated brighton case classification (ABC) tool. Detailed instructions for data collection was applied.

Results
The European collaborative framework for linking data and sharing information and the conduct of vaccine safety studies will be presented as well as results from the BIR assessments, case control studies and SCCS on the relative risks of GBS and narcolepsy following A(H1N1) pdm09 vaccine.

Conclusions:
These studies show results on important safety issues for the A(H1N1) pdm09 vaccine. It also demonstrated the feasibility to conduct rapid European vaccine safety studies with individual patient level data pooled of which the results were widely used by regulators for benefit risk assessment.

Keywords: vaccines, vaccine safety, adverse events following immunization

Contact:
Dr. Daniel Weibel, Assistant Professor, Erasmus University Medical Center, Dept. medical informatics, d.weibel@erasmusmc.nl

Parallel Session **Abstracts**

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Parallel Session Abstracts

11.15 – 12.55 Wed 24

01 Food and water-borne diseases

Gastro-intestinal poisoning following mistaken consumption of daffodils, Bristol, UK,February 2012

Petra Matulkova (Health Protection Agency South West England, United Kingdom), Maya Gobin (Health Protection Agency, South West Region, United Kingdom), Mark Evans (Health Protection Agency South West England, United Kingdom), Phil Parkyn (Trading Standards Service, Bristol City Council, United Kingdom), Casey Palmer (Health Protection Agency South West England, United Kingdom), Isabel Oliver (Health Protection Agency, United Kingdom)

BACKGROUND:
Between 05 and 18/02/2012, ten individuals presented at a local emergency department with sudden onset of vomiting after mistaken consumption of daffodils. We investigated to prevent further cases.

METHODS:
We defined a case as occurrence of at least one gastrointestinal symptom within 72 hours of consumption. We contacted cases seen at hospital and interviewed them to identify additional cases. We collected information on daffodil purchase and consumption. We collaborated with the Local Authority to investigate points of sale and understand the source of confusion.

RESULTS:
We identified 11 cases (median age: 23, range 5-60 years, eight females) among Bristol residents, all self-identified as originally from China or Hong Kong. The most commonly reported symptoms were vomiting (n=11, 100%) and nausea (n=9, 82%) that developed within 12 hours of daffodil consumption. The proportion with symptoms lasting less than 12 hours was 91% (vomiting) and 78% (nausea). There were no hospitalisations or deaths. Cases clustered in two family dinners and one party for which bunches of pre-bloom daffodil stalks had been purchased in two stores of one supermarket chain. Daffodils were displayed next to vegetables, not marked as non-edible, purchased, cooked and consumed thought to be Chinese chives / onions.

CONCLUSIONS:
Supermarket presentation of daffodils may have contributed to mistaken consumption. Multi-cultural societies are at risk of confusion between non-edible and edible plants. Clinicians must consider gastro-intestinal poisoning in differential diagnoses of acute gastroenteritis. We alerted the local Chinese community using a leaflet. We recommended explicit labelling and positioning of daffodils, away from produce. The supermarket chain introduced graphic 'non-edible' labels and no further cases were reported.

PRESENTED BY:
Petra Matulkova

Keywords: Poisoning, Vomiting, Daffodil, Mistaken consumption
ESCAIDE REFERENCE NUMBER: 2012635

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

Nathalie Jourdan-Da Silva (InVS, France), Béatrice Poignet-Leroux (Direction générale de l'alimentation, Paris, France), Simon Le Hello (CNR des E. coli et Shigella, Institut Pasteur, Paris, France), Renaud Lailler (French Agency for Food, Environmental and Occupational Health and Safety (ANSES), France), Anne-Sophie Barret (Institut de Veille Sanitaire, Saint Maurice, France), François-Xavier Weill (Institut Pasteur, France)

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

METHODS:
Confirmed cases were individuals with an isolation of S. Oranienburg between April 2 and June.24. Probable cases were individuals with a gastrointestinal episode and an epidemiological link with a confirmed case. Food consumption was collected using a standardised questionnaire. Strains isolated in humans and food were compared by PFGE.

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

CONCLUSIONS:
Epidemiological and microbiological investigations identified raw milk sheep cheese as the source of the outbreak. Control measures included the withdrawal and recall of the whole production since March 2012. Notification and investigation of family foodborne outbreaks was essential to determine the source of this outbreak.

PRESENTED BY:
Nathalie Jourdan-Da Silva

Keywords: Salmonella Oranienburg Raw milk cheese Outbreak
ESCAIDE REFERENCE NUMBER: 2012828

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

Karina Preussel (Department of Infectious Disease Epidemiology, Robert Koch Institute, Germany), Michael Höhle (Department of Infectious Disease Epidemiology, Robert Koch Institute, Germany), Klaus Stark (Robert Koch Institute, Germany), Dirk Werber (Robert Koch Institute, Germany)

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

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

RESULTS:
We included 12,016 cases (4,302 hospitalizations, 66 deaths) in the preliminary analysis, among them 724 STEC O157 cases (336 hospitalizations, 9 deaths). In a multivariable model, hospitalization risk (adjusted for age, cases' residence, and season of infection) of O104 cases was comparable to that of O157 cases (RR=0.93; 95% CI: 0.84-1.02). All other groups had substantial lower risks, relative to O157, ranging from RR=0.62 (95% CI: 0.57-0.68) for cases with unknown serogroup to RR=0.26 (95% CI: 0.20-0.35) for O103 infections. The highest age-adjusted mortality was observed for O157. Mortality risk was approximately 1/3 for STEC O104 cases (RR=0.35; 95% CI: 0.15-0.79) and less than 10% for all non-O104/non-O157 cases (RR=0.07; 95% CI: 0.02-0.27). Results for STEC O104 may include a bias through specific clinical recommendations and heightened public awareness during a large outbreak in 2011.

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

PRESENTED BY:
Karina Preussel

Keywords: Shiga Toxin-Producing Escherichia coli, serogroup, virulence, hospitalization, mortality
ESCAIDE REFERENCE NUMBER: 2012888

Salmonella enteritidis outbreak associated with contaminated eggs in Slovakia, May 2012

Andrea Kološová (Regional Public Health Authority, Slovakia), Maria Avdicova (Regional Authority of Public Health, Slovakia)

BACKGROUND:
On May 21st, Regional Public Health Authority in Komárno was notified of increased salmonella cases. We investigated the outbreak to: determine its extent, identify source of infection and implement control measures.

METHODS:
We conducted a retrospective cohort study among children and teachers from the implicated school. We collected information on food consumption and symptoms. Probable cases were those attending the canteen who reported at least 3 watery diarrhoea or 3 loose stools and fever or vomiting between May 10th and 21st. Cases were confirmed by Samonella detection in rectal swabs. We calculated attack rates (AR) and Risk Ratios (RRs) with 95% Confidence Intervals (CIs) and, by logistic regression, odds ratios (ORs) with 95% CIs for relevant items. We conducted environmental investigation.

RESULTS:
Overall participation was 96.3% (616 children, 79 teachers). We identified 43 cases (AR 6.4%, (41 children (12 confirmed; 29 probable); 2 teachers (probable)). Children median age was 9 (range: 3-15). Cases reported: diarrhoea (100%), fever (23.3 %) and vomit (55.8%). Four children were hospitalised, no deaths reported. Those who consumed fried fish (66%) and spinach soup with scrambled eggs (55%) were 4.6 (95%CI: 1.7-13) and 2.4 times (95%CI: 1.2-4.7) respectively more likely to become ill than those who did not. Multivariate analysis confirmed fried fish as associated with illness (OR=6.5; 95%CI 1.2-35.4). No fried fish was available for analysis. Salmonella enteritidis was found in eggs' shells. We detected non-compliance with HACCP. Swabs from kitchen staff were all negative. Eggs were traced back and salmonella confirmed.

CONCLUSIONS:
Cooking from contaminated eggs and breach of hygiene regulations caused this outbreak through fried fish as vehicle. Strict adherence to good manufacturing practises is necessary to prevent spread of infection.

PRESENTED BY:
Andrea Kološová

Keywords: Salmonellosis, eggs, school canteen, Slovakia
ESCAIDE REFERENCE NUMBER: 20121015

Parallel Session Abstracts

02 Healthcare-associated Infections (1)

Evaluating the impact of inter-ward patient movements on the spread of nosocomial infections

Mariano Ciccolini (University Medical Center Groningen, The Netherlands), Jan P Arends (University Medical Center Groningen, The Netherlands), Hajo Grundmann (University Medical Center Groningen, The Netherlands), Alex W Friedrich (University Medical Center Groningen, The Netherlands)

BACKGROUND:
Patient movements between hospital wards are potentially an important route of transmission of nosocomial pathogens. These movements determine a complex contact network, which is usually ignored when hospital-wide infection control policies are implemented.

METHODS:
We obtained inter-ward patient movement data covering a one-year period at the University Medical Center Groningen, a large tertiary referral hospital with over 1300 beds in the northern region of the Netherlands. Employing social network analysis tools, and a simple simulation model, we identified wards most at risk of infection, as well as the wards most efficient in pathogen propagation. We also compared network community structure with current ward assignment of infection control teams.

RESULTS:
There were 12,941 patient transfers between 58 wards. On average, each ward sent(received) patients to(from) 17(16) other wards (interquartile range 10-31(10-30)). Moreover, any two wards could be mutually reached, and epidemiologically linked, following the path of referred patients. Undetected outbreaks starting in a high risk ward can affect 25% of all other wards twice as fast as when emergence occurs in lower risk wards. We observe that assigning different infection control teams to wards in the same network cluster may cause delays in the detection of potential outbreaks.

CONCLUSIONS:
A mathematical approach to the study of inter-ward patient movements has allowed us to quantify the relative risk of pathogen transmission and acquisition by different wards, revealing previously unsuspected transmission pathways. More importantly, this mathematical framework can be easily adopted by other hospitals to carry out similar assessments.

PRESENTED BY:
Mariano Ciccolini

Keywords: Mathematical model, Social Network Analysis, Nosocomial infections, Patient referrals
ESCAIDE REFERENCE NUMBER: 2012962

Contact to livestock as an important risk factor for methicillin-resistant Staphylococcusaureus (MRSA) should be included in screening routines in hospital patients in the district Osnabrueck, Germany 2010

Michaela Diercke (Niedersächsisches Landesgesundheitsamt, Germany), Gerhard Bojara (Local Public Health Department Osnabrück, Germany), Ella Ott (Hannover Medical School, Germany), Jutta Esser (Laboratory Practice Osnabrück, Germany), Iris Chaberny (Hannover Medical School, Germany)

BACKGROUND:
To reduce the number of methicillin-resistant Staphylococcus aureus (MRSA) screening of hospital patients is indispensable. We estimated the MRSA point-prevalence in one German district with intensive livestock farming and identified risk factors associated with MRSA colonization.

METHODS:
In a cross-sectional study we screened hospitalized patients in all 16 acute-care hospitals in the district Osnabrück for MRSA in November 2010 taking nasopharyngeal swabs. MRSA isolates were analyzed for Staphylococcus aureus protein A (spa)-types defining spa-types belonging to multilocus sequence type (MLST) 398 as livestock-associated. Hygiene professionals interviewed patients with a standardized questionnaire on MRSA history and risk factors. We calculated odds ratios (OR) and 95% confidence intervals (CI) with logistic regression comparing patients with and without MRSA colonization.

RESULTS:
Altogether, 3266/3475(94%) patients agreed to participate. Median age was 64 years, 51% were female. Overall MRSA prevalence was 3% (range among hospitals 0-6.6%). Units with highest prevalence were vascular surgery (11%) and neurology (9.4%). Main spa-types were t003 (34%), t032 (20%) and MLST 398 spa-types (23%). According to patients 711 (22%) had been screened for MRSA on admission or during hospital stay , including 25/99 (25%) patients with occupational contact to pigs or cattle. Occupational contact to pigs (OR=7.6, 95% CI 3.8-15), history of MRSA(OR=7.4, 95% CI 4.1-13), need for nursing care (OR=2.8, 95% CI 1.8-4.5), chronic wounds (OR=2.3, 95% CI 1.4-4.0), stay on vascular surgery (OR=3.0, 95% CI 1.4-6.5) and neurology (OR=4.0, 95% CI 2.1-7.8) units were independently associated with MRSA.

CONCLUSIONS:
We recommend appropriate MRSA management, including screening, isolation and eradication in carriers, especially in vascular surgery and neurology units. The recommendation to screen patients with occupational contact to livestock on admission to hospitals needs to be reinforced.

PRESENTED BY:
Michaela Diercke

Keywords: Methicillin-resistant Staphylococcus aureus, point-prevalence, risk factors, livestock
ESCAIDE REFERENCE NUMBER: 2012978

Cluster Analysis of Vancomycin Resistant Enterococci (VRE) colonisation on a London Hospital Intensive Care Unit (ICU), 2010-2011

Ellen Heinsbroek (European Programme for Intervention Epidemiology Training (EPIET), United Kingdom), Margie Meltzer (North West London Health Protection Unit, Health Protection Agency, London, United Kingdom), Jane Turton (Laboratory of Health Care Associated Infections, Microbiology Services, Health Protection Agency, United Kingdom), Helen Maguire (London Regional Epidemiology Unit, Health Protection Agency, London, United Kingdom)

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

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

RESULTS:
Of 1,101 ICU patients admitted, 687 (62%) were screened an average of 2.2 times (range 1-30). Of those, 56 (8%, monthly range 0-17%) were VRE positive (rate: 8.1 per 1,000 bed-days, monthly range 0-19.2). Strain typing showed 7 different PFGE types for 33/43 (77%) cases. The remaining 10/43 cases (23%) had unique strains. Possible cross-contamination on ICU occurred in 18/43 cases (42%), resulting in clusters of 2-3 cases.

CONCLUSIONS:
Regular screening showed nearly one in twelve ICU patients were VRE-positive and identified possible cross-contamination in almost half of the cases. We recommend continued screening, including at discharge, to monitor transmission and further review of infection control practice, including environmental cleaning and antibiotic prescribing.

PRESENTED BY:
Ellen Heinsbroek

Keywords: Enterococcus, Hospital Infections, Cross infection, Intensive Care Units
ESCAIDE REFERENCE NUMBER: 2012854

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

Teija Korhonen (Regional Office of the French Institute for Public Health Surveillance (CIRE Sud), Marseilles, France), Caroline Six (Regional Office of the French Institute for Public Health Surveillance (CIRE Sud), Marseilles, France), Francis Charlet (Regional Health Office of Provence-Alpes-Côte d'Azur, Marseilles, France), Philippe Malfait (Regional Office of the French Institute for Public Health Surveillance (CIRE Sud), Marseilles, France)

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

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

RESULTS:
Between October 2011 and April 2012, we identified 84 clusters, this compares to a mean of 34 clusters during the previous four seasons (p 0.008). During 2011-2012, the attack rate among residents and personnel was 28% and 9%, respectively. Among ill residents in 2011-2012, 137 (10 %) were hospitalised and 86 (5%) died, compared with a mean case-fatality of 2.8% in the previous years (p 0.018). At least one case of influenza was confirmed in 60% of the clusters in 2011-2012, while the mean proportion in previous seasons was 12% (p< 0.001). Influenza A (H_3N_2) was the only virus strain identified in seven outbreaks during 2011 – 2012.

CONCLUSIONS:
We report the largest number of notified ARI clusters with influenza confirmation since the implementation of the surveillance system. This increase may be due to the circulation of H_3N_2 virus following two years of predominance of the pandemic H_1N_1-virus. It may also reflect the increasing cluster-ascertainment due to better acquaintance of reporting personnel with the system.

PRESENTED BY:
Teija Korhonen

Keywords: Respiratory Tract Infections Human Influenza Surveillance Outbreaks Nursing Homes
ESCAIDE REFERENCE NUMBER: 2012833

DAY 1

Parallel Session Abstracts

03 Tuberculosis

A tuberculosis cluster among immigrants in Norway 1997-2011: Identifying areas for improving the TB Control Programme

Bernardo Guzman Herrador (ECDC/FHI, Norway), Karin Rønning (Norwegian Institute of Public Health, Norway), Turid Mannsåker (FHI, Norway), Katrine Borgen (FHI, Norway), Ulf Dahle (FHI, Norway)

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

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

RESULTS:
Of the 44 notified cases, 36 originated from Somalia and eight from other high-incidence countries. Fifteen were ASs and 29 OIs. Upon arrival, 18 cases had latent TB, three had active TB and nine tested negative. Results of TB-screening upon arrival were not available for the remaining 14 cases (one AS and 13 OIs). Five of the 13 OIs had not been screened after having been residing in Norway for one year or longer.

CONCLUSIONS:
Most cases with available results of TB-screening upon arrival to Norway were already infected. However, TB-status upon arrival was unknown for many of the OIs due to lack of initial screening. Closer individual follow-up of already infected cases could have prevented development into active TB. The reasons why OIs postpone or ignore TB-screening should be explored.

PRESENTED BY:
Bernardo Guzman Herrador

Keywords: Tuberculosis, immigrants, screening, Norway
ESCAIDE REFERENCE NUMBER: 2012716

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

Sofie Gillesberg Lassen (Robert Koch Institute (1), European Programme for Intervention Epidemiology Training (EPIET) (2), Germany), Barbara Hauer (Robert Koch Institute, Germany), Bonita Brodhun (Robert Koch Institute, Germany), Lena Fiebig (Robert Koch Institute, Germany), Doris Altmann (Robert Koch Institute, Germany), Walter Haas (Robert Koch Institute, Germany)

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

METHODS:
We performed univariable, stratified, and multivariable analyses of TS by demographic and clinical factors on 2002-2008 German TB notification data (N=42,286) using the aforementioned TSR definitions. We calculated incidence-rate ratios (IRR) and 95% confidence intervals (CI) using negative binomial regression in STATA.

RESULTS:
A total of 38,344, 17,592 and 16,962 cases were included for RKI, WHO and ECDC definitions, respectively. Being culture-positive was associated with TS only univariably. In the final multivariable models, significant associations between TS and factors analysed were similar for RKI, WHO and ECDC definitions: being male, increasing age, multi-drug resistance and living in a new German Federal State were negatively associated with TS. For the RKI definition, being born in the former Soviet Union (IRR: 1.06, 95% CI: 1.01-1.11) and extra-pulmonary TB (IRR: 1.04, 95% CI 1.00-1.08) were positively associated with TS; being a new case was not significant.

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

PRESENTED BY:
Sofie Gillesberg Lassen

Keywords: Tuberculosis Surveillance Treatment success Treatment outcome monitoring Germany
ESCAIDE REFERENCE NUMBER: 2012775

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

Ettore Severi (Health Protection Agency, United Kingdom), Helen Maguire (London Regional Epidemiology Unit, Health Protection Agency, London, United Kingdom), Chikwe Ihekweazu (Health Protection Agency, United Kingdom), Graham Bickler (Health Protection Agency, United Kingdom), Ibrahim Abubakar (Respiratory Disease Department, Health Protection Agency - Colindale, London, United Kingdom)

BACKGROUND:
In 2010, 8483 individuals were diagnosed with tuberculosis (TB) in the United Kingdom (UK). Country of birth was recorded for 7947 and 73% were born outside the UK. To detect active TB cases and offer treatments, Heathrow and Gatwick airports screen (chest radiography) new entrants ›15 years of age, from countries with annual TB incidence ›40 cases/100,000 population, intending to stay over six months. We estimated the screening yield to provide evidence on screening usefulness and identified those at risk of active TB after entry.

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

RESULTS:
Of 200,199 screened entrants, 678 (0.34%) had suspected TB; of these, 90 were later reported in ETS, 59 of them within 3 months (yield=0.03%). Overall, 350 entrants were reported in ETS; persons from countries with annual TB incidence ›150 cases/100,000 population (aRR=5.8, 95% CI 3.6–9.3) and refugees (aRR=4.3, 95% CI 2.2-8.1) were at increased risk of TB diagnosis after entry.

CONCLUSIONS:
We question impact and usefulness of screening at port of entry, as it yields only few TB cases. Efforts for community post-entrance screening to enable early TB diagnosis and treatment should focus on persons from countries with TB incidence ›150 cases/100,000 population and refugees.

PRESENTED BY:
Ettore Severi

Keywords: Tuberculosis, immigration, screening, airports, cohort study
ESCAIDE REFERENCE NUMBER: 2012845

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

Maria Borg (EPIET, United Kingdom), Chitra Arumugam (Health Protection Agency, South West North Health Protection Unit, United Kingdom), Ibrahim Abubakar (Respiratory Disease Department, Health Protection Agency - Colindale, London, United Kingdom), Maya Gobin (Health Protection Agency, South West Region, United Kingdom), Grace Magani (Health Protection Agency, South West North Health Protection Unit, United Kingdom), Stephen Moore (National Health Service, Gloucestershire Care Services, United Kingdom), Isabel Oliver (Health Protection Agency, United Kingdom)

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

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

RESULTS:
Initially, 113 contacts were screened. Of these, 17 (15%) were infected. Subsequently, among 79 screened contacts we found 3 (4%) positive. Contacts with ›0-3.9, 4-7.9 and ≥8 hours exposure had 1.80 (95% CI 0.38-8.54), 4.31 (95% CI 1.26-14.76) and 6.17 (95% CI 1.40-27.08) times higher risk of infection than contacts with no exposure. Positive contacts were referred to a respiratory physician and offered appropriate treatment.

CONCLUSIONS:
The risk of TB infection increased with increasing duration of contact, with the risk being markedly higher for those with cumulative weekly contact in excess of 4 hours. The delay in diagnosis may explain the high risk of infection for contacts in this school setting and underlines the importance of early diagnosis andtaking account of total duration of exposure to the index case especially when children may be at risk.

PRESENTED BY:
Maria Borg

Keywords: Tuberculosis School setting Mass screening IGRA Duration of exposure
ESCAIDE REFERENCE NUMBER: 20121004

DAY 1

Parallel Session Abstracts

13.25 – 14.25 Wed 24

04 Epidemiology and microbiology driving public health policy (1)

Identification of hidden key hepatitis C populations: An evaluation of screening practices using surveillance data and mixed epidemiological methods

Angelique Vermeiren MSc. (Public Health Service South Limburg, The Netherlands), Nicole HTM Dukers-Muijrers PhD. (Public Health Service South Limburg, The Netherlands), Inge van Loo PhD MD. (Maastricht University Medical Center, The Netherlands), Frans S Stals PhD MD.(Clinical Microbiologist, Atrium MC, The Netherlands), Dirk W van Dam MD. (Orbis Medical Center, The Netherlands), Ton Ambergen PhD. (Maastricht University, The Netherlands), Christian Hoebe MD PhD. (Public Health Service South Limburg, The Netherlands)

BACKGROUND:
Hepatitis C virus (HCV) is a major cause of liver diseases worldwide. Due to its asymptomatic nature, screening is necessary for identification. Screening of the total population is not cost effective. It is therefore important to identify which factors for positivity characterize the key populations in which targeting of screening yields the highest numbers of HCV positives, and assess which of these key populations have remained hidden to care.

METHODS:
Laboratory data (2002-2008) were retrieved for all HCV tests (23,800) in the south of the Netherlands (population 500,000). Trends were tested using Poisson regression and chi-square tests. Risk factors for HCV were assessed using a log-linear regression. The hidden positive population was estimated by a capture-recapture approach.

RESULTS:
The number of tests increased over time (2,388-4,149). Nevertheless, the positivity rate among those screened decreased (6.3%-2.1%). The population prevalence was estimated to be 0.49% (95%CI 0.41-0.59). Of all HCV-positive patients, 66% were hidden to current screening practices. Risk factors associated with positivity were low socioeconomic status, male sex, and age between 36-55. In future screening 47% (95%CI 32-70) of hidden patients can be identified by targeting 9% (men with low socio-economic status, 36-55 years old) of the total population.

CONCLUSIONS:
Although the current HCV screening policy addresses high-risk populations, it only reaches one third of positive patients. This study shows that combining easily identifiable demographic risk factors can be used to identify key populations as a likely target for effective HCV screening. We recommend strengthening screening among middle-aged men, living in low socioeconomic neighborhoods.

PRESENTED BY:
Angelique Vermeiren

Keywords: Hepatitis C, mass screening, epidemiological methods, social class, risk populations
ESCAIDE REFERENCE NUMBER: 2012636

Evidence for Lower Susceptibility to Q Fever in Children

Volker Heinz Hackert (Public Health Service South Limburg, The Netherlands), Nicole HTM Dukers-Muijrers PhD. (Public Health Service South Limburg, The Netherlands), Inge van Loo PhD MD. (Maastricht University Medical Center, The Netherlands), Carlijn Somers (Public Health Service South Limburg, The Netherlands), Petra Pasman (GP Practice Heerlerbaan, The Netherlands), Christian Hoebe MD PhD. (Public Health Service South Limburg, The Netherlands)

BACKGROUND:
Q fever is rare in children. While underreporting has been offered as a possible explanation, there is little confirmatory evidence. Our study is first to assess wider community incidence of disease and infection in children following a point source outbreak of Q fever, related to abortions on a dairy-goat farm in South Limburg, Netherlands, where seroprevalence of the general population had raised from 0.5% pre – to 3.4% postoutbreak.

METHODS:
Using 2011/12 seroprevalence and questionnaire data of 464 schoolchildren from three schools in the study area, located at 3.0km(response:266/579), 4.2km(151/1429), and 4.4km(47/199) from the goat farm, and 2009/10 mandatory notification and serology data, we compared children(<18 years) and adults regarding incidence of disease and infection, testing and notification rates, and underreporting.

RESULTS:
Children represented 17%(52513/307348) of the study area population, but only 9.4%(119/1271) of all subjects tested in 2009/10, and 3.2%(8/253) of laboratory-confirmed notified cases. Excluding two seropositive children reporting outbreak farm visits in 2009, postoutbreak seroprevalence in 2012 was 1.4%(6/432). The six seropositives lived in the same municipality as the outbreak farm, and closer to it than seronegatives (mean 2.5km versus 4.1km, p<0.01). None reported health problems associated with Q fever. Seroprevalence was significantly lower compared to a 2009 sample of IgM-positive adults from the same municipality (12%(5/42)(RR:0.12, 95%CI:0.04-0.37, p<0.001). Only one of eight notified children was from this municipality; with 2366 children living in the municipality, 1.4% seroprevalence extrapolated to 33 infections, 32(97%) of which remained unreported.

CONCLUSIONS:
Q-fever infections in children were largely asymptomatic and unreported. Incidence of Q fever infections in children appeared very low compared to adults, raising the possibility of lower susceptibility to Q fever in this age group, advocating further exploration.

PRESENTED BY:
Volker Heinz Hackert

Keywords: Q fever, Coxiella burnetii, child, disease susceptibility, incidence
ESCAIDE REFERENCE NUMBER: 2012839

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

Volker Heinz Hackert (Public Health Service South Limburg, The Netherlands), Nicole HTM Dukers-Muijrers PhD. (Public Health Service South Limburg, The Netherlands), Genevieve van Liere (Public Health Service South Limburg, The Netherlands), Frans Stals (Atrium Medical Center, Heerlen, The Netherlands), Wim van der Hoek (National Institute for Public Health and the Environment, Bilthoven, The Netherlands), Christian Hoebe MD PhD. (Public Health Service South Limburg, The Netherlands)

BACKGROUND:
Clinically, Q fever may overlap with conditions such as influenza, confronting physicians with diagnostic challenges. Since Feb2009, South Limburg, Netherlands, faced a regional outbreak of Q fever related to abortions on a dairy-goat farm. Q-fever testing in 2009/10 may have been influenced by H1N1 influenza, epidemic in the Netherlands since mid-October 2009.

METHODS:
All regional subjects tested for Q fever from Feb2009-Apr2010 (n=1228) were assessed relating age, gender, and time of testing to acute Q fever serology. Association with symptoms was evaluated in questionnaire respondents (163 seropositive, 301 seronegative). Data, including time trends for symptoms, were analyzed using linear and logistic regression.

RESULTS:
Of 1228 subjects tested, 253 were seropositive, 975 seronegative. Distribution of the number of subjects tested/week was bimodal; the first testing wave (n=644) peaked mid-May 2009, the second (n=304) mid-March 2010, with an inbetween-low early December 2009. Of all seropositives, 91% were detected in the first wave (positive rate=229/644(36%), 9% in the second (positive rate=24/304(8%)). Male sex(OR:1.9(95%CI:1.2-3.1)), fever(2.3(1.2-4.4)), flulike illness(2.0(1.0-3.8)), pneumonia(3.5(2.0-6.2)), and absence of cough(0.3(0.2-0.5)) were significant predictors of Q fever in multivariate logistic regression; a weighted sumscore based on these predictors gave a LR+ of 4.8 for high and a LR – of 0.3 for low scores. Cough, a possible marker of influenza, was reported with increasing frequency in the second wave(weekly OR:1.04(1.02-1.07)).

CONCLUSIONS:
A first wave of Q fever testing until December 2009 was followed by a second wave yielding a much lower positive rate. 2009(H1N1) influenza may have caused continuous testing for Q fever since December 2009. A symptom-based sumscore may assist differentiation and diagnostic decision-making in epidemic settings.

PRESENTED BY:
Volker Heinz Hackert

Keywords: Q fever, Coxiella burnetii, Influenza A Virus, H1N1 Subtype, differential diagnosis
ESCAIDE REFERENCE NUMBER: 2012842

05 Healthcare-associated infections (2)

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

Daniel Eibach (1) EUPHEM, ECDC, Sweden; 2) Centre de Biologie et Pathologie Est, Hospices Civils de Lyon, France), Yahia Mekki (Centre de Biologie et Pathologie Est, Hospices Civils de Lyon, France), Jean-Sebastien Casalegno (Centre de Biologie et Pathologie Est, Hospices Civils de Lyon, France), Karine La Bail Carval (Gynecology Obstetrics Departement, Hospices Civils de Lyon, France), Marie-Laure Valdeyron (Preventive Medecine Departement, Hospices Civils de Lyon, France), Georges Mellier (Gynecology Obstetrics Departement, Hospices Civils de Lyon, France), Bruno Lina (Centre de Biologie et Pathologie Est, Hospices Civils de Lyon, France), Pascal Gaucherand(Gynecology Obstetrics Departement, Hospices Civils de Lyon, France), Patrice Mathevet (Gynecology Obstetrics Departement, Hospices Civils de Lyon, France)

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

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

RESULTS:
We collected 217 samples before and 200 samples after the ultrasound examination. Human DNA was detected in 36 (18%) post-examination samples and 61 (28%) pre-examination samples. After the ultrasound LLD procedure, 5 (2.5%) samples contained detectable HR-HPV types (16, 31, 2x 53 and 58). Similarly, HPV was detected in 6 pre-examination samples (2.7%). Amongst these 6 positives, 4 (1.8%) contained a HR-HPV (types 53 and 70).

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

PRESENTED BY:
Daniel Eibach

Keywords: Papillomavirus, Disinfection, Infection control, Ultrasonography, Equipment Contamination
ESCAIDE REFERENCE NUMBER: 2012680

DAY 1

DAY 1

Parallel Session Abstracts

Antimicrobial use in Scottish care homes for older people

Fiona Murdoch (Health Protection Scotland (HPS), United Kingdom), William Malcolm (Health Protection Scotland (HPS), United Kingdom), Christopher Sullivan (Health Protection Scotland (HPS), United Kingdom), Margaret Tannahill (Care Inspectorate, United Kingdom), Abigail Mullings (Health Protection Scotland (HPS), United Kingdom), Jacqui Reilly (Health Protection Scotland, United Kingdom)

BACKGROUND:

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

METHODS:
Care homes across Scotland were recruited to the survey. Data collection was undertaken between 10/07/10 and 05/08/10. Data were collected on the day of survey. Data on resident demographics, presence of extrinsic and intrinsic risk factors, antimicrobial prescription and presence of an infection were collected for each resident who was identified with an infection or receiving antimicrobials.

RESULTS:
A total of 357 residents were receiving antimicrobial therapy at time of survey with ten residents receiving two antimicrobials. The prevalence of antimicrobial use was 7.3% (95%CI 6.6 to 8.1).The most commonly prescribed antimicrobials were trimethoprim, nitrofurantoin and amoxicillin. Data were analysed for antimicrobial prescribing by infection type. The total number of GPs coordinating medical care in each care home ranged from 1 to 83 and there was variation in antimicrobial policies between care homes.

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

PRESENTED BY:
Fiona Murdoch

Keywords: Healthcare associated infection, Antimicrobial Resistance
ESCAIDE REFERENCE NUMBER: 2012821

Second federal state wide survey on MRSA management in hospitals in North Rhine-Westphalia (NRW)

Annette Jurke (NRW Centre for Health, Muenster, Germany), Robin Koeck (University Hospital Muenster, Institute of Hygiene, Muenster, Germany), Alex W Friedrich (University Medical Center Groningen, The Netherlands), Regine Kaemmerer (Ministery of Health, Emancipation, Care and Age, Duesseldorf, Germany), Inka Daniels-Haardt (NRW Centre of Health, Muenster, Germany)

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

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

RESULTS:
The median MRSA incidence density of 292 hospitals was 1.15 per 1,000 patient days with interquartile range (IQR) of 0.71 – 1.88. In 275 hospitals the median of percentage of MRSA on all S. aureus was 33.0% with IQR 21.0 – 48.1. The median screening rate was 7.00% with IQR 2.20 – 18.0. The local health authorities estimated that 66% of the hospitals have been adequately addressed the RKI recommendations. Compared to the first survey in 2006, the median screening rate has more than quadrupled, the mean MRSA incidence density has nearly doubled and the implementation of the RKI recommendations increased by 14%.

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

PRESENTED BY:
Annette Jurke

Keywords: MRSA, prevention, surveillance, guideline adherence, survey
ESCAIDE REFERENCE NUMBER: 20121055

06 Surveillance (1)

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

Noemí López (PEAC, National Center for Epidemiology, Carlos III Health Institute, Spain), Concepción Delgado-Sanz (National Center of Epidemiology, ISCIII , Spain), Silvia Jiménez-Jorge (Ciber Epidemiología y Salud Pública (CIBERESP), Ministry of Science and Innovation, Institute of Hea, Spain), Lorena Simón Méndez (National Center of Epidemiology, ISCIII , Spain), Salvador de Mateo (Ciber Epidemiología y Salud Pública (CIBERESP), Ministry of Science and Innovation, Institute of Hea, Spain), Amparo Larrauri (Ciber Epidemiología y Salud Pública (CIBERESP), Ministry of Science and Innovation, Institute of Hea, Spain)

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

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

RESULTS:
Of 108,312 influenza cases reported to SISS in the study period, 27,686 (25.56%) were swabbed.Swabbing increased in pandemic (p<0.001) and it was maintained in post-pandemic seasons. Multivariate analysis showed lower percentage of swabbing in >64 years than in other age-groups and higher one in vaccinated patients (OR=1.57 CI95%:1.49-1.66) and in pandemic/post-pandemic seasons (OR=2.24 CI95%:1.76-2.14).However, the probability to be swabbed in vaccinated patients decreased in pandemic/post-pandemic seasons (p<0.036).The average number of samples taken by sentinel practitioners in the 2010-11 epidemic period was significantly higher compared with the non-epidemic period (5.51±SD5.82 vs. 2.64±SD3.78 respectively)

CONCLUSIONS:
Swabbing in SISS increased during 2009-pandemic and since then has been remained. Although the swabbing in >64 years was lower than in other age-groups, it reached the European surveillance guidelines. Swabbing was higher in influenza-vaccinated patients but that probability decreased in vaccinated cases since pandemic. We continue emphasizing in the SISS the importance of systematic collection of specimens for virological confirmation to avoid selection bias of patients

PRESENTED BY:
Noemí López

Keywords: Pandemic Influenza, Human/epidemiology Sentinel Surveillance Specimen Handling/statistics & numerical data
ESCAIDE REFERENCE NUMBER: 2012974

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

Remko Enserink (National Institute for Public Health and the Environment, The Netherlands), R. Zuidema (National Institute for Public Health and the Environment, The Netherlands), Harold Noel (Institut de Veille Sanitaire, France), H.A. Smit (Julius Centre, University Medical Centre Utrecht, The Netherlands), W. van Pelt (National Institute for Public Health and the Environment (RIVM), The Netherlands)

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

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

RESULTS:
The study comprised 1768 follow up years among children in 47 day care centers. The most common diagnoses, expressed as incidence per 1000 child years, were gastroenteritis (355) influenza-like illness (226), common cold (261), ear infection (137), chickenpox (113), eye infection (35) and impetigo (16). Gastroenteritis and influenza-like illness accounted for almost half of reported illness episodes among children. 16% of illness episodes required a general practitioner visit, 7% required antibiotics, and 1% of children required hospitalization due to their illness.

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

PRESENTED BY:
Remko Enserink

Keywords: Day Care, Surveillance, Cohort Studies, Communicable Diseases
ESCAIDE REFERENCE NUMBER: 2012979

DAY 1

Parallel Session Abstracts

10.45 – 12.30 Thurs 25

07 Influenza

Impact on varicella incidence 5 years after of vaccine introduction in Spain, 2006 – 2011

Giovanna Ciaravino (ECDC - ISC III, Spain), María José Sagrado (Instituto de Salud Carlos III, Spain), Noemí López(PEAC, National Center for Epidemiology, Carlos III Health Institute, Spain), Josefa Masa (ISC III - National Center of Epidemiology, Spain),Victoria Martinez de Aragon (Centro Nacional de Epidemiología, Instituto de Salud Carlos III, Spain)

BACKGROUND:
Spain introduced varicella vaccine in 2005. Fifteen out of 19 regions implemented a vaccination scheme with one dose for susceptible children aged 10-15 years (scheme A) to prevent severe cases. The last four regions also vaccinated 15 months toddlers with one dose (scheme B) to interrupt transmission. We assessed the impact of vaccination on varicella rates nationwide and in two regions using different schemes.

METHODS:
We analyzed varicella cases reported to the National Surveillance Network during 1998-2011 at the national level and in Catalonia (19% of cases, scheme A) and Madrid (18% of cases, scheme B). We stratified analyses for the pre (1998-2004) and post (2006-2011) vaccination periods. We calculated varicella incidence rates (IR) by period and period incidence rate ratios (IRR) adjusted by regions using negative binomial regression.

RESULTS:
We included 1,300,476 cases of varicella in the first period and 853,793 in the second. National varicella IR decreased from 10.5/100,000 (95% confidence intervals (CI):10.2-10.9) in 1998-2004 to 7.2/100,000 (95%CI:7-7.4) in 2006-2011 (Post-vaccination region-adjusted IRR: 0.89, 95%CI:0.83-0.96). In Catalonia under scheme A, varicella IR did not differ before (8.34; 95%CI:7.65-9.08) and after (8.83; 95%CI:8.2-9.46) vaccination. In Madrid under scheme B, IR decreased from 14.3/100,000 (95%CI:13.0-15.5) in 1998-2004 to 4.9/100,000 (95%CI:4.3-5.5) in 2006-2011 (IRR: 0.35, 95%CI:0.31-0.4).

CONCLUSIONS:
Results of analysis in two regions suggests that vaccinating toddlers against varicella decreases rates while vaccinating only adolescents has no impact on incidence. Further studies should examine the impact of vaccination on the incidence by age group and on varicella-related hospitalizations at national and regional levels.

PRESENTED BY:

Giovanna Ciaravino

Keywords: Varicella, varicella vaccine, incidence
ESCAIDE REFERENCE NUMBER: 20121003

Influenza vaccine effectiveness in Europe, 2011-12: estimates from the I-MOVE multi-centre case-control study among target groups for vaccination

Esther Kissling (Epiconcept, France), Marta Valenciano (EpiConcept, France), Amparo Larrauri (National Centre for Epidemiology, Instituto de Salud Carlos III, Spain), Beatrix Oroszi (Office of the Chief Medical Officer, Budapest, Hungary), Jean Marie Cohen(GROG/Open Rome, France), Baltazar Nunes (Instituto Nacional de Saúde Doutor Ricardo Jorge, Portugal), Daniela Pitigoi (UMF Carol Davila, Cantacuzino Institute, Romania), Caterina Rizzo (National Centre for Epidemiology, Surveillance and Health Promotion, Istituto Superiore di Sanità, Italy), Javiera Rebolledo (EPIET hantavirus group; EPIET; Health Protection Surveillance Center, Dublin, Ireland), Iwona Paradowska-Stankiewicz (NIPH-NIH, Poland), Silvia Jiménez-Jorge (National Center of Epidemiology, ISCIII, Madrid / Ciber Epidemiología y Salud Pública (CIBERESP), Spain), Judit Krisztina Horvath (National Center for Epidemiology, Hungary), Isabelle Daviaud (GROG/Open Rome, France), Ausenda Machado (Instituto Nacional de Saúde Doutor Ricardo Jorge, Portugal), Emilia Lupulescu (National Institute of Research and Development for Microbiology and Immunology "Cantacuzino" , Romania), Antonino Bella (Infectious Diseases Epidemiology Unit, Istituto Superiore di Sanit, Italy), Joan O Donnell (HPSC, Ireland), Małgorzata Głuchowska (National Institute of Public Health-National Institute Hygiene, Poland), Bruno Ciancio (ECDC, Sweden), Angus Nicoll (ECDC, Sweden), Alain Moren (EpiConcept, France)

BACKGROUND:
In the fourth season of I-MOVE (Influenza Monitoring Vaccine Effectiveness in Europe), we undertook a multicentre case-control study based on sentinel practitioner surveillance networks in eight European Union (EU) Member States to estimate 2011/12 influenza vaccine effectiveness against medically-attended influenza-like illness (ILI) laboratory-confirmed as influenza A(H3) among the target groups for vaccination.

METHODS:
Practitioners systematically selected ILI patients to swab within eight days of symptom onset. We compared A(H3) influenza-positive to influenza-negative patients among those who met the EU ILI case definition. We used logistic regression with study as fixed effect and calculated adjusted vaccine effectiveness (AVE), controlling for potential confounders (age-group, sex, onset month, chronic diseases and related hospitalisations and number of practitioner visits in the previous year). We stratified by age-group, early/late phase of the influenza season (up to week 6 and from week 7) and calculated aVE by time since vaccination.

RESULTS:
AVE was 25% (95%CI -6-47) among all ages (N=1014), 63% (95% CI 26-82) in adults aged 15-59 and 15% (95% CI -33-46) among those aged 60+. AVE was 38% (95%CI -8-65) in the early phase of the influenza season and -1% (95%CI -60-37) in the late phase. AVE for those vaccinated ‹ 3 months before symptom onset was 45% (95% CI 8-67) and for those vaccinated 3 months or more before symptom onset it was 12% (95%CI -30-40).

CONCLUSIONS:
The I-MOVE multicentre case-control study suggests low AVE against A(H3) in 2011/12. A relatively higher VE in the early season may indicate changes in the virus late in the season or more rapidly waning immunity. Virological surveillance should be enhanced to quantify change over time and understand its relation with duration of immunological protection.

PRESENTED BY:

Esther Kissling

Keywords: Influenza, Influenza vaccine, prevention & control, multicentre studies, case control studies
ESCAIDE REFERENCE NUMBER: 2012792

Estimating vaccine effectiveness against severe influenza in the United Kingdom 2011/12: applying the screening method to data from intensive care surveillance systems.

H. Lucy Thomas (Health Protection Agency, United Kingdom), Nick Andrews (Health Protection Agency, United Kingdom), Helen Green (Health Protection Agency, United Kingdom), Nicki Boddington (Health Protection Agency, United Kingdom), Hongxin Zhao (Health Protection Agency, United Kingdom), Arlene Reynolds (Health Protection Scotland, United Kingdom), Jim McMenamin (Health Protection Scotland, United Kingdom), Richard Pebody (Health Protection Agency, United Kingdom)

BACKGROUND:
Methods for estimating vaccine effectiveness (VE) against severe influenza are not well established. We piloted a new approach for estimating VE against influenza infection resulting in intensive care (ICU) admission in the United Kingdom in 2011/12.

METHODS:
We extracted individual-level data on confirmed influenza ICU admissions from newly established severe influenza surveillance systems in England and Scotland. We obtained the influenza vaccine status of cases from their primary care records, and population influenza vaccine uptake data from routine vaccine monitoring systems. We estimated VE using the screening method, adjusting for age-group, risk-group, country and week.

RESULTS:
Of 60 influenza ICU cases reported, vaccination status was available for 56. 15/20 (75%) cases ≥65 years old, and 19/25 (76%) ‹65 years in risk groups were vaccinated. Population vaccine uptake was 74% and 50% respectively. Adjusted VE for influenza ICU admissions was estimated to be -10% (95% CI -207% to 60%) in those ≥65 years, and -296% (95% CI -930% to -52%) in those ‹65 years in risk groups.

CONCLUSIONS:
The number of influenza cases this season was exceptionally low, leading to wide confidence intervals around the VE estimate. The finding of no evidence of VE at preventing severe influenza in those ≥65 years is consistent with other studies against less severe outcomes this season. However, the negative VE estimate for those ‹65 years in risk groups suggests that there is significant residual confounding, even after adjustment for age-group, risk-group, country and week. This makes the screening method unsuitable for annual estimation of VE against influenza ICU admissions in this group. Alternative methods for estimating VE against severe influenza need to be developed, using individual-level controls to enable further adjustment for confounding.

PRESENTED BY:

H. Lucy Thomas

Keywords: Influenza vaccines, Intensive care units, Use effectiveness, Surveillance
ESCAIDE REFERENC NUMBER: 2012861

Severe influenza cases admitted to intensive care unit in France: estimation of vaccine effectiveness through 3 years of monitoring

Isabelle Bonmarin (InVS, France), Emmanuel Belchior (InVS, France), Yann Le Stratt (InVS, France), Daniel Levy-Bruhl (InVS, France)

BACKGROUND:
A surveillance of influenza severe cases admitted to intensive care units (ICU) has been running in France since the 2009-10 pandemic. We present results from the 3 last influenza seasons including the pandemic one.

METHODS:
Severe influenza cases admitted to all ICU should be reported to the Institut de veille sanitaire through a standardized form which includes demographics, immunization and virological status, risk factors, severity (acute respiratory distress syndrome (ARDS) and external respiratory support) and evolution. Vaccine effectiveness (VE) against laboratory-confirmed influenza ICU cases is estimated by the "screening method ". Data on vaccination coverage are provided by the National Social Security Scheme through reimbursement claims data.

RESULTS:
The number of reported cases decreased from 1 334 in 2009/10 to 789 in 2010/11 then to 321 in 2011/12. The main virus was A(H1N1)pdm09 during the two first seasons and A(H3N2) in 2011/12. Average age increased from 41 to 58 years old from the first to the third season. The proportion of patients without associated risk factors increased from 26% during the pandemic to 36% in 2010-11 and decreased to 19% in 2011-12. A decline of the vaccine effectiveness for high-risk individuals was observed in 2011/12 (VE: 30% (95% CI: 22–39)), as compared to 2010/11 (VE: 53% (95% CI: 40–67)).

CONCLUSIONS:
These data confirm the specific characteristics of severe influenza cases according to the virus type. They indicate that A(H3N2) viruses can induce severe cases. They also show a decrease VE in the context of a mismatch of the vaccine strains with circulating viruses in 2011/12. This underlines the usefulness of the screening method for real-time monitoring of VE during the influenza season.

PRESENTED BY:

Isabelle Bonmarin

Keywords: Influenza, surveillance, severity, vaccine effectiveness
ESCAIDE REFERENCE NUMBER: 20121014

Parallel Session Abstracts

If it's not the flu what is it? Primary care consultations due to influenza-like illness in Scotland

Beatrix von Wissmann (Health Protection Scotland, United Kingdom), Arlene Reynolds (Health Protection Scotland, United Kingdom), Rory Gunson (West of Scotland Specialist Virology Centre, United Kingdom), Jim McMenamin (Health Protection Scotland, United Kingdom)

BACKGROUND:
Influenza-like illness (ILI) increases the demand on the health system throughout most winter seasons in Europe. This study aimed to quantify the relative contribution of viral pathogens to ILI, based on results from swabbing samples submitted to the Scottish National Influenza Centre from Sentinel general practices (GP).

METHODS:
GPs participating in the sentinel scheme submitted nasopharyngeal swabs from up to 5 ILI patients per week, from October to May each season. Swabs were screened for influenza, respiratory syncytial virus (RSV), rhinovirus, coronavirus, human metapneumovirus and parainfluenza by multiplex real time polymerase chain reaction. Pathogen specific swab positivity was analysed by year, month and age group.

RESULTS:
In the previous five winter seasons, between 18 – 89 GPs participated, submitting a total number of 703-5135 swabs per season. Influenza virus was detected in 7.7-37.8% of swabs per season. Non-influenza viral pathogens were detected in 23.6 – 37.6% of swabs per season. RSV, rhinovirus and coronavirus accounted for over 60% of non-influenza viral pathogens detected in all years. Swab positivity for all pathogens showed distinct seasonal fluctuation. Swab positivity for non-influenza pathogens was highest in children under 5 (range 53.6 – 69.6%), followed by adults over 64 years (range 27.4 – 41.4%), and varied between 16.7 – 35.1% in other age groups (5-14yrs, 15-44yrs, 45-64yrs), over the 5 year period under observation.

CONCLUSIONS:
The Scottish GP sentinel scheme facilitates the surveillance of viral respiratory pathogens associated with primary care consultations for ILI. The proportion of ILI attributable to non-influenza pathogens was highest in young children. However these pathogens were also associated with a considerable proportion of GP consultations due to ILI across all other age groups, highlighting their contribution to seasonal demand on primary care.

PRESENTED BY:
Beatrix von Wissmann

Keywords: Influenza, sentinel surveillance, virology, respiratory pathogen
ESCAIDE REFERENCE NUMBER: 20121033

Individual and programme factors associated with uptake of Influenza vaccine in frontline healthcare workers in Northern Ireland, 2012: a case-control study

Galena Kuyumdzhieva (Public Health Agency, United Kingdom), Neil Irvine (Public Health Agency, Norfolk, United Kingdom), Richard Smithson (Public Health Agency, United Kingdom), R Gamble (Western Health and Social Care Trust, United Kingdom), C Campbell (Southern Health and Social Care Trust, United Kingdom), K O'Connor (Northern Health and Social Care Trust, United Kingdom), C Parkes (Belfast Health and Social Care Trust, United Kingdom), L Rodgers (Belfast Health and Social Care Trust, United Kingdom), J Sweeney (South Eastern Health and Social Care Trust, United Kingdom), M Devine (Public Health Agency, United Kingdom)

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

METHODS:
We compared cases (vaccinated during 2011/12) and controls (unvaccinated) among 3200 HCWs in five Health Trusts, using a self-administered questionnaire. We summarized demographic characteristics, vaccination history, programme factors and compared groups with chi-square test (5% significance). We used logistic regression to calculate odds ratios with 95% confidence intervals (CIs) to examine factors associated with being vaccinated adjusted (aOR) for other variables.

RESULTS:
Overall, 1194(75%) cases and 555(35%) controls responded. A higher proportion of cases were working in hospital setting (62% vs. 56%; p=0.018) and were doctors (10% vs. 4%; p=0.0001). Controls were more concerned about adverse effects (65% versus 30%; p=0.000) and would be more likely to be vaccinated in the future if clinics were available on site (50%) and written information was available (44%). Factors associated with being vaccinated were age over 50 years (aOR 1.4 95%CI 1.01-2); agreement that "flu can be serious in healthy people" (aOR 1.68; 95%CI 1.29-2.18); "staff vaccination can protect patients" (aOR 2.89; 95%CI 2.1-3.9); "HCWs are at greater risk of acquiring flu than the general population" (aOR 1.81; 95%CI 1.4-2.4); and disagreement with "flu vaccination is ineffective" (aOR 2.75; 95%CI 2.1-3.6) and "vaccine causes flu-like illness" (aOR 1.65; 95%CI 1.25-2.2).

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

PRESENTED BY:
Galena Kuyumdzhieva

Keywords: Influenza vaccine, uptake, HCW
ESCAIDE REFERENCE NUMBER: 2012848

o8 Novel methodological approaches (1)

Word clouds as a potential method enhancement in outbreak investigations

Måns Magnusson (Swedish Institute for Communicable Disease Control, Sweden), Sharon Kühlmann-Berenzon (SMI, Sweden)

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

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

RESULTS:
The word cloud containing suspected causes included water as the top candidate among the 5023 cases; this was not surprising since a recommendation to boil all tap water was issued early during the outbreak. Among cases providing information on eateries (n=3312), the words "school" and "day-care" were the most frequent, whereas non-cases (n=3502) often included specific commercial establishments. The word cloud on additional comments from 1438 cases, however, did not provide any new information.

CONCLUSIONS:
The word clouds did not identify the source of the Cryptosporidium outbreak. Nevertheless, comparing eateries between cases and non-cases could have shed light early on less likely exposures such as specific restaurants. Word cloud is a fast method for analyzing free text questions and has the potential to become a useful tool in helping generate hypotheses during outbreak investigations.

PRESENTED BY:
Johan Lindh

Keywords: Disease outbreak Questionnaires Text mining Communicable diseases
ESCAIDE REFERENCE NUMBER: 2012674

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

Isabel Martinez-Pino (Epicentre, France), Jonathan Polonsky (Epicentre, France), Fabienne Nackers (Epicentre, France),Sandra Simons (Médecins Sans Frontières, Zimbabwe), Michel van Herp (Médecins Sans Frontières, Belgium), Peter Maes (Médecins Sans Frontières, Belgium), Marc Biot (Médecins Sans Frontières, Belgium), Kristel Eerdekens (Médecins Sans Frontières, Belgium), Klaudia Porten (Epicentre, France), Francisco J Luquero (Epicentre, France)

BACKGROUND:
An outbreak of typhoid fever occurred in Harare City (Zimbabwe) in October, 2011. We conducted an investigation to identify priority areas for water and sanitation intervention through mapping of the most affected suburbs, Kuwadzana (KU) and Dzivaresekwa (DZ).

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

RESULTS:
From 10/10/2011 to 17/03/2012, 3,795 suspected cases of typhoid fever were reported in Harare; of them 2570 (67.7%) were in DZ and KU. The median age was 16 years [interquartile-range 4 – 30 years] and 54.2% were female. The AR in DZ was 0.80% and 1.37% in KU. We traced and recorded 2,212 (86.1%) GPS coordinates of suspected cases in DZ and KU. Cases were more clustered than controls (p<0,001). Two clusters were identified in KU and DZ (the latter was apparent already within the first week of the outbreak), both of which were located next to a water source.

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

PRESENTED BY:
Isabel Martinez-Pino

Keywords: Typhoid Fever Disease Outbreaks Cluster Analysis Spatial Analysis
ESCAIDE REFERENCE NUMBER: 2012737

Parallel Session Abstracts

An electronic manual and resource e-library to monitor and evaluate surveillance systems' quality

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

METHODS:
Based on a 2010 survey among EU national surveillance coordinators and WG field experience, a conceptual framework and systematic approaches to M&E were developed and illustrated by examples and case studies. WG experts drafted and reviewed chapters of a manual to guide users in surveillance systems' M&E. Additionally, an e-library was developed to host M&E documents collected through rigorous web searches of open-source, applied and academic publications.

RESULTS:
A common stepwise approach to monitor completeness, validity and timeliness was used, including planning, measurement of attributes, and regular display and interpretation of the results in light of predefined standards. A trigger-oriented approach and logical model was conceived to guide the user in selecting the appropriate evaluation methods in terms of type of protocol (light, medium, full), relevance and ways to measure surveillance's attributes and cost. The e-library is searchable using keywords, document types, levels of importance, and relation to e-manual chapters. It hosts over 170 open-source protocols, procedures and manuals.

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

PRESENTED BY:
Isabelle Devaux

Keywords: Data quality, evaluation, surveillance, e-manual
ESCAIDE REFERENCE NUMBER: 2012745

Laboratory preparedness for detection of Shiga toxin-producing E. coli (STEC) O104:H4in the EU/EEA: capacity building in response to the 2011 outbreak

Polya Rosin (EDCD, Sweden), Taina Niskanen (ECDC, Sweden), Daniel Palm (EDCD, Sweden), Marc Struelens (EDCD, Sweden), Johanna Takkinen (ECDC, Sweden), Flemming Scheutz (WHO CC for Reference and Research on Escherichia and Klebsiella, Statens Serum Institut, Denmark), National Laboratory Experts for Shiga-toxin producing Escherichia coli from the European Food- and Waterborne Diseases and Zoonoses Network (European Food- and Waterborne Diseases and Zoonoses Network, ECDC, Sweden)

BACKGROUND:
Between May and July 2011 an outbreak of enteroaggregative Shiga toxin 2-producing Escherichia coli (EAEC-STEC) O104:H4 affected close to 4000 cases, causing over 50 deaths. This epidemic strain was of a rare serotype and possessed unusual virulence characteristics, making diagnosis and case confirmation challenging. Data were rapidly needed to assess possible gaps in case detection and epidemic strain identification by diagnostic and reference laboratories.

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

RESULTS:
In April 2011, 20/29 (70%) National Reference Laboratories (NRLs) in EU/EEA MSs lacked epidemic case confirmation capacity. In June 2011, 12/24 (50%) of responding Member States (MS) reported no access to Shiga toxin (Stx) 1 and Stx 2 toxin assays or stx1 and stx2 gene assays in clinical laboratories. The outbreak triggered national and international capacity building initiatives including sharing updated testing protocols, reagents and control strains. As a result, in January 2012, 25/29 (86%) NRLs had developed full capabilities to detect EAEC-STECinfection and confirm the epidemic O104:H4 strain.

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

PRESENTED BY:
Polya Rosin

Keywords: Laboratory capacity Diagnostic Shiga toxin Escherichia coli European Union Surveillance
ESCAIDE REFERENCE NUMBER: 2012681

"Liking" social media – use of Facebook as a recruitment tool in an outbreak investigation, The Netherlands

Georgia Ladbury (Dutch National Institute for Public Health and the Environment (RIVM), EPIET, The Netherlands), Saskia Ostendorf (Municipal Health Service Gelderland Midden, The Netherlands), Toos Waegemaekers (Municipal Health Service Gelderland Midden, The Netherlands), Susan Hahné (National Institute of Public Health and the Environment - RIVM, The Netherlands)

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

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

RESULTS:
Following introduction of the incentive and Facebook account, participant numbers increased from ten to 60 (response ~60%). 80% of participants reported hearing about the study via Facebook, and 75% of Friend Requests were accepted.

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

PRESENTED BY:
Georgia Ladbury

Keywords: Social networking, outbreak investigation
ESCAIDE REFERENCE NUMBER: 2012644

09 Outbreaks (1)

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

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

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

METHODS:
A probable case was a student with diarrhoea or vomiting between 21/11-28/11/2011, considering kitchen closure on 26/11. A confirmed case was a probable case with a NV-positive stool sample. We collected information on food prepared and consumed at the school on 21/11-25/11 via a self-administered questionnaire. We calculated day-specific attack rates (ARs) in students exposed to any food on 21/11 – 25/11, and subsequently food-day-specific ARs and relative risks (RRs). To disentangle the effects of different food items, we conducted stratified analyses. Environmental health officers inspected the school kitchen.

RESULTS:
The outbreak started on 23/11, peaked on 24/11 and ended on 5/12. Forty-eight students fulfilled the case definitions among 351 respondents. Highest ARs were on 22/11 and 23/11 (10%, 12%, respectively). Several foods were associated with illness, including two raw food items -sour cream (RR: 16; 95% CI: 3.9-67) and turkey-strip salad (RR: 5; 95% CI: 2.3-12). After stratifying for consumption of these two, no other food remained associated with illness. These exposures explain 33 of 39 (85%) suspected foodborne cases. A hazard analysis critical control point system (HACCP) was lacking in the kitchen.

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

PRESENTED BY:
Shu-Wan Jian

Keywords: Gastroenteritis, Foodborne Diseases, Schools
ESCAIDE REFERENCE NUMBER: 2012675

DAY 2

Parallel Session Abstracts

A nationwide outbreak of Salmonella Newport associated with mung bean sprouts,Germany 2011

Christophe Bayer (Robert Koch-Institute, Germany), Rita Prager (Robert Koch Institute, Germany), Wolfgang Rabsch (Robert Koch Institute, Branch Wernigerode, Germany, Germany), Petra Hiller (Federal Institute for Risk Assessment, Berlin, Germany), Burkhard Malorny (Federal Institute for Risk Assessment, Berlin, Germany), Beatrice Pfefferkorn (Federal Office of Consumer Protection and Food Safety, Berlin, Germany), Bettina Rosner (Robert Koch Institute, Germany)

BACKGROUND:
The number of reported Salmonella Newport infections in Germany increased from an average of 2-3 cases per week (2001-2010) to 67 in week 43/2011. As mung bean sprouts contaminated with S. Newport had been detected at a distributor in Lower Saxony we tested the hypothesis of sprouts being the infection vehicle in this outbreak.

METHODS:
We compared all notified adult S. Newport cases with disease onset between 20/10/2011 and 08/11/ 2011 with S. Enteritidis cases of the same age group (18-31, 32-48 and 49-88 years) notified in October-November 2011 regarding their food consumption, in particular sprouts, in the 3 days before illness. We calculated attack rates and odds ratios (OR) for different foods and performed multivariable analysis to correct for multiple exposures. S. Newport isolates from case-patients and food samples were subtyped by molecular methods. We conducted trace-back investigations for sprouts from locations where cases had eaten.

RESULTS:
Median age of cases (n=106) was 38 years (range 0-91 years), 52% were female. Sprouts had been consumed by 14/50 S. Newport and 1/45 S. Enteritidis cases (OR=21.2, 95%-CI 2.9 – 917.9) and showed the highest association amongst identified risk food items in univariate analysis. In multivariable analysis only sprout consumption was associated with S. Newport infection (OR=18.7; 95%CI 2.3-150.2). Molecular subtyping patterns of human isolates were indistinguishable from the mung bean sprouts isolate. Sprouts were traced back to various distributors and a sprout producer in the Netherlands.

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

PRESENTED BY:
Bettina Rosner

Keywords: Salmonella, outbreak, foodborne, case-control study, Germany
ESCAIDE REFERENCE NUMBER: 2012812

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

Volker Heinz Hackert (Public Health Service South Limburg, The Netherlands), Wim van der Hoek (National Institute for Public Health and the Environment, Bilthoven, The Netherlands), Nicole HTM Dukers-Muijrers PhD. (Public Health Service South Limburg, The Netherlands), Arnout de Bruin (National Institute for Public Health and the Environment, The Netherlands), Sascha Al Dahouk (Federal Institute for Risk Assessment, Germany), Heinrich Neubauer (Federal Research Institute for Animal Health, Germany), Christian Hoebe MD PhD. (Public Health Service South Limburg, The Netherlands), Cathrien Bruggeman (Maastricht University Medical Center, The Netherlands)

BACKGROUND:
Early 2009, a dairy-goat annex care farm in South Limburg, Netherlands, reported 220 C.burnetii-related abortions in 450 pregnant goats. These preceded human cases and occurred in a region Q-fever free before 2009, providing a unique quasi-experimental setting for investigating regional transmission patterns associated with a Q-fever point source.

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

RESULTS:
Serological attack rate was 92%(24/26) in index-farm residents/employees, 56%(28/50) in visitors, and 50%(7/14) in household contacts, with clinical attack rates of ≥80%. Notified symptomatic community cases (n=253) were scattered downwind from the index farm, following a significant exposure-response gradient. Observed incidence ranged from 6.3% (0 – 1 km) to 0.1% (4 – 5 km), and remained high beyond. True incidence of infections was estimated 2.9% regionwide, extrapolating to 8941 infections; estimated near-farm incidence was 12%. C.burnetii load was high on-farm (2009), and lower off-farm (2009/2010).

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

PRESENTED BY:
Volker Heinz Hackert

Keywords: Outbreak, point-source, Q fever, Coxiella burnetii, transmission
ESCAIDE REFERENCE NUMBER: 2012844

Epidemiological Investigation Of Cholera Outbreak In Ghoda Village Of Ahmedabad District, Gujarat, India, 2010.

Himanshu Nayak (Amc Met Medical College, India), Minal Gadhvi (B.J.Medical College, India), Sachin Patel (B.J.Medical College, India)

BACKGROUND:
On 15th July 2010, a health authority had been informed by one government hospital about case of cholera from Ghoda village of Ahmedabad district. We have been asked to investigate the suspected outbreak to confirm diagnosis and recommendation to prevent and control it.

METHODS:
A case cholera was defined according to WHO case definition. Team of Public health expert, Microbiologist, Paediatrician & Medicine was sent for the outbreak investigation.The information on age, sex, symptoms, signs, date of onset, residence, traveling history, food taken during 24 hours, water sources, treatment taken and assessment of chlorination was collected. The outbreak was described by place, time and person characteristics. We confirmed diagnosis clinically, epidemiologically and serologically. Samples of stool & common water sources were collected by microbiologist.

RESULTS:
Total 68 cases were identified by active & passive surveillance in the village. At first the stool sample was collected and vibrio cholera was identified and area was declared as cholera affected. Most of the cases were concentrated in two residential areas who were using common community well as drinking water. We also inspected well and surrounding vicinity and took sample of well water for microbiological examination. The attack rate (AR) of cholera was 2.5%; maximum cases were identified in the age group of 0–5 years (33.8%). Equal number of male & female was affected. Case fatality rate was 7.4%. Chlorination was not adequate & common community well was contaminated & we found filth in the well & surrounding vicinity.

CONCLUSIONS:
Cholera outbreak was confirmed epidemiologically & serologically. We recommended to seal the contaminated well & supply of pure chlorinated water & there was drastically fall in cholera cases within few days.

PRESENTED BY:
Himanshu Nayak

Keywords: Cholera, Epidemic investigation, Outbreak, Ahmedabad
ESCAIDE REFERENCE NUMBER: 2012871

Outbreak of hepatitis B in a German nursing home 2011 associated with blood glucose monitoring and a not reported HBs-Antigen-carrier status

Jane Hecht (Robert Koch Institute, Germany), Christoph Ziesch (Gesundheitsamt Görlitz, Germany), Christian Schüttler (National Reference Laboratory (NRL) for Hepatitis B and D, Institute for Medical Virology Justus-Lie, Germany), Dieter Glebe (National Reference Laboratory (NRL) for Hepatitis B and D, Institute for Medical Virology Justus-Lie, Germany), Claudia Santos-Hövener (Robert Koch Insitute, Germany), Osamah Hamouda (Germany), Ruth Offergeld (Robert Koch Institute, Germany)

BACKGROUND:
Eight cases of acute hepatitis-B-infection were reported in June-November 2011 in a nursing home in Saxony, Germany. We investigated to identify the vehicle of transmission and prevent further infections.

METHODS:
We used electronic nursing home data to include residents of 2011 in a retrospective cohort study. We defined cases as Anti-HBc-IgM positive (ELISA) residents. HBV genomes in the positive serum samples were cloned and sequenced. We collected information regarding possible exposures and analysed data using Exact Poisson regression.

RESULTS:
We identified 8 cases among 71 residents (attack rate:11.3%, 3 deaths, case fatality ratio (CFR): 37%). Use of blood glucose monitors (BGM,relative risk (RR 18.0,CI 2.8-∞),chiropody (RR 7.2,CI 1.1-∞) and insulin injections (RR 6.26,CI 1.37-28.66) were associated with being a case in univariable analysis but only BGM was associated in multivariable Poisson regression (p=0.001). Infection control review identified that nurses used one BGM device for more than one resident. Positive samples had high viral load (› 107 genomes/ml) and were HBeAg-negative (PreCore-Stop-Mutant genotype, subgenotype D2, rare in Germany). Cases shared up to 99.6 % genomic sequence. A resident identified as the possible source was known to be chronically infected to his general practitioner but not to the nursing home.

CONCLUSIONS:
Reuse of BGM devices may have caused this hepatitis B outbreak. The high CFR may be explained by the nature of the virus. Nursing homes remain vulnerable to BGM-associated hepatitis B outbreaks that should be prevented through strong surveillance, careful investigations and strict implementation of universal precautions. Further research is needed to determine whether identification of patients chronically infected with HBV might help to prevent these outbreaks.

PRESENTED BY:
Jane Hecht

Keywords: Disease outbreaks nursing homes hepatitis B blood glucose diabetes mellitus infection control, methods
ESCAIDE REFERENCE NUMBER: 2012896

Parallel Session Abstracts

14.45 – 15.45 Thurs 25

10 Epidemiology and microbiology driving public health policy (2)

Analysis of the Field Epidemiology Manual (FEM wiki): fast growing international community

Patty Kostkova (City ehealth Research Centre (CeRC), Sweden), David Fowler (City ehealth Research Centre (CeRC), Sweden), Vladimir Prikazsky (ECDC, Sweden), Arnold Bosman (EDCD (ECDC), Sweden)

BACKGROUND:
Launched at ESCAIDE 2010, an online training and community portal FEM Wiki (Field Epidemiology Manual Wiki: www.femwiki.com) provides approved training resources developed to support the epidemiology training. Anyone can view the content but registered users can also edit articles and discuss in forums. The portal activities have been analyzed in order to guide future developments.

METHODS:
Web server analytics built into the FEM wiki platform recorded traffic in an SQL database. We analyzed basic statistics, user engagement, changes in the semantic taxonomy and activity in the forums.

RESULTS:
FEM Wiki has 814 registered users as of May 2012. From Feb 2011 to Jan 2012, there have been over 100 000 page views, between 10 and 20 thousand page views, and 3 to 6 thousand visits per month. There are also 483 wiki pages in FEM Wiki, with over 3000 edits made by 33 separate users. There were 95 forum discussions since January 2010, with over 200 posts. The most active threads were Biases in Epidemiological Studies (18), Outbreak investigation (7), Source of infection (5). Most active users include those in charge of the FEM Wiki (44), but other users demonstrate the site is attractive to external communities: TEPHINET (6) and FETP Pakistan (4). The taxonomy has been refined to 278 nodes and 15 new wiki pages were created. Eight users are most active in forum discussions; however, 16 additional users initiated new threads.

CONCLUSIONS:
FEM Wiki is a successfully growing training portal attracting over 25 000 unique web visitors and over 100 000 page views, with more than 814 registered users. For wikis typical skewed distribution of active users indicates necessity of more active moderation.

PRESENTED BY:
Patty Kostkova

Keywords: Field epidemiology public health training microbiology
ESCAIDE REFERENCE NUMBER: 2012910

Nothing new on the Eastern Front – Exceptional agreements after Europe's eastern expansion paved the way to a new EPIET training format.

Marion Muehlen (ECDC, Sweden), Yvan Hutin (ECDC, Sweden), Arnold Bosman (ECDC, Sweden)

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

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

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

CONCLUSIONS:
EPIET's traditional requirement to train fellows abroad may not apply to the new EU-PH reality.In 2011, ECDC created the "MS-track" to recruit fellows in their home country. In September 2012, 21 MS-track fellows were currently in training on MS salaries provided by their MS while ECDC covered costs of training modules. Further consultations and efforts are necessary to ensure (1) uniform engagement across Europe, (2) equitable distribution of resources for capacity building and (3) evaluation to determine if MS-track benefits new MS as intended.

PRESENTED BY:
Marion Muehlen

Keywords: Capacity building, training, intervention epidemiology, FETP
ESCAIDE REFERENCE NUMBER: 20121040

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

Shona Neal (Health Protection Agency, United Kingdom), Androulla Efstratiou (Health Protection Agency, United Kingdom)

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

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

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

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

PRESENTED BY:
Shona Neal

Keywords: Diphtheria; evaluation; methods, EU
ESCAIDE REFERENCE NUMBER: 2012999

11 Healthcare-associated infections (3)

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

Catherine Wloch (Health Protection Agency, United Kingdom), Theresa Lamagni (o, United Kingdom), Joanna Conneely (Health Protection Agency, United Kingdom), Pauline Harrington (Health Protection Agency, United Kingdom), Suzanne Elgohari (Health Protection Agency, United Kingdom), Albert Jan van Hoek (Health Protection Agency, United Kingdom), Jennie Wilson (Imperial College Healthcare NHS Trust, United Kingdom), Elizabeth Sheridan (Health Protection Agency, United Kingdom)

BACKGROUND:
Although most surgical site infections (SSI) in women having undergone caesarean section (C-section) are superficial, the high frequency of infections (9.6%) combined with large volume of procedures (160,000/year) translate into a substantial burden to the health economy. This study assessed costs resulting from SSI following C-section and potential savings from surveillance, a proven means of reducing infections through improved clinical practice.

METHODS:
Data on SSI following C-section and resources for surveillance were collected during a pilot study involving 14 NHS hospitals in England. Direct costs attributable to SSI (2010/11) were estimated from the National Schedule of Reference Costs, Personal Social Services Research Unit and the NHS Drug Tariff. Costs were modelled on a hospital performing 800 C-sections a year with readmissions to hospital (0.6%) and community-detected infection rates (8.5%) based on pilot study findings.

RESULTS:
Additional costs due to SSI were estimated at £12,018 per hospital per year arising from extended hospital stay, readmission and treatment. Costs to community healthcare services resulting from additional midwife/GP visits and treatment were estimated at £5,358. Overall this was equivalent to £226 per infection or £3.39 million nationally/year. Costs of staffing and consumables associated with surveillance for one quarter of each year were estimated at £5,573. On the basis of these preliminary calculations, a reduction in infections of 32% would cover the outlay of surveillance whilst tackling this important public health problem.

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

PRESENTED BY:
Catherine Wloch

Keywords: Caesarean section Surgical wound infection Health care costs Postnatal care Community health services
ESCAIDE REFERENCE NUMBER: 2012882

Parallel Session Abstracts

Estimating the risk of post-operative bacteraemia in English patients, 2011

Suzanne Elgohari (Health Protection Agency, United Kingdom), Theresa Lamagni (United Kingdom), Nick Hinton (Health Protection Agency, United Kingdom), Elizabeth Sheridan (Health Protection Agency, United Kingdom)

BACKGROUND:
Nosocomial bacteraemia represent a significant source of excess morbidity. To estimate the risk of post-operative bacteraemia and identify predisposing risk factors we linked two national surveillance datasets for the first time.

METHODS:
Data on 16 different categories of surgical procedures between January and December 2011 collected through HPA's surgical site infection (SSI) surveillance programme were linked to bacteraemia episodes (all causes) between January 2011 and January 2012 using a probabilistic matching algorithm. A mixed effects model was used to examine the association with age, pre-operative health status (ASA score) and patient sex adjusting for surgical category and variation between hospitals.

RESULTS:
A total of 138,551 procedures submitted by 267 hospitals were linked to 2,126 bacteraemia episodes, of which 610 occurred within 30 days of surgery. The 30-day risk of post-operative bacteraemia varied by surgical category being highest in cholecystectomy (6.79%; 95%CIs: 3.44%-11.82%) and bile duct/liver/pancreatic surgery (4.85%; 95%CIs: 3.17%-7.08%). The most frequent pathogens isolated were coagulase negative staphylococci (25%), E. coli (20%) and

S. aureus (11%). Of the 610 bacteraemia episodes, 38 (6%) had a prior diagnosis of SSI; overall, the risk of bacteraemia was significantly higher in this group than those without SSI (2.14% vs 0.37%; P<0.001). The mixed effects analysis identified older age (≥65 years; OR: 1.28; 95% CIs: 1.04-1.58), ASA score ≥3 (OR:2.38; 95%CIs: 1.93-2.94) and male sex (OR: 1.28; 95% CIs: 1.07-1.54) as independent risk factors for post-operative bacteraemia.

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

PRESENTED BY:
Suzanne Elgohari

Keywords: Nosocomial bacteraemia surgery surgical site infections surgical wound infections
ESCAIDE REFERENCE NUMBER: 2012932

Implementation of a nationwide centralized system for surveillance of healthcare¬associated outbreaks in Germany, 2011/2012

Sebastian Haller (Postgraduate Training for Applied Epidemiology (1), European Programme for Intervention Epidemiology Training (EPIET) (2), Robert Koch-Institute (3), Germany), Muna Abu Sin (Robert Koch-Institute, Germany), Justus Benzler (Robert Koch-Institute, Germany), Susanne Barbara Schink (Robert Koch-Institut, Germany), Andreas Gilsdorf (Robert Koch Institut, Germany), Eckmanns Tim (Robert Koch-Institute, Germany)

BACKGROUND:
In August 2011, the German protection against infection act was amended, making forwarding of healthcare-associated infection (HAI-) outbreak notifications from local health-authorities via federal states to Robert Koch-Institute mandatory. Germany is among the first countries having established a systematic nationwide surveillance system for HAI-outbreaks. We evaluated the acceptance of the new system to improve its performance.

METHODS:
Since November 2011 we collect information on standard paper-forms, for each outbreak: (1) aggregated: number of cases colonized, infected and deceased, source, infectious agent, multidrug resistance, transmission, institution; and

(2) linelist including information on diagnosis, time of diagnosis and microbiological findings. We screen notifications daily. We asked stakeholders for informal feedback on the new system.

RESULTS:
Until June 2012 1,137 paper-forms were returned to notify on 530 outbreaks. Number of notifications increased from initially 39 in November 2011 to a maximum of 283 in February and 243 in March 2012. Main causative agent was Norovirus in 408/530 (77%) outbreaks, with a seasonal maximum of notifications in February (n=244) and March (n=189). Non-Norovirus-outbreak-notifications increased from 18 to 54 in March. Among the 98 outbreaks caused by bacteria frequent pathogens were: Staphylococcus sp. (15%), Clostridium difficile (14%) and Klebsiella sp. (10%). Multidrug-resistant-bacteria were responsible for 41% outbreaks with bacteria. Number and quality of notifications differed between federal states. Stakeholders claimed that completing paper-forms is cumbersome and electronic-reporting would be preferred.

CONCLUSIONS:
The unsteady increase in outbreak notifications is partly due to Norovirus seasonality; but may also suggest a growing acceptance. The main hurdle for acceptance appears to be the paper-based reporting. To simplify data entry and improve quality, an integration of the HAI-outbreak-surveillance into the German electronic surveillance system SurvNet@RKI is planned.

PRESENTED BY:
Sebastian Haller

Keywords: Nosocomial Infections, Hospital Infections, Outbreaks, Surveillance
ESCAIDE REFERENCE NUMBER: 2012948

12 Burden of disease

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

Scott McDonald (RIVM, The Netherlands), Alies van Lier (National Institute for Public Health and the Environment, Bilthoven, the Netherlands), Dietrich Plass (Department of Public Health Medicine, School of Public Health, University of Bielefeld, Germany), Mirjam Kretzschmar (National Institute for Public Health and the Environment, Bilthoven, the Netherlands)

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

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

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

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

PRESENTED BY:
Scott McDonald

Keywords: Disability-Adjusted Life Years, Ageing, Influenza, Hepatitis B
ESCAIDE REFERENCE NUMBER: 2012604

Epidemics of Mycoplasma pneumoniae infections have limited impact on pneumonia-associated hospitalizations and macrolides consumption, Finland, 1996-2011

Aleksandra Polkowska (European Programme for Intervention Epidemiology Training (EPIET), Finland), Jukka Ollgren (National Institute for Health and Welfare, Finland), Outi Lyytikäinen (National Institute for Health and Welfare, Finland)

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

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

RESULTS:
In 1995-2011, the overall mean reported rate was 26 cases per 100,000, highest among 5-14 years olds (69 per 100,000). Pneumonia-associated hospitalizations among those aged 5-14 (incidence rate ratio (IRR) 1.009;p-value (P)=0.01) and 15-64 (IRR 1.003; P=0.02) years old were associated withMP cases. However, rates of pneumonia-associated hospitalizations were not higher during epidemics. The mean macrolides/doxycycline consumption increased from 4.7 DDD/1,000/day in 1997-2010 to 5.04 in 2011 with a marginal overall impact of epidemics on consumption (IRR 1.02; Confidence interval 1.01-1.03).

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

PRESENTED BY:
Aleksandra Polkowska

Keywords: Mycoplasma pneumoniae, disease outbreaks, hospitalization, macrolides
ESCAIDE REFERENCE NUMBER: 2012626

DAY 2

Parallel Session Abstracts

16.15 – 17.55 Thurs 25

13 Vaccine-preventable diseases (1)

The BCoDE toolkit for assessing impact of interventions in the EU: a pilot study using observed data

Edoardo Colzani (ECDC, Sweden), Pierluigi Lopalco (ECDC, Sweden), Alessandro Vaccine preventabl Cassini (ECDC, Sweden), Carrillo-Santisteve Paloma (ECDC, Sweden)

BACKGROUND:
The Burden of Communicable Diseases in Europe (BCoDE) project aims to estimate and compare the burden of communicable diseases using a summary measure of population health (DALYs: Disability-Adjusted Life Years) in all EU Member States (MS). This measure allows comparison across diseases, populations and over time. As a service to MS, a user-friendly software (BCoDE toolkit) for disease burden estimation has been developed. Eventually this can be used for assessment of interventions. In order to test the tool for this purpose, a pilot evaluation was carried out looking at the correlation between measles vaccination coverage and the measles burden estimated by the tool.

METHODS:
Country-specificdata on measles vaccination coverage from 13 MS were retrieved from the Centralized Information System for Infectious Diseases (CISID) and averaged across years 2000-2010. They were then compared with country-specific DALYs due to measles averaged across years 2007-2010, and calculated with the BCoDE toolkit based on cases reported to The European Surveillance System (TESSy). A linear regression analysis was carried out using STATA 12.0.

RESULTS:
The lowest observed vaccination coverage was 81.2% (with corresponding DALYs per 100,000=0.74) while the highest was 98.2% (with corresponding DALYs per 100,000=0.002) with a mean across the 13 MS of 91.9% (mean DALYs per 100,000=0.23). A general correlation between vaccination coverage and DALYs was found (r=0.72, p<0.001). The model showed that for each percentage unit increase in measles vaccination coverage there was a significant decrease in DALYs (beta coefficient = -0.04; 95% CI: -0.05, -0.02).

CONCLUSIONS:
This pilot shows potential usefulness of using the BCoDE toolkit for evaluation of intervention strategies related to vaccine-preventable diseases contributing to evidence-based policy making.

PRESENTED BY:
Edoardo Colzani

Keywords: Measles, burden of illness, vaccination, intervention studies
ESCAIDE REFERENCE NUMBER: 20121025

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

Judith Spijkerman (University Medical Center Utrecht, The Netherlands), Mirjam Knol (National Institute of Public Health and the Environment, Centre for Infectious Disease control, The Netherlands), Reinier Veenhoven (Spaarne Hospital Hoofddorp, The Netherlands), Karin Elbserse (National Institute of Public Health and the Environment, Centre for Infectious Disease Control, The Netherlands), Pieter Van Galeldonk (National Institute of Public Health and the Environment, Centre for Infectious Disease Control, The Netherlands), Alienke Wijmenga (National Institute of Public Health and the Environment, Centre for Infectious Disease control, The Netherlands), Hester de Melker (RIVM, The Netherlands), Elisabeth Sanders(University Medical Center Utrecht, The Netherlands), Leo Schouls (National Institute of Public Health and the Environment, Centre for Infectious Disease control, The Netherlands), Guy Berbers (National Institute of Public Health and the Environment, Centre for Infectious Disease control, The Netherlands)

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

METHODS:
We randomly assigned 400 healthy 'at term' born infants to receive PCV13 at: 2-4-6 months, 3-5 months, 2-3-4 months or 2-4 months in the primary series with a booster dose at 11 months. All infants received DTaP-IPV-Hib vaccine at 2-3-4and 11 months. Blood samples were collected 1 month after the primary series, at 8 and 11 months, and 1 month after the booster dose. Differences between schedules in geometric mean concentrations (GMCs) of pneumococcal serotype-specific IgG antibodies were analysed with ANOVA in the intention-to-treat population.

RESULTS:
One month after the primary series, the 2-4-6schedule was superior to the 3-5, 2-3-4and 2-4 schedule for 4, 9 and 10 serotypes, respectively. The 3-5 schedule was superior to the 2-3-4schedule for 5 serotypes and the 2-4 schedule for 11 serotypes. The 2-3-4schedule was superior to the 2-4 schedule for 5 serotypes. After the booster dose, virtually no inferiority or superiority between the various schedules was observed.

CONCLUSIONS:
Starting the primary series 1 month later and larger intervals between doses resulted in higher antibody levels after PCV13 administration. These factors proved to be more important than the number of primary doses. After the booster dose at 11 months of age, the differences between schedules disappeared. The 2-4-6and 3-5 schedules are advised as the preferred primary schedules.

PRESENTED BY:
Mirjam Knol

Keywords: 13, valent pneumococcal vaccine Pneumococcal infections Immunogenicity Immunization schedule
ESCAIDE REFERENCE NUMBER: 2012695

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

Thorsten Rieck (Robert Koch Institute, Germany), Marcel Feig (Robert Koch Institute, Germany), Eckmanns Tim (Robert Koch-Institute, Germany), Gabriele Poggensee (Robert Koch Institute, Germany), Justus Benzler (Robert Koch Institute, Germany)

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

METHODS:
Anonymized billing data from Associations of Statutory Health Insurance Physicians (ASHIP) were analyzed, covering 85% of the population in 12 out of 16 federal states. Patients can be followed over time within their associated ASHIP and were included if physician contacts both at 0-4 months and at 24-26 months within the same ASHIP were documented. Vaccination histories were construed for these individuals. VC on federal state level was weighted by the according number of annual live births and summarized to nationwide VC. Follow-up over longer time periods allowed validating the method with available VC data from kindergarten and school children and the German Health Survey for Children and Adolescents (KIGGS).

RESULTS:
Nationwide VC of 4 doses of diphtheria, tetanus, pertussis, polio and Hib vaccines was 80% (no difference between birth cohorts). VC for 4 doses of HepB and pneumococcal conjugate vaccine (PCV) increased from 71% to 73% and from 42% to 70%, respectively. VC of MMR was high for dose 1 (94%) compared to dose 2 (66%) (no difference between cohorts). VC increased across 2006/07/08-cohorts for 1-dose MenC (75/77/79%) and first (77/81/85%) and second varicella dose (39/53/60%). Validation showed good agreement with all other data sources.

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

PRESENTED BY:
Thorsten Rieck

Keywords: Vaccination coverage surveillance health services research
ESCAIDE REFERENCE NUMBER: 2012710

Is Germany on the road to eliminating rubella?

Sofie Gillesberg Lassen (Robert Koch Institute (1), European Programme for Intervention Epidemiology Training (EPIET) (2), Germany), Doris Altmann (Robert Koch Institute, Germany), Thorsten Rieck (Robert Koch Institute, Germany), Anette Siedler (Robert Koch Institute, Germany), Sabine Reiter (Robert Koch Institute, Germany), Ole Wichmann (Robert Koch Institute, Germany), Dorothea Matysiak-Klose (Robert Koch Institute, Germany)

BACKGROUND:
Rubella is targeted for elimination in Europe by 2015. Since 2001, the German national surveillance system (NSS) includes nationwide case-based notifications for congenital rubella syndrome (CRS), but rubella is notifiable only in the five eastern federal states (EFS) but not the 11 western federal states (WFS). Using available data-sources, we aimed to assess the status of rubella elimination according to WHO indicators (i.e. rubella-incidence <1/million total population, CRS-incidence <1/100,000 live-births, and 2-dose vaccination coverage >=95%).

METHODS:
For 2001-2009, rubella and CRS-data from the NSS (inpatients and outpatients) and the Federal Statistical Office (hospital statistics) were described by age and federal state. Cases included fulfilled the case reference definition for rubella or CRS in the NSS or were coded with rubella or CRS in hospital statistics using the International Classification of Diseases (ICD-10). We used rubella vaccination coverage-data from routine school-entry examinations 1998-2010.

RESULTS:
From the EFS 107 rubella cases were notified (2009-incidence: 0.46/1,000,000); six were hospitalised. Among the 177 rubella cases registered in hospital statistics 28 (16%) were from the EFS, 63 (36%) were 15-25 years old. While 10 CRS cases were reported in the NSS, 27 CRS-patients <1 year were registered in hospital statistics (incidence 0.2 vs. 0.4/100,000 live-births). Two-dose vaccination coverage increased between 1998 and 2010 from 31.6% to 92.7% in the EFS and from 11.7% to 91.0% in the WFS.

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

PRESENTED BY:
Sofie Gillesberg Lassen

Keywords: Rubella Elimination Surveillance Germany WHO targets
ESCAIDE REFERENCE NUMBER: 2012739

Parallel Session Abstracts

Measles vaccination coverage and reasons for low coverage among preschool children in Bavaria, Germany, 2004-2007

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BACKGROUND:
The German Standing Committee on Vaccination recommends two doses of measles-containing vaccine (MCV) to children under 24 months of age. Nevertheless, 26 measles outbreaks have been notified in preschool facilities and schools in Bavaria, Germany, in 2010-2011. We assessed coverage and determinants of measles vaccination among preschool children in Bavaria to identify low-coverage groups and to guide public health authorities in developing tailored strategies to enhance vaccine uptake.

METHODS:
We analysed combined data from three synchronized cross-sectional studies conducted at school entry health examination in five areas in Bavaria during 2004-2007. Measles vaccination status was obtained from vaccination records; socio-demographic and health-related parameters were obtained from self-administered parental questionnaires. We calculated adjusted odds ratios (aOR) and confidence intervals (CI) by multivariable logistic regression analyses to determine independent associations between no/incomplete uptake of MCV and demographic, socio-economic, and health-related factors.

RESULTS:
Among 25,284 children entering school in participating areas, 16,035 (63.4%) responded to our study (median age: 6.0 years; 47% female). Overall, 12,343/15,399 (80.2%) children with known vaccination status had received at least two doses and further 2,102/15,399 (13.7%) one dose of MCV. Factors associated with no/incomplete vaccination were having parents with university entrance or higher education (aOR 1.40; 95%-CI: 1.25-1.56), single parenthood (aOR 1.20; 1.04-1.39), and incomplete participation in the national paediatric examination programme (NPEP; aOR 2.35; 2.10-2.63).

CONCLUSIONS:
We found a measles vaccination coverage higher than official figures for preschool children in Bavaria, probably due to higher response among parents supporting vaccination. Nevertheless, it does by far not reach the WHO-goal of 95%. Efforts such as offering easily accessible vaccination services in schools and enhancing NPEP-participation are necessary to close vaccination gaps in this age-group.

PRESENTED BY:
Merle Böhmer

Keywords: Measles, vaccination, coverage, determinants, Germany
ESCAIDE REFERENCE NUMBER: 2012804

Reasons for non-vaccination against Human Papillomavirus (HPV) in a sample of Italian girls (results from VALORE project), 2012

Cristina Giambi (Istituto Superiore di Sanità, Italy), Fortunato D'ancona (Istituto Superiore di Sanità, Italy), Martina Del Manso (Istituto Superiore di Sanità, Italy), Barbara De Mei (Istituto Superiore di Sanità, Italy), Vanessa Cozza (Department of Medical and Surgical Sciences, University of Foggia, Italy), Carmen Monta (European Programme for Intervention Epidemiology Training (EPIET), ECDC, Sweden), Ilaria Giovannelli (Istituto Superiore di Sanità, Italy), Chiara Cattaneo (Istituto Superiore di Sanità, Italy), Silvia Declich (Infectious Diseases Epidemiology Unit, Istituto Superiore di Sanit, Italy), Local Representatives for VALORE (Multiple affiliations, listed at: http://www.epicentro.iss.it/problemi/hpv/valore.asp, Italy)

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

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

RESULTS:
So far we have received 2015 (14.2%) questionnaires from 56 LHUs in 10 Italian regions and included 1701 valid questionnaires in the analysis. Main reasons for non-vaccination were: fear of adverse events (79.6%); lack of trust in a "new" vaccine (76.0%); discordant (64.5%) and scarce (53.4%) information on HPV vaccination; cervical cancer prevention by pap-smear (52.7%); parents considered their daughter too young to be at risk (45.4%). The most reported sources of information were: GPs/pediatricians (44.9%), family/friends (37.4%), internet (31.6%), gynecologists (28.0%). GPs/pediatricians (73.3%) and gynecologists (57.4%) were reported as the best sources to receive adequate information. Most girls (98.9%) had received other pediatric vaccinations; most families (80.9%) considered vaccinations fundamental for health children and 47.7% considered them dangerous.

CONCLUSIONS:
Our results suggest that a more complete and transparent communication may help reducing fear and increasing trust in vaccination among parents. Sensitizing and training health care workers is essential to provide clear and homogeneous information to facilitate parents' decision-taking process regarding HPV vaccination.

PRESENTED BY:
Cristina Giambi

Keywords: Human Papillomavirus Vaccines Vaccination Uterine Cervical Cancer Immunization Programs
ESCAIDE REFERENCE NUMBER: 2012820

14 Surveillance (2)

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

Sabine Maritschnik (Austrian Agency for Health and Food Safety, Austria), Franz Allerberger (Austrian Agency for Health and Food Safety (AGES), Austria), Daniela Schmid (Institute of Medical Microbiology and Hygiene, Austrian Agency for Health and Food Safety, Vienna, Austria)

BACKGROUND:
The Austrian Salmonella surveillance system is a national, case-based system in place since 1996 containing clinical, epidemiological and laboratory information on salmonellosis cases reported to district public health officers (DPHOs). In 2009, a new National electronic Reporting System (NeRS) replaced the previous paper-based data reporting process. DPHOs enter data directly into an electronic database. Our aim was to assess data completeness and timeliness after and simplicity before and after implementation of NeRS and its ability to reliably monitor salmonellosis trends.

METHODS:
We assessed simplicity by comparing the number of data transfer steps from local to national level before and after implementation of NeRS. We used the 2009–2011 NeRS dataset to assess completeness and timeliness. Excluding automatically generated data, we calculated the cumulative proportion of complete case records for nine single data entry fields and timeliness by the mean difference between diagnosis and reporting date.

RESULTS:
Simplicity: The NeRS eliminated two steps in the case data reporting process between local and national level. Data completeness: outcome was complete in 100% (6917/6917) of case records, diagnosis date in 83.7% (5791/6917), notification date in 84.9% (5870/6917), symptoms in 90.3% (6244/6917), epidemiological criteria in 90.8% (6277/6917), infection source in 90.3%(6246/6917), hospitalisation in 68.1% (4708/6917), foreign travel-associated illness in 93.4% (6460/6917) and country of travel destination was given in 98.5% (1054/1070) of case records. Timeliness: The 3 years' mean time per case between diagnosis and reporting was 0-36 hours.

CONCLUSIONS:
After implementation of the NeRS, the simplification and acceleration of data reporting and the achieved high completeness rate, should enable public health authorities to reliably monitor salmonellosis trends in real-time.

PRESENTED BY:
Sabine Maritschnik

Keywords: Austria Salmonella surveillance system evaluation disease notification
ESCAIDE REFERENCE NUMBER: 2012666

Surveillance for Invasive Meningococcal Disease in the Kingdom of Saudi Arabia,1995-2011

Daniel Eibach (1) EUPHEM, ECDC, Stockholm; 2) Centre de Biologie et Pathologie Est, Hospices Civils de Lyon, France), Rafat Hakeem (Public Health Directorate, Ministry of Health, Riyadh, Saudi Arabia), Ahmad Kholedi (Public Health Directorate, Ministry of Health, Riyadh, Saudi Arabia), Osman M Abdalla (Public Health Directorate, Ministry of Health, Riyadh, Saudi Arabia), Ziad A Memish (1) Public Health Directorate, Ministry of Health, Riyadh; 2) Alfaisal University, Riyadh, (Saudi Arabia)

BACKGROUND:
The Kingdom of Saudi Arabia (KSA) bears a high risk of outbreaks with Neisseria meningitidis due to the annual Hajj pilgrimage. Following large outbreaks of Invasive Meningococcal Disease (IMD) in 2000 and 2001, quadrivalent ACW135Y vaccines became obligatory for pilgrims and residents in Mecca and Medina. The objective of this study was to perform a descriptive analysis for IMD incidences and mortality among citizens and pilgrims in the KSA, before and after the new vaccination policy in 2002.

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

RESULTS:
There were no signs of epidemics among pilgrims or residents after 2002. The annual incidence for IMD decreased from 0.15 cases/100.000pop. in the pre-epidemic period (1995-1999) to 0.06 cases/100.000pop. after the epidemics (2002-2011); also, the case fatality ratio (CFR) dropped from 19.3% (95%-CI 17.0-21.5) to 11.4% (95%-CI 6.4-16.4) Bas du formulaireBas du formulaireand the annual number of total cases in Mecca and Medina during the Hajj season decreased from 13.4(95%-CI 5.3-21.5) to 1.7 (95%-CI 0.3-3.1). In Mecca and Medina the disease incidence among children below 5 years was significantly lower from 2004-2011 (0.25 cases/100.000pop), compared to all other KSA regions(0.95 cases/100.000pop.; p<0.05).

CONCLUSIONS:
After the introduction of compulsory ACW135Y vaccination, the disease incidence and CFR decreased. Extending the vaccination programme beyond Mecca and Medina for the general pediatric population will likely further reduce the IMD incidence.

PRESENTED BY:
Daniel Eibach

Keywords: Meningococcal Infections, Saudi Arabia/epidemiology, Disease Outbreaks, Mortality
ESCAIDE REFERENCE NUMBER: 2012682

Parallel Session Abstracts

Is laboratory electronic reporting speeding non-typhi Salmonellae surveillance? London and South East of England, 2010/2011

Ettore Severi (Health Protection Agency, United Kingdom), Gavin Dabrera (Health Protection Agency, United Kingdom), Naomi Boxall (Health Protection Agency, South East Region, United Kingdom), Lisa Harvey-Vince (Health Protection Agency, United Kingdom), Linda Booth (Health Protection Agency, United Kingdom), Sooria Balasegaram (Health Protection Agency, United Kingdom)

BACKGROUND:
In England, laboratories must notify non-(para)typhoidal Salmonella cases (NTS) via any means (preferably electronic) to Health Protection Units (HPU) who then apprise Environmental Health Departments (EHD) who investigate. Weevaluated the timeliness of electronic NTS reporting and the completeness of EHD investigations / follow-up in London and South East (SE) regions to identify opportunities for improvement.

METHODS:
We surveyed laboratories, HPUs and EHDs in London and SE between December 2010 and April 2011 to describe processes, assess timeliness of electronic reporting (days) and measure the completeness of EHD follow-up interviews. We defined time between onset and action as (1) Electronic Laboratory Report Period from onset to laboratory report, (2) HPU Report Management Period from receipt of laboratory report to report to EHD, and (3) EHD Follow-up from receipt of HPU report to starting investigations.

RESULTS:
Median time between onset and follow-up was 23 days in SE and 26.5 days in London. Median Electronic Laboratory Report Period was 22 days in SE and 24 days in London. HPU Report Management Period was within the same day in SE and one day in London. EHD follow-up started after one day in SE (52% postal) and 1.5 days in London (53% telephone). Completion of telephone interviews (when successful) reached 98% in London and 96% in SE, compared to 52% and 60% of postal questionnaires, respectively.

CONCLUSIONS:
Electronic reporting takes too long, mainly because results are uploaded in batches, causing delays in investigation, which increase loss to follow-up and recall bias. Improved electronic surveillance will reduce delays by uploading laboratory results in real-time. Phone interviews could further improve the timeliness and acceptability of NTS follow-up improving public health benefit.

PRESENTED BY:
Ettore Severi

Keywords: Infectious disease reporting, electronic laboratory reporting, non-typhi salmonella, non-paratyphi salmonella, electronic surveillance, surveillance system evaluation
ESCAIDE REFERENCE NUMBER: 2012688

Severe Influenza Surveillance System in the United Kingdom: evaluation of mandatory reporting

Carlos Carvalho (Health Protection Agency, United Kingdom), Nicki Boddington (Health Protection Agency, United Kingdom), Richard Pebody (Health Protection Agency, United Kingdom)

BACKGROUND:
Following the 2009 pandemic, the Health Protection Agency (HPA) developed the UK Severe Influenza Surveillance System (USISS) based on mandatory weekly reports of admissions to Intensive Care/High Dependency Units (ICU/HDU) throughout the UK. In 2011/2012, in England, ICU/HDUs from 164 acute hospitals submitted weekly data and national reports were produced every Thursday. We evaluated the system to inform future surveillance plans.

METHODS:
We surveyed participating acute hospital trusts in England online to collect feedback about structure, operation and outputs of USISS. We requested data tables of the weeks 40 2011 to 20 2012 that summarised cases (persons admitted to ICU/HDU with laboratory-confirmed influenza A[H1,H3,novel] or B infection in the previous week) to validate reports already received.

RESULTS:
35 USISS users (21%) responded to the survey. 60% considered the data requested reasonable, 60% agreed USISS would allow identification of a novel virus, 52% judged resources available in the ICU/HDU sufficient to participate in USISS and 29% received adequate feedback. Of the 244 cases initially reported, 133 (55%) were influenza A unknown subtype, 67 (27%) A(H3N2), 25 (10%) A(H1N1)2009 and 19 (8%) influenza B. We received validation tables from 42 ICU/HDUs (26%) totalising 68 cases (versus 87 cases initially sent to HPA). Five (13%) were updated from "unknown" to a specific subtype and 19 (22%) were discarded after reporting.

CONCLUSIONS:
In 2011/2012, USISS was well accepted and considered useful. While all known cases were reported, some sub-typing data were missing. The paucity of severe influenza in selected ICU/HDUs may explain the lower response and completeness of the evaluation surveys. HPA must improve feedback to ICU/HDUs and re-evaluate the system during a high activity influenza season.

PRESENTED BY:
Carlos Carvalho

Keywords: Influenza, surveillance, evaluation, United Kingdom.
ESCAIDE REFERENCE NUMBER: 2012728

Daily mortality monitoring in Spain: Evaluation of the system timeliness 2008-2010

Vinciane Sizaire (Centro Nacional de Epidemiologia, Spain), Victor Flores (Centro Nacional de Epidemiologia, Spain), Fernando Simón Soria (Minitry of Health, Social Services and Equality, Spain)

BACKGROUND:
In 2004, daily mortality monitoring from June to September was introduced in Spain. The Ministry of Justice daily sends to the National Centre for Epidemiology an electronic file containing death notifications of the previous 15 days from computerized civil registries (n=2008, 74.5% population in 2011). Automated time-series analysis detects mortality excesses which are communicated to the authorities for assessing causes and implementing measures. We aimed to estimate delays in reporting deaths and time required for detecting alerts during summers 2008 to 2011.

METHODS:
We included notifications of the years 2008-2011. Delays in reporting were defined as more than 8 days between date of death and date of data reception. We stratified per size of district (‹10,000 [small] inhabitants versus ≥10,000 [big]). We calculated the median time needed to detect alerts, defined as number of consecutive days with observed mortality exceeding the expected daily average, above the 90th percentile of consecutive days observed in the previous 2 years.

RESULTS:
Yearly, proportion of late notifications varied between 6-7%. This proportion was 12.2% (95%CI: 11.6%-12.7%) in small and 6.5% (95%CI: 6.4%-6.6%) in big districts. Time required from the notification of deaths till reaching the alert threshold varied between 3-20 days and the median was 6 days (IQR: 5-9). The median was 5 days (IQR: 4-5) in 2008, 6 days (IQR: 5-6) in 2009 and 6.5 days (IQR: 6-8) in 2010.

CONCLUSIONS:
Delays in notification are bigger in small districts and time required in detecting an alert is almost one week. Based on these findings and in order to improve real-time detection of alerts, the system should develop models estimating and correcting delays of daily death notification.

PRESENTED BY:
Vinciane Sizaire

Keywords: Daily mortality, timeliness, evaluation
ESCAIDE REFERENCE NUMBER: 2012761

15 Outbreaks (2)

Outbreak of Escherichia coli O157 infection associated with consumption of ground beefburgers, South West France, 2012

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BACKGROUND:

From 15 to 22 June 2012, four haemolytic uremic syndrome (HUS) cases were reported in south-western France, two of them with confirmed E. coli O157 infection. An investigation was conducted to describe the outbreak, identify the source of infection and guide control measures.

METHODS:
A case series investigation was conducted. A probable case was defined as a resident of south-west France who developed bloody diarrhoea or HUS after 28 May 2012. Cases were confirmed by isolation of E. coli O157 in stool samples or by O157 serology. A standardized questionnaire was administered to all cases to document food consumption and other at-risk exposures. Trace-back investigations and veterinary inspections were conducted on suspected products.

RESULTS:
Thirteen cases were identified (3 adults and 10 children) with an onset of diarrhoea between 6 and 28 June. Eight cases developed HUS; no death occurred. An infection with E. coli O157 was confirmed for 9 cases by stool culture or serology. E. coli O157 stx2-eae was isolated from 7 cases. Ten cases reported having consumed fresh ground beef burgers bought in one supermarket chain. These burgers were produced by a single company and distributed in one supermarket chainin South-Western France. Food microbiological investigations are still on going.

CONCLUSIONS:
Prompt investigations enabled to quickly point out fresh ground beef burgers as the most probable source of infection in 10 cases. Implemented control measures included a recall of the product (issued on 23 June) and a campaign to raise public awareness of the need for thorough cooking. All the 10 cases had consumed the burgers before the recall. The recall may have contributed to prevent further cases among consumers who had frozen beef burgers.

PRESENTED BY:
Patrick Rolland

Keywords: Haemolytic uremic syndrome, E. coli O157, ground beef burgers, control measures
ESCAIDE REFERENCE NUMBER: 2012898

Parallel Session Abstracts

European outbreak of Salmonella Strathcona caused by small tomatoes, August – November 2011

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

METHODS:
A case was defined as a laboratory confirmed Salmonella Strathcona patient in Europe with a specific pulse-field gel electrophoresis (PFGE) pattern ill between August and November 2011. Hypothesis-generating interviews were performed in Denmark, Germany and Austria, and further studies in Denmark included comparative analyses of patients' shopping lists obtained from supermarket computers, and a case-control study with 25 cases and 56 population register controls matched on age, sex and municipality.

RESULTS:
In total, 43 cases of Salmonella Strathcona were reported in Denmark, 13 in Germany, two in Italy and one in Austria with the same PFGE. The comparative analyses of patients' shopping lists showed that 8/10 cases had bought a specific type of Datterino tomatoes prior to disease onset. In a case-control study illness was associated with a specific supermarket chain, mOR=16.9 [2.2-130], and having consumed elongated small tomatoes, mOR=28, 95% CI [2,6-300]. Trace-back investigation showed that the tomatoes came from an Italian producer and had been sold both in Germany and Austria, although a detailed European trace-back investigation could not be performed.

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

PRESENTED BY:
Luise Müller

Keywords: Europe, Salmonella Strathcona, Outbreak, Tomatoes
ESCAIDE REFERENCE NUMBER: 2012931

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

Leonor Sanchez-Buso (Genomics and Health. CSISP-Universitat de Valencia. CIBERESP., Spain), Francisco Adrian (Alcoi Public Health Centre, Spain), Vicente Morera (Denia Public Health Centre, Spain), Silvia Guiral (Surveillance and Epidemiologic Control Unit. Public Health Directorate. Regional Goverment Valencia, Spain), Marisa Camaro (Public Health Laboratory. Public Health Directorate. Regional Goverment Valencia, Spain), Piedad Olmos (Public Health Laboratory. Public Health Directorate. Regional Goverment Valencia, Spain), Fernando Gonzalez-Candelas (Genomics and Health CSISP-Universitat de Valencia. CIBERESP, Spain)

BACKGROUND:
On January 11, Public Health authorities in the Comunidad Valenciana (Spain) were informed of several cases of travel-associated legionellosis in British patients that pointed to a hotel in Calpe (Alicante) as the source of an outbreak. Molecular typing of clinical isolates identified the infecting strain as Legionella pneumophila ST 23.The outbreak caused 21 infections with 5 fatalities and was controlled in early February, after stringent cleaning and disinfection measures were adopted but it reappeared in May, causing 17 additional infections. We report here our findings on the molecular investigation of environmental samples from this hotel.

METHODS:
Water and biofilms samples were taken before and after cleaning and control measures were implemented as well as after the outbreak resumed in June. Water samples were processed following protocol UNE-EN ISO11731:2007, and biofilm samples were used for DNA extraction, PCR amplification with Legionella-specific primers and subsequent sequencing of positive amplicons. This protocol was completed in less than 48 hours.

RESULTS:
Only 5 out of 164 water samples resulted in positive cultures of Legionella, whereas at least one L.pneumophila locus was sequenced in 98 biofilm samples. In 5 biofilms all the loci in the SBT scheme for Legionella were sequenced and ST 578 was identified in all cases. Colonies from the 5 cultures yielded several Legionella strains, including ST 23, ST 1236 and several Legionella spp. Comparison with results of clinical samples (direct sequencing from sputums)revealed additional matches with environmental sequences.

CONCLUSIONS:
Direct analysis of biofilms can reveal the presence of Legionella and facilitate the rapid identification of this species during the epidemiological investigation of legionellosis outbreaks, thus allowing the informed adoption of appropriate control measures.

PRESENTED BY:
Fernando Gonzalez-Candelas

Keywords: Sequence typing, PCR, Biofilms, Environmental samples, Legionellosis, outbreaks
ESCAIDE REFERENCE NUMBER: 20121021

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

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

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

RESULTS:
37 cases (UK, 16; Spain, 12; Belgium, 7; France, 2) were travel-associated and the remaining had professional exposure. The hotel abided with the current regulations and exceptional cleaning and control measures were adopted on January 16-17, after which samples were negative for Legionella. Biofilm samples from January 31st were positive the same day one new case was declared by ELSDNET: the hotel was closed immediately. It reopened one week later, and new water samples were negative but biofilms revealed the presence of Legionella. Additional inspections in June identified several closed chambers connected to the spa as likely reservoirs for Legionella which could be disseminated to the hotel hall through the doors and air-conducts.

CONCLUSIONS:
Intervention measures were facilitated by analyzing biofilms. A new reservoir for Legionella has been identified connected to the spa. This finding has led to dismantling the spa and allowed the hotel to reopen once the outbreak has been controlled.

PRESENTED BY:
Fernando Gonzalez-Candelas

Keywords: Legionellosis Outbreaks Environment controlled Biofilms PCR
ESCAIDE REFERENCE NUMBER: 20121035

10.45 – 12.25 Fri 26

16 Vaccine-preventable diseases (2)

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

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

METHODS:
We computed incidence rates (IR) by utilising population data and RV-related hospitalisations identified through the national mandatory reporting system. First, we compared IR of seasons after (2008/09-2010/11) to the mean IR of seasons before (2004/05-2005/06) RV-vaccine introductionby age-group and region (EFS and WFS).Second, we tested effects of seasonal trend, vaccination coverage, age-group, and region on IR with negative binomial regression and computed IR-ratios (IRR) in the seasons after mid-2006. A p-value ‹0.05 was considered statistically significant.

RESULTS:
IR gradually decreased by each post-introduction season. For children aged ‹6, 6-11, 12-17, and 18-23 months the IR in the EFS was reduced in 2010/11 by 40%, 57%, 41%, and 22%, respectively. There was no significant IR-reduction in those aged ≥24 months. In WFS, the IR-reduction in 2010/11 in respective age-groups was 27%, 28%, 14%, and not detectable among those aged ≥18 months. In regression analysis, the effect of vaccination was independent from the region. Vaccination of 50% of the unvaccinated children population was significantly associated with a reduction in the RV-hospitalisation incidence in the age-groups 6-11 (IRR=0.58), 12-17 (IRR=0.62), and 18-23 months (IRR=0.78).

CONCLUSIONS:
In the German setting with low to moderate vaccine uptake, RV-related hospitalisation incidence decreased substantially depending on the achieved vaccination coverage, but only in children ‹24 months of age.

PRESENTED BY:
Sandra Dudareva-Vizule

Keywords: Rotavirus, hospitalisation, vaccination, impact, Germany
ESCAIDE REFERENCE NUMBER: 2012787

Parallel Session Abstracts

cycEVA study: four years of monitoring influenza vaccine effectiveness in Spain

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BACKGROUND:
In Spain, influenza vaccine effectiveness (IVE) has being estimated since 2008-9 season through a test-negative case-control study (cycEVA). cycEVA is part of the ECDC-funded project I-MOVE (Monitoring Influenza Vaccine Effectiveness in the EU/EEA) aimed at estimating seasonal and pandemic IVE in the EU. cycEVA studies were conducted in 2008-9 (pilot season), 2009-10 (pandemic season), 2010-11 and 2011-12 within the well established Spanish Sentinel Influenza Surveillance System. We aimed at describing cycEVA performance in its four seasons

METHODS:
cycEVA study performance was analysed using the following indicators: sentinel physicians (GPs) participation, data quality (variables completeness, added variables to control for potential confounders related to IVE), results dissemination (number of reports and publications in peer-reviewed journals, timeliness and number/source of citations)

RESULTS:
GPs participation increased from 164 (2008-9) to 246 in the rest. GPs recruiting at least one patient increased from 41% (2008-9) to ›80% in the following seasons. Some variables were added to the questionnaire: additional chronic diseases, obesity, pregnancy, number of GP visits in the previous year and target groups for vaccination. The variable completeness ranged from 80% to 100%. 2010-11 and 2011-12 IVE preliminary results were published early in the season. cycEVA results were published in 5 peer-reviewed journals with 30 citations from one influenza review, one WHO report and several national/international peer-reviewed journals

CONCLUSIONS:
cycEVA study achieved an increased GPs participation and better information, resulting in more timely IVE estimates dissemination. cycEVA is a well established network able to provide timely and quality IVE estimates in Spain. Its results helped Public Health Authorities guiding influenza vaccination recommendations as well as contributed to the I-MOVE multicentre study allowing more precise IVE European estimates

PRESENTED BY:
Silvia Jiménez-Jorge

Keywords: Vaccine effectiveness, case-control study, pandemic influenza, seasonal influenza, sentinel network
ESCAIDE REFERENCE NUMBER: 2012902

The changing serotype distribution of Streptococcus pneumoniae in Ireland, since introducing pneumococcal conjugate vaccines

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

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

RESULTS:
Following the introduction of PCV, the overall incidence of IPD declined by 12% in 2011 compared with 2008, the greatest decline was in children ‹2 years of age (55%). The burden of disease due to the PCV7 serotypes in this age group was reduced by 91%. Despite these overall reductions, the incidence of IPD due to non-PCV7 serotypes increased in those ≥2 years of age and older but not in younger children. The predominant serotypes in 2008 in rank order were 14, 4, 9V and 7F, in 2011 these were 7F, 19A (PCV13 serotypes), 22F and 8. The greatest shift was seen with 22F cases almost trebled in 2011, followed by 19A where cases doubled. In 2011, 19A was the predominant serotype in children ‹2 years of age.

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

PRESENTED BY:
Margaret Fitzgerald

Keywords: Pneumococcal Infections/preventions &, control Pneumococcal Infections/epidemiology Pneumococcal Vaccines Serotyping
ESCAIDE REFERENCE NUMBER: 2012926

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

Oktawia Wojcik (Statens Serum Institut, Denmark), Jacob Simonsen (Statens Serum Institut, Denmark), Kåre Mølbak (Statens Serum Institut, Denmark), Palle Valentiner-Branth (Statens Serum Institut, Denmark)

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

METHODS:
Using proportional allocation (stratified by birth cohort, gender and region),we randomly selected children from the 2000-2003 birth cohorts, registered in the Danish Civil Registry System and without a recorded TdaP-IPV booster. We invited parents to respond to a postal questionnaire regarding unrecorded vaccinations. Participants were considered vaccinated if they used a vaccination card to recall their child's vaccination status and provided an exact date of vaccination. Adjusted vaccination coverage (VC) was calculated as follows: adjusted VC = ((1-registered VC) * study population VC) + registered VC).

RESULTS:
Of the 574 contacted parents, 386 (67%) completed a questionnaire; 272 (70%) reported that their child received the TdaP-IPV booster, with 121 (44%) providing the date of vaccination. Most commonly reported reasons for not receiving the booster included forgetting (37%) and not wanting the vaccination (16%). The majority (89%) of children who received the booster were vaccinated by their general practitioners (GPs); 6% abroad and ‹1% in a hospital. The adjusted TdaP-IPV booster VC was 85.6% (95% CI, 85.1%-86.3%) compared to 82% from the DVCD, indicating an underreporting of at least 20.2%.

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

PRESENTED BY:
Oktawia Wojcik

Keywords: Validation, vaccination coverage, Denmark, TdaP-IPVbooster, vaccination database
ESCAIDE REFERENCE NUMBER: 2012736

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

Saverio Caini (National Center of Epidemiology, Republic of Korea), Nam Seon Beck (Translational Research Division, International Vaccine Institute, Seoul, Republic of Korea), Harouna Jacouba (Ministry of Public Health, Niamey, Niger), Ibrahim Chaibou (Ministry of Public Health, Niamey, Niger), Ide Hinsa (Ministry of Public Health, Niamey, Niger), Aboubacar Adakal (Ministry of Public Health, Niamey, Niger), Idrissa Maiga (Ministry of Public Health, Niamey, Niger), Sung Hye Kim (Translational Research Division, International Vaccine Institute, Seoul, Republic of Korea), Aboubacar Issoufou (Ministry of Public Health, Niamey, Niger), Lorenzo Pezzoli (Translational Research Division, International Vaccine Institute, Seoul, Republic of Korea)

BACKGROUND:
MenAfriVac™ is a conjugate vaccine against meningitis A specifically designed for Africa. In Niger, the MenAfriVac™ vaccination campaign was conducted in people aged 1-29 years in three phases. The third phase was conducted in November/December 2011 targeting more than 7 million people in six regions (31 districts).

METHODS:
We estimated vaccination coverage (by both card and verbal history of vaccination)and described reasons for non-vaccination at regional level by cluster survey assuming: expected coverage of 90%, precision of +5%, confidence level of 95%, and design effect of 2. At district level, we conducted a clustered lot quality assurance sampling (lower threshold; 75%; upper threshold: 90%; alpha and beta errors below 10% and 15% respectively). We calculated risk ratios (RR) and 95% confidence intervals (95%CI) through Poisson regression with robust variance for the association between vaccination status and variables of interest.

RESULTS:
We surveyed 2390 persons and estimated an overall coverage of 90.9% (95%CI 88.6-93.2) by card+history and of 68.8% (95%CI 64.9-72.8) by card only. The main reason for non-vaccination was not being at home during the campaign At district level we defined five and 25 districts as accepted for coverage above 75% based on card only and card+history, respectively. Female sex (RR 1.05, 95%CI 1.03-1.08), age‹15 years (RR 1.17, 95%CI 1.13-1.22), being informed about the campaign (RR 1.41, 95%CI 1.30-1.51) and living in the same household for more than 3 months (RR 1.36, 95%CI 1.11-1.67) were associated with being vaccinated.

CONCLUSIONS:
Although the estimated overall coverage by card+history was high, we could identify districts where pockets of unvaccinated might still exist. Mop-up campaigns with specific sensitization strategies should be considered in those districts with non acceptable coverage.

PRESENTED BY:
Saverio Caini

Keywords: Meningococcal Meningitis, Serogroup A, Vaccination Coverage, Survey, Lot Quality Assurance Sampling, Cluster Sampling
ESCAIDE REFERENCE NUMBER: 2012753

Parallel Session Abstracts

17 Novel methodological approaches (2)

Reconstruction of the evolutionary dynamics of the A(H1N1) pdm09 influenza virus in Italy during the pandemic and post-pandemic phases.

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

METHODS:
The hemagglutinin (HA) gene was amplified and sequenced from 227 A(H1N1) pdm09-positive respiratory samples collected from patients with influenza illness during the pandemic (2009-2010) and post-pandemic (2010-2011). Phylodynamic and phylogeographic analyses were performed using Bayesian frameworks.The Markov-Chain Monte Carlo (MCMC) and Continuous-Time Markov-Chain (CTMC) approaches – implemented in BEAST program – were used to estimate time-scaledphylogeny, demography and evolutionary rate, and phylogeographic history.

RESULTS:
Global and local phylogenetic analyses showed that all Italian sequences sampled in the post-pandemic (2010-2011) season grouped into at least four highly significant Italian clades, whereas those of the pandemic season (2009-2010) were interspersed with isolates from other countries at the tree root. The time of the most recent common ancestor (tMRCA) of the strains circulating in the pandemic season was estimated to be between spring and summer 2009, whereas the Italian clades of the post-pandemic season originated in the spring 2010 and showed radiation in summer-autumn 2010. This was confirmed by a Bayesian skyline plot showing the biphasic growth of the effective number of infections. Local phylogeographic analysis showed that the first season of infection originated in localities with high-density populations, whereas the second season involved less densely populated localities, in line with a gravity-like model of geographical dispersion.

CONCLUSIONS:
The A(H1N1)pdm09 virus was introduced into Italy in spring 2009 through multiple importations. This was followed by repeated founder effects in the post-pandemic period that originated specific Italian clades.

PRESENTED BY:
Elena Pariani

Keywords: Influenza A virus, epidemiology, phylogeny, time-scaled phylogeny, phylogeography.
ESCAIDE REFERENCE NUMBER: 2012895

Is Schmallenberg virus a new zoonotic agent? – a quick answer due to new (zoonotic) infectious disease control structures

Margreet te Wierik (National Center for Infectious Disease Control, The Netherlands), Hans van den Kerkhof (National Center for Infectious Disease Control, The Netherlands), Cees van den Wijngaard (National Center for Infectious Disease Control, The Netherlands), Wilfrid van Pelt(National Center for Infectious Disease Control, The Netherlands), Wim van der Poel (Central Veterinary Institute, The Netherlands), Piet Vellema(Animal health Service, The Netherlands), Chantal Reusken (National Center for Infectious Disease Control, The Netherlands), Marion Koopmans (National Center for Infectious Disease Control, The Netherlands)

BACKGROUND:
As a result of the Q-fever epidemic in the Netherlands, the zoonotic disease control structures were recently strengthened. Earlier, seven regional consultants communicable disease control were employed as liaison officers between the National Center for Infectious Disease Control (NCIDC) and the 28 Regional Public Health services (RPHS) in the Netherlands. A new agreement was reached to inform the RPHS directly of (possible) zoonotic disease events by the (private) Animal Health Service (AHS). November 2011, a new virus was identified that caused severe congenital malformations in sheep and cattle in the Netherlands. It was named Schmallenberg virus (SBV) and was placed in the Bunyaviridae family, a family known to contain important zoonotic viruses. A risk assessment concluded that zoonotic transmission of SBV could not be excluded and a serosurvey in highly exposed individuals was recommended. The new (zoonotic) control structures were deployed to facilitate this survey.

METHODS:
Study design, questionnaires, and diagnostic tests were developed by the NCIDC. A seroepidemiological study was set up among farmers, employees and other residents from farms where SBV infected animals were confirmed or strongly suspected, as well as veterinarians involved in their management. The AHS recruited the study participants in collaboration with the NCIDC. The regional consultants coordinated the actual data collection in their region. Samples and questionnaires were analysed by experts from the NCIDC.

RESULTS:
The study was designed, set-up, conducted and reported in three months. Actual recruitment and data collection were done in over a month. All 301 recruited persons tested negative for SBV-antibodies.

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

PRESENTED BY:
Margreet te Wierik

Keywords: Zoonoses, seroepidemiological study, Public Health response
ESCAIDE REFERENCE NUMBER: 2012916

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

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

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

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

RESULTS:
Evaluation of the modified EIA demonstrated that the avidity pattern in oral fluids paralleled that in serum. Oral fluid samples from 131 patients with suspected measles infections were subsequently investigated and a significantly lower mean relative avidity index (%), indicating recent infection, was determined for IgM positive samples (32.8%) compared to IgM negative oral fluids (71.0%; p<0.0001). Further testing is in progress to determine sensitivity and specificity of the assay.

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

PRESENTED BY:
Katherina Zakikhany

Keywords: Measles, supportive diagnostics, IgG avidity testing
ESCAIDE REFERENCE NUMBER: 2012700

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

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

METHODS:
Campylobacter isolates from human cases (187 isolates) and chicken meat (98 isolates) from three countries intended for the Danish market and isolated through routine sampling were typed by flagellin A (flaA) Short Variable Region sequencing and antimicrobial resistance profiling. Patients were interviewed regarding travel abroad in the week before disease onset.

RESULTS:
The human Campylobacter isolates showed six large flaA-nucleotide type clusters. Travel data showed 37% of cases could be attributed to foreign travel. Antimicrobial resistance profiling showed that 61% of domestically acquired Campylobacter isolates were fully sensitive to all tested antimicrobials, as opposed to 16% for travel-related cases. When flaA-typing data, antimicrobial resistance profiles and travel information of the patients were combined, no large single cluster of isolates was observed. Comparison of the human isolates with isolates from retail chicken meat showed that 44 (23.5%) patient isolates had a flaA-type and antimicrobial resistance profile similar to Danish chicken meat isolates. Only four (2.1%) patients carried isolates specifically matching those isolated from chicken meat imported from two other European countries.

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

PRESENTED BY:
Lieke van Alphen

Keywords: Campylobacter flaA Short Variable Region sequencing antimicrobial resistance typing
ESCAIDE REFERENCE NUMBER: 2012855

Parallel Session Abstracts

18 Outbreaks (3)

Molecular anatomy of invasive Group A Streptococcal (iGAS) isolates in England

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BACKGROUND:
An unusual increase in iGAS infections occurred in England in December 2008, particularly amongst children coupled with high case fatality rates (23%), prompted a national alert. A significant increase in emm/M3 from 14% in November 2008 to 38% in April 2009 was observed; such single type dominance had not previously been observed for any emm/M type. The main objectives of our study were to determine the factors behind the increase in emm/M3 causing severe invasive disease in England by the examination of the phylogenetic characteristics, diversity and 'evolutionary drift' of emm/M3 from invasive and superficial disease.

METHODS:
A total of 296 GAS emm/M3 strains from 2001 to 2011 (182 invasive and 114 non-invasive) were examined using whole genome sequencing.

RESULTS:
emm/M3 strains were differentiated into three sequence types (STs): ST15, ST315 or ST406. Strains from 2008/2009 period were scattered across all STs and lineages. There was no significant correlation between emm subtypes, clinical features or the invasiveness of emm/M3 strains and clonal lineages. We have identified a phage present in 45/296 strains; all of which are 2008/2009 strains within a distinct ST15 clade. This phage contains 63 putative genes, two of which are the exotoxin gene speC and DNAase gene spd1.

CONCLUSIONS:
The unusual upsurge in invasive GAS infections could be attributed, in large part, to the emergence of the novel phage-containing clade (ST15) of emm/M3 GAS strains within the population. We hypothesise that phage-encoded proteins contributed to this emergence either through biological activity or through reduced population immunity. Prompt molecular analysis of GAS isolates emerging in the UK population could translate into improved advanced public health warning systems for newly emergent invasive strains.

PRESENTED BY:
Baharak Afshar

Keywords: IGAS infections, whole genome sequencing, phage, population immunity
ESCAIDE REFERENCE NUMBER: 2012826

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

Sareeya Wechwithan (FETP, Thailand)

BACKGROUND:
D8 measles genotype has been detected in south Asia, but not Thailand, before 2011. In July, 2011, a measles outbreak was reported at a boarding school in central Thailand, followed one month later by an outbreak 45 km away. The boarding school houses students from low income families. We conducted investigations to determine epidemiological linkage and limit the scope of the outbreaks in a resource limited area.

METHODS:
Cross sectional study was conducted by reviewing records of hospitalized patients and immunization records and conducting active case finding in the school and villages. Cases were persons under 15 years old who have fever, rash and cough with at least one of: koplik spot, coryza or conjunctivitis 17th July – 14th Sep 2011. Serum and throat swab samples were obtained from eligible cases for measles culture, IgM ELIZA serology and PCR genotype identification.

RESULTS:
15 measles cases were detected in the school (attack rate 2.18%); D8 measles was identified as the genotype. New student immunization program had not yet occurred. Two infected students returned to their hill-tribe village homes for Buddhist Lent. In August, 147 cases (attack rate 27.3%) were detected in these villages. Serum specimens from villagers were 94% (16/17) positive. Sputum culture from a village patient was found positive for D8 measles as found same genotype from school outbreak.

CONCLUSIONS:
Amplified transmission occurred due to infected patients from the smaller boarding school outbreak becoming index cases in the hill tribe villages. A mop up MMR campaign was conducted, including 160 doses given throughout the hill-tribe community. Program monitoring in vulnerable setting like school is needed to prevent amplified transmission to community.

PRESENTED BY:
Sareeya Wechwithan

Keywords: Measles D8genotype, hill tribes outbreaks, measles outbreak, measles
ESCAIDE REFERENCE NUMBER: 20121043

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

Akbar Ali Ghanghro (District Health Department (FELTP-Alumni) Sind, Pakistan), Lubna Akbar Ghanghro (Health Department, Pakistan), M.Parial Jokhio (Health Department (FELTP-Fellow), Pakistan), Jamil Ahmed Ansari (FELTP-Pakistan, Pakistan)

BACKGROUND:
On 6th October 2010 a medical practioner reported that an outbreak of acute watery diarrhea struck within the Chana/Mashori colony, Darbello, District Naushahroferoze where his clinic treated 17 patients while one person died. We conducted a retrospective matched case-control study to define risk factors associated with AWD among colony residents and identify interventions that could prevent further cases and future outbreaks.

METHODS:
Cases were identified from affected colony and medical records and matched controls (without watery diarrhea since 1st Oct to 10th Oct 2010) to the cases by age/sex category (‹ 2–4, 5–14, and › 14 years M/F) and location of residence within the Chana/Mashori colony. Cases were defined as any person of any age with profuse, effortless watery diarrhea (three or more stools in 24 hours).Two rectal swabs and seven drinking water samples were randomly collected for laboratory analyses.

RESULTS:
Total 35 cases were line listed manifested by abdominal pain (76%), vomiting (59%), severe dehydration (43%) fever (18%). Mean age was 22 years. Vibrio Cholera poly 01 serotype Ogawa was isolated in both rectal swabs. 5/7 water samples remained fecal contaminated. Consumption of chlorinated drinking water stored in covered or sealed containers remained protective against AWD (matched odds ratio [MOR] = 0.47 [0.27, 0.98]), while consumption of drinking water from the installed hand pumps, were close to swamp (MOR = 5.14 [1.55, 17.73]) identified the most significant factor associated with outbreak.

CONCLUSIONS:
Contamination of drinking water due to swamp was likely the source of this outbreak. Chlorination of water controlled the outbreak. Improving sanitation and promoting methods to ensure safe drinking water are likely to be effective measures in moderating future cholera outbreaks in this setting.

PRESENTED BY:
Akbar Ali Ghanghro

Keywords: Cholera outbreak Floods/2010, Sind, Pakistan.
ESCAIDE REFERENCE NUMBER: 20121048

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

Ides Boone (European Programme for Intervention (EPIET); Baden-Württemberg State Health Office, Stuttgart, Germany), Nadja Oster (Local public health office, Waldshut County, Germany), Christiane Wagner-Wiening (Baden-Württemberg State Health Office, Germany), Albert Heim (Consulting Laboratory for Adenovirus, Hannover, Germany), Iris Zöllner (Baden-Württemberg State Health Office, District Government Stuttgart, Germany), Günter Pfaff (Baden-Württemberg State Health Office, District Government Stuttgart, Germany)

BACKGROUND:
Between November 2011 and February 2012, Baden-Württemberg reported an outbreak of epidemic keratoconjunctivitis (EKC) with 112 notifications, as compared to 28 in 2009 and 38 in 2010. All cases visited an outpatient eye clinic (clinic A). We investigated the characteristics and severity of the outbreak.

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

RESULTS:
Sixty-two of 104 case patients (60%) completed the questionnaire (mean age 59, 50% females). Twenty-six cases were community-acquired. The remaining 36 cases who developed EKC symptoms after a median of 12 days after consultation (Range: 3-33) were nosocomial cases. We detected Adenovirus type 37 in 4/4 conjunctival swabs from nosocomial cases. Symptoms lasted a median of 19 days (Range: 2 – 41) and included red eyes (94%), watery eyes (82%), foreign body sensation (82%) and corneal ulcers (8%). Nosocomial cases were more likely to report severe or very severe symptoms (94%) than community-acquired cases (60%, relative risk: 1.6, 95% confidence interval: 1.1-2.2). On 14/12/2011 the clinic implemented disinfection, dedicated rooms and equipment for EKC patients and the number of cases decreased, with a last nosocomial case on 30/1/2012.

CONCLUSIONS:
Community outbreak of EKC may lead to sub-clusters of nosocomial transmission. We recommend rapid dissemination of recommendations to eye clinics so that they implement separate treatment paths and virucidal disinfection methods for EKC patients.

PRESENTED BY:
Ides Boone

Keywords: Adenovirus, Viral conjunctivitis, Outbreak, Germany
ESCAIDE REFERENCE NUMBER: 20121065

Parallel Session Abstracts

Active case finding for malaria cases in Lakonia, Greece: 2011-2012

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BACKGROUND:
Malaria was eliminated in Greece during the 60's with intensive anti-malarial campaigns. Sporadic autochthonous and about 50 imported cases were reported annually since then. In 2011 an outbreak of malaria was identified in Peloponnese, while sporadic cases with no reported tavel history were reported in four more areas. The coexistense of Anopheles mosquitoes in several areas in Greece with large numbers of migrants from malaria-endemic countries (esp. from the Indian subcontinent), along with environmental factors such as climate change make re-stablishement of malaria in Greece a definite possibility.

METHODS:
Active case finding was organized in the epicentre of the Lakonia outbreak aiming at early diagnosis and appropriate treatment of malaria cases. Since September 2011 the Hellenic CDC has deployed personnel in the area. Field personnel records residences with a unique identification number, informs residents on mosquito protection measures and malaria, performs fever screening and focus investigations in a radius of 100m around each confrimed case. RDTs and blood sampling are employed on symptomatic patients.

RESULTS:
Since September 2011 a total of 3570 residences were visited and 7731 persons have been examined (4547 Greeks and 2368 immigrants). 485 blood samples have been collected from patients with fever or reported fever and contacts of malaria cases. Ten (2,1%)samples were positive for malaria, of those only 3 in asymptomatic patients who were contacts of a case. 24 anti-malarial treatment courses have been delivered as DOT.

CONCLUSIONS:
Early diagnosis and appropriate antimalarial treatment of all malaria cases in the area represent one of the main axes of measures along with vector control aiming to decrease the transmission of malaria in the area and prevent re-establishment of malaria in Greece.

PRESENTED BY:
Danai Pervanidou and Kostas Danis

Keywords: Malaria, outbreak, Greece
ESCAIDE REFERENCE NUMBER: 20121071

Investigation of Malaria Outbreak – Abobo Town, Southwest lowland of Ethiopia, 2011

Gole Ejeta Yembo (Ethiopian Health and Nutrition Research Institute, Ethiopia), Getaneh Abrha (Ethiopian Health and Nutrition Research Institute, Ethiopia), Daddi Jima Wayessa (Ethiopian Health and Nutrition Research Institute, Ethiopia)

BACKGROUND:
Greater than 52 million (68%) of the total population of 78 million in Ethiopia lives in malarious areas. Malaria transmission is seasonal and unstable usually characterized by frequent focal and cyclic epidemics. In December 2011, Gambella Region notified Ministry of Health about the occurrence of malaria outbreak in Abobo Town. We investigated risk factors for malaria infection in this town.

METHODS:
We conducted an unmatched case -control study. We selected slide-confirmed malaria cases who resided in Abobo Town from 01 – 31December 2011.The controls were the neighbor of each case, but did not suffer from malaria. A structured questionnaire was used to collect information from the cases and controls. Using univariable and multivariable unconditional logistic regression, we compared exposures for malaria infection.

RESULTS:
We investigated 223 slide-confirmed malaria cases and 223 controls. The univariate analysis identified 9 risk factors. In multivariable model, living <1000 m of Alwero river (odd ratio [OR] = 5, 95% confidence interval [CI]= 1.5-17), not using mosquito nets (OR= 4.2,95% CI:1.3-15.1), living <100m of stagnant water (OR=3.5 , 95% CI: 1.2-14), in the presence of tick grass < 200 m (OR=2.7, 95% CI: 1.2-12.4), staying outside during night up to 10 hrs am (OR=2.4,95% CI: 1.2 – 11.3), not spraying house with deltamethrin ((OR=2.3,95% CI: 1.6-10.3) and low education level (OR=2.3, 95%CI:1.1-9.5) were associated.

CONCLUSIONS:
The risk of developing malaria was multi -factorial with a risk factor profile similar to in highland of Ethiopia. Households within close proximity to Alwero River and those not using bed nets are at higher risk of malaria and health education on the use of bed nets and indoor residual spraying should be intensified.

PRESENTED BY:
Gole Ejeta Yembo

Keywords: Malaria Outbreak southwest low land Ethiopia
ESCAIDE REFERENCE NUMBER: 20121028

DAY 3

14.45 – 16.25 Fri 26

19 Vector-borne diseases and Zoonoses

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

Lapo Mughini Gras (Istituto Superiore di Sanità, Italy), Paolo Mulatti (Istituto Zooprofilattivo Sperimentale delle Venezie, Italy), Francesco Severini (Istituto Superiore di Sanità, Italy), Daniela Boccolini (Istituto Superiore di Sanità, Italy), Roberto Romi (Istituto Superiore di Sanità, Italy), Gioia Bongiorno (Istituto Superiore di Sanità, Italy), Cristina Khoury (Istituto Superiore di Sanità, Italy), Riccardo Bianchi (Istituto Superiore di Sanità, Italy), Lebana Bonfanti (IZS Venezie, Italy), Gioia Capelli (Istituto Zooprofilattivo Sperimentale delle Venezie, Italy), Luca Busani (Istituto Superiore di Sanit, Italy)

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

METHODS:
We developed MaxEnt-based ecological niche models using literature records of 13 potential WNV Italian vector mosquitoes to predict their habitat suitability range. We produced municipality-based countrywide maps of vectors' potential distribution and assessed different climate, landscape and host population variables in modelling their niches. We also tested for associations between vector habitat suitability and occurrence of 2008-2010 Italian WNV equine outbreaks using GEE analysis.

RESULTS:
Suitable habitats for Culex pipiens, Aedes albopictus and Anopheles maculipennis were widely distributed. Suitable habitats for Culex modestus, Ochlerotatus geniculatus, Ochlerotatus caspius, Coquillettidia richiardii, Aedes vexans and Anopheles plumbeus were concentrated in north-central Italy. Species were widespread predicted in the Po valley, where Usutu and Chikungunya viruses have recently emerged additionally to WNV. Suitable habitats for Aedes cinereus, Culex theileri, Ochlerotatus dorsalis andCuliseta longiareolata were restricted to coastal and southern areas. Altitude, temperature and rainfall variables showed the highest predictive power. Host population and landscape variables provided minor contributions. Significant associations between vector habitat suitability and WNV equine outbreak occurrence were found for Cx. modestus (OR 4.51; 95%CI: 2.16-9.43), Ae. albopictus (OR 3.58; 95%CI: 1.60-8.00) and Cx. pipiens (OR 2.66; 95%CI: 1.50-4.73). Cx. modestus and Cx. pipiens habitat suitabilities interacted significanlty (OR 9.87; 95%CI: 2.07-47.05).

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

PRESENTED BY:
Lapo Mughini Gras

Keywords: West Nile virus, mosquito, ecological niche modelling, equine, Italy
ESCAIDE REFERENCE NUMBER: 2012679

Tick-borne encephalitis transmitted by unpasteurised cow milk in western Hungary, September -October 2011

Saverio Caini (National Center of Epidemiology, Hungary), Katalin Szomor (National Reference Laboratory for Viral Zoonoses, National Center for Epidemiology, Budapest, Hungary), Emőke Ferenczi (National Reference Laboratory for Viral Zoonoses, National Center for Epidemiology, Budapest, Hungary), Ágnes Székelyné Gáspár (Körmendi, Őriszentpéteri, Szentgotthárdi, Vasvári Public Health Institute Service; Policy administra, Hungary), Agnes Csohan (National Center for Epidemiology, Hungary), Katalin Krisztalovics (Department of Infectious Disease Epidemiology, National Center for Epidemiology, Budapest, Hungary), Zsuzsanna Molnar (National Institut of Epidemiology, Hungary), Judit Krisztina Horvath (National Center for Epidemiology, Hungary)

BACKGROUND:
In September-October 2011, a cluster of four tick-borne encephalitis (TBE) cases was identified in western Hungary. Initial investigations revealed a possible link with consumption of unpasteurised cow milk sold by a farmer without authorisation. We investigated the association between consumption of unpasteurised cow milk from the suspected farmer and development of disease.

METHODS:
All regular customers of the farmer were considered as a cohort.A confirmed case was a cohort member with symptoms of TBE and TBE virus-specific IgM in cerebrospinal fluid or blood. A suspected case was a cohort member with symptoms of TBE for whom a clinical sample was not available. Exposure was defined as consumption of milk purchased from the farmer during September-October 2011. Risk ratios (RRs) and 95% confidence intervals (95%CI) were calculated for the association between consumption of unpasteurised cow milk and being a case. Milk samples were tested by PCR for the TBE virus.

RESULTS:
Overall, 103 people (52 females, median age 46 years) were included in the cohort.Eleven cases (seven females, median age 44 years) were reported (seven confirmed, including the four cases initially reported). No confirmed cases and only one suspected case were observed among those who did not drink any milk. Cases who consumed milk from the suspected farmer were 2.12 times more likely to be a TBE case (95% CI 0.29-15.52) than those who did not. Milk samples from cows tested negative for the TBE virus.

CONCLUSIONS:
Though the association we highlighted was not significant, implication of consuming unpasteurised cow milk as cause of TBE outbreaks should not be overlooked.Public health services should inform the public about the risks associated with consumption of unpasteurised milk.

PRESENTED BY:
Saverio Caini

Keywords: Outbreak, Tick borne encephalitis, vaccine preventable diseases, cow milk consumption
ESCAIDE REFERENCE NUMBER: 2012755

DAY 3

Parallel Session Abstracts

Lack of Evidence for Schmallenberg Virus Infection in Highly Exposed Persons

Tanja Ducomble (ECDC, Sweden), Hendrik Wilking (RKI, Germany), Klaus Stark (Robert Koch Institute, Germany), Anja Takla (Postgraduate Training for Applied Epidemiology - German Field Epidemiology Training Programme, Berlin, Germany), Mona Askar (Robert Koch Institute, Germany), Lars Schaade (Robert Koch Institut, Germany), Andreas Nitsche (Robert Koch Institute, Germany), Andreas Kurth (Robert Koch Institute, Germany)

BACKGROUND:
Since the second semester of 2011, a novel vector-borne Orthobunyavirus, Schmallenberg virus (SBV), infects ruminants, especially sheep, throughout Europe. Transplacental transmission leads to severe congenital malformations and high viral loads in animals, especially their birth products. Phylogenetically related viruses (e.g. Oropouche) have proven zoonotic transmissibility. We conducted a seroprevalence survey among shepherds in the most affected area in Germany (North-Rhine Westphalia), to investigate possible transmission to humans and assess potential exposure and symptoms.

METHODS:
We recruited volunteering shepherds from a SBV epizootic area during a SBV information meeting and administered a questionnaire regarding demographics, exposure to infected animals, insect bites and personal health since late summer 2011. We tested a serum specimen from each participant with real-time reverse transcription quantitative PCR (RT-qPCR) for virus and via indirect fluorescent antibody test (IFAT) for SBV-specific antibodies. For confirmation of indeterminate and positive results, we used a serum neutralization test (SNT).

RESULTS:
Of the 60 participating shepherds, 48 (89%) reported contact with malformed lambs or respective birth products, 36 (60%) SBV isolation in their respective livestock and 22 of 56 (39%) frequent insect bites. Nine shepherds self-reported unexplained symptoms (fever, headache, myalgia/arthralgia, respiratory symptoms, skin rash), without relevant differences between exposure groups. All sera tested negative by RT-qPCR. Eight samples showed indeterminate fluorescent signals in the IFAT at 1:20 serum dilution but were non-reactive at a 1:80 dilution. Re-testing by SNT showed no antibodies.

CONCLUSIONS:
We did not find molecular or serological evidence for SBV infection among a highly exposed population. Reported symptoms were compatible with illnesses commonly experienced during winter months. We conclude that it is very unlikely that the novel virus may pose a threat to humans.

PRESENTED BY:
Tanja Ducomble

Keywords: Orthobunyavirus, Zoonoses, Seroepidemiologic Studies, Schmallenberg virus,
ESCAIDE REFERENCE NUMBER: 2012778

Cryptosporidiosis outbreak among schoolchildren visiting a holiday farm in Norway

Heidi Lange (Norwegian Institute of Public Health, Norway), Line Vold (Norwegian Institute of Public Health, Norway), Øystein Haarklau Johansen (Vestfold hospital, Norway), Lucy Robertson (Norwegian School of Veterinary Science, Norway), Kjersti Søli (Kongsberg Food Safety Authority, Norway), Christian Nelke (Nore og Uvdal Municipality, Norway), Frank Thrana (Tønsberg municipality, Norway), Karin Nygård (Norwegian Institute of Public Health, Norway)

BACKGROUND:
On 25 March 2012, the Norwegian Institute of Public Health was notified about gastroenteritis cases among children following one-week stays at a Norwegian holiday farm. During a cryptosporidiosis outbreak linked to the same farm in March 2009, no source could be identified. We investigated the outbreak to identify its source and prevent further cases.

METHODS:
We conducted a retrospective cohort study among children who had visited the farm from March 5 to 23. A case was defined as a child having diarrhea or at least two of the following symptoms: vomiting, nausea, abdominal pain, fever; duration of illness >1 day; and symptom onset within two weeks of visit. Through a web-based questionnaire we gathered information on demographics, symptoms and exposures. Environmental investigation included inspection of the premises, water sampling, and fecal sampling from visitors, animals and employees.

RESULTS:
A total of 175/246 (71%) children answered the questionnaire, of which 40 (23%) were cases. Cryptosporidium oocysts were detected from 13/41 visitors, 2/8 employees and 6/24 animals sampled. An identical subtype of Cryposporidium parvum was found in both human and animal samples, which matched human samples from 2009. Water samples were negative. We observed a dose response relationship between number of optional sessions with animals and illness, increasing from RR=2.7 (CI95%= 0.6-11.5) with two sessions to RR=8.0 (CI95%=1.7-37.7) with six sessions.

CONCLUSIONS:
Contact with infected animals was the likely cause of this outbreak. The occurrence of two outbreaks three years apart suggests that Cryptosporidium is established in the farm's environment. In spring, the number of newborn, newly infected ruminants rises and consequently the oocyst output is very high. We recommend improving hand hygiene information and routines related to animal contact.

PRESENTED BY:
Heidi Lange

Keywords: Cryptosporidiosis, Cryptosporidium parvum, gastroenteritis, zoonoses, Norway
ESCAIDE REFERENCE NUMBER: 2012912

Identification of various animal tapeworms other than T. solium by molecular methods inhuman cysticercosis cases

Dennis Tappe (Institute of Hygiene and Microbiology, Germany), Haeupler Alexandra (Bernhard Nocht Institute Hamburg, Germany), Birgit Muntau (Bernhard Nocht Institute Hamburg, Germany), Paul Racz (Bernhard Nocht Institute Hamburg, Germany), Philipp Eberwein (University Eye Hospital Freiburg, Germany), Hansjuergen Agostini (University Eye Hospital Freiburg, Germany), Winfried Kern (Center for Infectious Diseases and Travel Medicine, University of Freiburg, Germany), Egbert Tannich (Bernhard Nocht Institute Hamburg, Germany), Bernhard Fleischer (Bernhard Nocht Institute Hamburg, Germany), Sven Poppert (Bernhard Nocht Institute Hamburg, Germany)

BACKGROUND:
Various zoonotic tapeworms with predator-prey transmission cycles similar to the pork tapeworm Taenia solium are known. Some of these may rarely cause infections (cysticercosis) in immunocompromised humans, but they are not yet known to be relevant pathogens of immunocompetent humans.

METHODS:
We established PCR-protocols for the amplification of mitochondrial sequences of tapeworms using both newly designed and previously published primers. These different PCRs were applied to parasitic cysts removed from human tissue and also for a retrospective analysis of 10 archived paraffin-embedded formalin-fixed samples which had been diagnosed as cysticercosis by histological methods before. The amplicons were sequenced and compared to Genbank entries.

RESULTS:
The first human case of an infection with the larval stage of the marten tapeworm T. martis was molecularly diagnosed which showed histological features of a conventional T. solium-cysticercosis. In the series of ten archived paraffin-embedded samples, one case was retrospectively identified as T. serialis and one as T. crassiceps infection.

CONCLUSIONS:
Molecular methods were shown to be suitable for the identification of tissue-invasive larval tapeworms in humans. A surprisingly high number of animal tapeworms other than T. solium were identified in the series of human cases examined here that had been (mis-) diagnosed as conventional cysticercosis by histological methods before. An exact species diagnosis is probably of limited relevance as far as therapy is concerned, however, for epidemiological reasons the correct identification of the larval tapeworm is important to conclude the circumstances of transmission – and thus to prevent future infections. We therefore recommend molecular identification of parasites found in human tissue in addition to conventional histology.

PRESENTED BY:
Sven Poppert

Keywords: Tapeworm, Zoonosis, Molecular Identification, Transmission
ESCAIDE REFERENCE NUMBER: 2012983

20 HIV and sexually transmitted infections

Young commercial sex workers are at higher risk of Sexually Transmitted Infections, the Netherlands, 2006-2011

Nelly Fournet (National Institute of Public Health and the Environment - RIVM - ECDC, The Netherlands), Femke Koedijk (National Institute of Public Health and the Environment - RIVM, The Netherlands), Petra van Leeuwen (Public Health Service Amsterdam, The Netherlands), Martijn van Rooijen (Public Health Service Amsterdam, The Netherlands), Susan Hahné (National Institute of Public Health and the Environment - RIVM, The Netherlands), Marianne van der Sande (National Institute of Public Health and the Environment - RIVM, The Netherlands), Maaike van Veen (Public Health Service Amsterdam, The Netherlands)

BACKGROUND:
Commercial sex workers (CSW) are particularly exposed to sexually transmitted infections (STI). To direct prevention measures, we estimated the prevalence of the three most common bacterial STI and examined factors associated with infection among CSW.

METHODS:
A CSW was defined as a person exchanging sex for money or other valuable goods in the past 6 months prior to the consultation. Using 2006-2011 national surveillance data on STI-clinic visits, we estimated prevalence of STI (positive laboratory test for chlamydia, gonorrhoea and/or syphilis). We used univariable and multivariable logistic regression to identify factors associated with these STI, stratified by gender and age group.

RESULTS:
Between 2006 and 2011, the prevalence of STI was 9% among 23,789 female sex workers (FSW) and 17% among 2,295 male sex workers (MSW). Young CSW (15-24 years) had a higher prevalence (25% for MSW, 16% for FSW) than CSW aged >=25 years (14% for MSW, 7% for FSW, p<0.0001). Prevalence of STI was higher among MSW having sex with men than among heterosexual MSW (OR=2.0 95%CI:1.2-3.5 for 15-24 years, OR=2.2 95%CI:1.3-3.6 for 25-34 years and OR=2.8 95%CI:1.5-5.3 for >=35 years). MSW known to be HIV positive had a higher prevalence (OR=4.6 95%CI:2.7-7.9 for 25-34 years and OR=2.8 95%CI:1.5-5.5 for >=35 years) than those who where previously tested negative for HIV.

CONCLUSIONS:
Young male and female CSW, MSW having sex with men and known HIV-positive MSW had a higher prevalence of STIs. Prevention activities need to target young sex workers to increase early diagnosis, prevention and treatment. MSW who have sex with men and those known HIV positive may require more targeted interventions.

PRESENTED BY:
Nelly Fournet

Keywords: Sexually transmitted infections, prevalence, risk factors, sex workers
ESCAIDE REFERENCE NUMBER: 2012632

Parallel Session Abstracts

Partner notification outcomes for MSM and heterosexuals with STI/HIV: challenges at different stages

Fleur van Aar (Epidemiology & Surveillance, Centre Infectious Disease Control, National Institute Public Health, The Netherlands), Yolanda van Weert (Epidemiology & Surveillance, Centre Infectious Disease Control, National Institute Public Health, The Netherlands), Ralph Spijker (STI AIDS Netherlands, The Netherlands), Hannelore Götz (Rotterdam Rijnmond Public Health Service, The Netherlands), Eline Op de Coul (Epidemiology & Surveillance, Centre Infectious Disease Control, National Institute Public Health, The Netherlands)

BACKGROUND:
Partner notification (PN) is seen as a vital tool to break HIV/STI transmission chains. In the Netherlands, studies assessing PN effectiveness are lacking. Evaluation of current PN practices is needed to develop new PN interventions.

METHODS:
PN outcomes were collected through a newly developed registration form from index patients with HIV, syphilis, and gonorrhoea visiting five STIcenters in 2010-2011. PN outcomes (partners being at risk, notifiable, notified, tested, and case-finding effectiveness (CFE: detected infections/ number of partners with a test result)) were compared between men having sex with men (MSM) and heterosexuals.

RESULTS:
Of all index patients newly diagnosed with HIV/STI(N= 282) for whom PN was indicated, 221 MSMand 55 heterosexuals reported respectively 1,332 and 93 partners at risk. Proportions of notifiable partners (MSM: 42%, N= 555; heterosexuals: 90%,N= 84; p<0.001) and notifiable partners being notified (89%, N = 494 vs 75%, N = 63, p<0.001) differed significantly between MSMand heterosexuals. The overall CFE was 43% for MSMand 33% for heterosexuals with the largest difference found for HIV (MSM: 12%, heterosexuals: 3%).

CONCLUSIONS:
The major challenge in PN among MSM remains the large proportion of unnotifiable (often anonymous) partners. Among heterosexuals, the actual notification of partners was more difficult. Anonymous Internet-based PN, could improve both capability (reachability of unnotifiable partners) and ability (facilitation of the actual notification process) to notify partners.

PRESENTED BY:
Fleur van Aar

Keywords: HIV, STI, partner notification, prevention, case-finding, effectiveness
ESCAIDE REFERENCE NUMBER: 2012722

Sexually transmitted infections among female sex workers (FSW) in Germany: Need to protect young migrants with poor language skills

Melanie Schuster (Robert Koch-Institute, Germany), Florian Burckhardt (Robert-Koch Institute, Germany), Stine Nielsen (Robert Koch-Institute, Germany)

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

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

RESULTS:
Of 1,408 FSW, 377 (26%) were German and 1,031 (74%) were migrants. Prevalence of STI was higher among migrants (21% versus 13%, p<0.01). Young age (odds ratio (OR):1.8, 95% confidence intervals (CI):1.2-3.2), limited language skills (OR: 2.1, 95%CI:1.4-3.2), meeting clients on the street (OR: 2.1, 95%CI:1.2-3.7) and first-time consultation at health department (OR: 1.8, 95%CI:1.2-2.6) were associated with higher STI prevalence among migrants, while health insurance (OR 0.6, 95%CI:0.4-0.8), condom use for birth control (OR 0.7, 95%CI:0.5 – 1.0) and meeting clients at a brothel (OR 0.7, 95%CI:0.5-1.1) were associated with lower STI prevalence.

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

PRESENTED BY:
Melanie Schuster

Keywords: STI, Female Sex Workers, Migrants, FSW, STD
ESCAIDE REFERENCE NUMBER: 2012879

A response plan to manage the threat of untreatable gonorrhoea

Gianfranco Spiteri (EDCD, Sweden), Michelle Cole (Health Protection Agency, London, United Kingdom), Catherine Ison (Health Protection Agency, London, United Kingdom), Magnus Unemo (Swedish Reference Laboratory for Pathogenic Neisseria, Örebro, Sweden), Steen Hoffmann (Statens Serum Institut, Copenhagen, Denmark)

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

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

RESULTS:
A total of 1766 isolates were collected and tested. A significant increase in the percentage of tested isolates with decreased susceptibility to cefixime (5% in 2009 to 9% in 2010, p<0.01) was identified. Isolates with this phenotype were detected in 17 countries compared to 10 in 2009. None of the isolates showed decreased susceptibility to ceftriaxone. Rates of ciprofloxacin and azithromycin resistance remain high (53% and 7%, respectively). The minimum inhibitory concentration (MIC) of gentamicin continued to be low, with MIC50 and MIC90 of 8mg/L.

CONCLUSIONS:
The rapid increase and spread of decreased susceptibility to cefixime means that, in a near future, cefixime will be unsuitable for treatment in most EU/EEA countries. ECDC has published a response plan which aims to strengthen surveillance of gonococcal antimicrobial susceptibility in the EU/EEA; ensure that capacity for culture and susceptibility testing is maintained; establish a system for collection of data on clinical treatment failure; and to recommend public health actions at national and European level.

PRESENTED BY:
Gianfranco Spiteri

Keywords: Neisseria gonorrhoeae Drug Resistance, Microbial Cephalosporin Resistance Anti-Bacterial Agents/therapeutic use Treatment Failure
ESCAIDE REFERENCE NUMBER: 2012909

What is sustaining the ongoing outbreak of Shigella flexneri in men who have sex with men? Enhanced surveillance data analysis, England and Wales, 2011-2012

Maria Borg (EPIET, United Kingdom), Maya Gobin (Health Protection Agency, South West Region, United Kingdom), Alma Tostmann (Health Protection Agency, South West Region, United Kingdom), Joanna Cartwright (Health Protection Agency, North West Region, United Kingdom), Catherine Quigley (Health Protection Agency, North West Region, United Kingdom), Paul Crook (Health Protection Agency, South East Region, United Kingdom), Naomi Boxall (Health Protection Agency, South East Region, United Kingdom), John Paul (Health Protection Agency, South East Region, United Kingdom), Gwenda Hughes (HIV & STI Department, Health Protection Agency - Colindale, London, United Kingdom), Ian Simms (HIV & STI Department, Health Protection Agency - Colindale, London, United Kingdom), Claire Jenkins(Gastro-Intestinal Infections Reference Unit, Health Protection Agency - Colindale, London, United, United Kingdom), Bob Adak (Gastrointestinal, Emerging and Zoonotic Infections Department - Colindale, London, United Kingdom), Isabel Oliver (Health Protection Agency, United Kingdom)

BACKGROUND:
In September 2011, we investigated an increase in UK-acquired Shigella flexneri cases of serotype 3a occurring mostly in men who have sex with men (MSM). We launched i) a nationwide investigation to assess the magnitude of the outbreak, ii) enhanced surveillance for S. flexneri nationally to ascertain risk factor information including MSM activity and understand infection transmission dynamics.

METHODS:
We analysed S. flexneri diagnoses reported by national laboratories between 2001 and 2011.We conducted in-depth interviews with initially identified MSM cases to identify potentially risky behaviours. We conducted telephone interviews with the remaining MSM cases using a standardised questionnaire, also available as a confidential online survey. We calculated proportions using number of responses as denominator.

RESULTS:
In 2009, S. flexneri 3a diagnosesincreased by 200%. Until 2009, the male:female ratio was 1:1; it subsequently changed to 3:1 to date. Between September 2011 and July 2012, national laboratories reported 350 S. flexneri cases withno/unknown recent travel. Of these, 41 (12%) were reported as MSM. We interviewed 21 (51%) MSM cases using in-depth interviews (n=9) or questionnaires (n=12). Seventeen (81%) reported sexual activity in the week preceding illness. Two (18%) of the cases that had anal sex and 12 (86%) of the cases that had oral sex didn't use protection. Sexual partners of 13 (76%) cases for whom information was available were asymptomatic.

CONCLUSIONS:
Our analysis suggests that the outbreak may have started in 2009 and that, amongst others, the role of asymptomatic sexual partners needs to be explored further. Studies to measure carriage of S. flexneri in the MSM population and ascertain the role of asymptomatic infection are underway. We issued advice to minimise transmission between MSM.

PRESENTED BY:
Maria Borg

Keywords: Shigella flexneri outbreak MSM asymptomatic sexual contacts
ESCAIDE REFERENCE NUMBER: 20121012

Parallel Session Abstracts

21 Vaccine-preventable diseases (3)

Estimating the Number of Infants Needed to Vaccinate to prevent a case of serogroup B Invasive Meningococcal Disease

Shelley Deeks (Public Health Ontario, Canada), Vica Dang (Public Health Ontario, Canada), Frances Jamieson (Public Health Ontario, Canada), Gillian Lim (Public Health Ontario, Canada), Prasad Rawte (Public Health Ontario, Canada), Natasha Crowcroft (Public Health Ontario, Canada)

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

METHODS:
We used a combination of probabilistic and deterministic methods to link confirmed IMD cases reported to Ontario's integrated Public Health Information System to Public Health Ontario Laboratory records between January 1, 2000 and December 31, 2011. We calculated incidence using Statistics Canada population data. We calculated a crude NNV using the inverse of the age-specific (‹1 year) incidence multiplied by expected vaccine efficacies between 70% and 80% and assumed no herd effects.

RESULTS:
A total of 276 serogroup B IMD cases were identified over 12 years. Incidence ranged from 0.11 to 0.24/100,000/year, and fluctuated over time. Cases ranged in age from 13 days to 101 years; 21.2% occurred in infants, of which 48.3% were ‹ 4 months. The average annualized age-specific rate among infants was 3.55/100,000. If we assume that all cases ‹ 1 year are vaccine preventable, we would need to vaccinate between 35,211 and 40,241 infants to prevent one IMD case. However if cases ‹4 months are not vaccine preventable (i.e., 48.3% of these cases), the NNV would increase to between 68,107 and 77,836 infants.

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

PRESENTED BY:
Natasha Crowcroft

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

The incidence of narcolepsy in Europe: before, during, and after the influenza A(H1N1)pdm09 pandemic and vaccination campaigns

Leonoor Wijnans (Erasmus Medical Center, The Netherlands), Daniel Weibel (Erasmus Medical Center, The Netherlands), Corinne de Vries (University of Bath, United Kingdom), Lisen Arnheim Dahlström (Karolinska Institutet, Sweden), Nicoline van der Maas (National Institute of Public Health, The Netherlands), Anders Hviid (Statens Serum Institut, Denmark), Carmela Santuccio (Italian Medicines Agency, Italy), Kari Johansen (ECDC, Sweden), Piotr Kramarz (ECDC, Sweden), Jan Bonhoeffer (Brighton Collaboration Foundation, Switzerland), Miriam Sturkenboom (Erasmus Medical Center, The Netherlands)

BACKGROUND:
In August 2010 reports of a possible association between exposure to AS03 adjuvanted pandemic A(H1N1)pdm09 vaccine and occurrence of narcolepsy in children and adolescents emerged in Sweden and Finland. In response to this signal, the background rates of narcolepsy in Europe were assessed to provide information for signal verification.

METHODS:
We performed a dynamic retrospective cohort study to assess the narcolepsy diagnosis rates during the period 2000-2010 using large linked automated health care databases in 6 countries: Denmark, Italy, Finland, the Netherlands, Sweden and the United Kingdom.

RESULTS:
Overall, 2,608 narcolepsy cases were identified in almost 280 million person years (PY). The pooled incidence rate was

0.93 (95% CI: 0. 90 – 0.97) per 100,000 PY, with peaks between 15-30 (women›men) and around 60 years of age. Increased rates were observed after the start of pandemic vaccination in Denmark, Finland and Sweden.

CONCLUSIONS:
The results of this incidence study provided useful information for signal verification on a population level. The safety signal of increased narcolepsy diagnosis following the start of the pandemic vaccination campaign as observed in Sweden and Finland could be observed with this approach. In contrast, an increase in narcolepsy diagnosis was not observed in other countries or did not follow A(H1N1)pdm09 vaccination. Patient level analyses in these countries are being conducted to verify the signal in more detail.

PRESENTED BY:
Daniel Weibel

Keywords: Narcolepsy, incidence, background rates, influenza vaccine, AS03B adjuvant
ESCAIDE REFERENCE NUMBER: 2012880

Serotype replacement in paediatric pneumococcal carriage during conjugate vaccine implementation

Rebecca. A. Gladstone (University of Southampton, United Kingdom), Johanna. M. Jefferies (University of Southampton and University Hospital Southampton Foundation NHS Trust, United Kingdom), Saul. N. Faust (University of Southampton, University Hospital Southampton Foundation NHS Trust, United Kingdom), Stuart. C. Clarke (University of Southampton, University Hospital Southampton Foundation NHS Trust and HPA, United Kingdom)

BACKGROUND:
The 7-valent pneumococcal conjugate vaccine (PCV-7) was added to the UK routine childhood vaccination schedule in 2006 and superseded by PCV-13 in 2010, to help prevent invasive pneumococcal disease. Pneumococcal colonisation is a recognised precursor to disease. We describe changes to pneumococcal carriage in young children during PCV implementation.

METHODS:
Nasopharyngeal swabs were taken from children ≤4 years old in the outpatients department of a general hospital during winters 2006/7-2010/11. Pneumococci was isolated using conventional microbiology and serotyped by PCR and the Quellung reaction. Multi-locus sequence typing and whole genome sequencing were employed to genotype isolates.

RESULTS:
528 pneumococci were collected during the five year period. The mean annual pneumococcal carriage rate was 31% (range 28-37%). PCV-7 vaccine types (VT) decreased significantly between 2006/7 and 20010/11 (p=0.0001) with a corresponding increase in non-vaccine types (NVT). PCV-13-only VT (n=6) decreased significantly between 2009/10 and 2010/11 (p=0.0238).By year 5, replacement of PCV-7 VT was complete, with only a single strain of 6B detected. The number of sequence types (ST) observed annually was stable (42-48 STs), with 10%, of observed STs, accounting for 50% of the isolates annually. Genotype distribution varied annually, with only 7% of STs occurring in all years. ST199 was the single most common ST observed in all years, 49% of which were associated with serotype 19A.

CONCLUSIONS:
Carried genotypes are diverse and shift temporally but clonal expansion of genotypes associated with NVT was observed for multiple serotypes. Pneumococcal carriage remained stable but NVT now dominate. Clonal expansion has contributed to NVT increases which have completely replaced decreasing VTs. These findings have clinical implications as carried pneumococci act as a circulating reservoir for disease.

PRESENTED BY:
Rebecca. A. Gladstone

Keywords: Streptococcus pneumoniae Pneumococcal Vaccines
ESCAIDE REFERENCE NUMBER: 2012990

Influenza outbreak in a nursing home in Ireland in April 2012: high case fatality rate with low vaccination coverage among staff

Javiera Rebolledo (ECDC/HPSC, Ireland), Louise Doherty (HSE, Ireland), Joan O Donnell (HPSC, Ireland), Darina O'Flanagan (Health Protection Surveillance Centre, Ireland), Peter Wright (HSE, Ireland)

BACKGROUND:
On April 1st an outbreak of influenza-like illness (ILI) in a nursing home in Ireland was notified. At this point, five deaths had already occurred in the preceding 10 days among residents with 27 residents and three staff ill. We investigated the outbreak to: determine its magnitude, identify reasons for its occurrence and implement control measures.

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

RESULTS:
The facility had 46 residents and 75 staff (working in all units with no assignment to any particular one)at this time. Of those, three staff (AR: 4%) (with unknown vaccination status and not swabbed) and 35 residents (AR: 76%) (11 confirmed; 24 probable) were symptomatic. Fourconfirmed cases in residents were hospitalised and seven died (CFR: 20%). Of the 29 residents tested, 11 (38%) were positive for influenza A(H_3). VC was 69% (31/46) among all residents, 9% (7/75) among staff, 63% (22/35) among cases in residents, and unknown among staff cases.

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

PRESENTED BY:
Javiera Rebolledo

Keywords: Influenza, outbreak, nursing-home, vaccination, elderly, staff
ESCAIDE REFERENCE NUMBER: 20121000

Parallel Session Abstracts

Recurrent measles outbreaks in population groups with suboptimal immunizations uptake

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

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

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

RESULTS:
The index case of the 2003 outbreak was a 2 year-old unvaccinated child from Switzerland. Within 5 months, 107 cases emerged in three crowded neighborhoods. The first cases of the 2004 outbreak were three girls aged 4-5 years, in one kindergarten. Within 5 months, 117 cases emerged, with one fatality. In August 2007 a tourist from the UK attended a wedding in Jerusalem and two days later diagnosed with measles. The subsequent outbreak lasted for some ten months (the largest in the last decade) with 1527 reported cases nationally, 992 (65%) in the Jerusalem district, mainly among unvaccinated children in ultra-Orthodox communities. Most cases (72.6%) were under 15 years, 42.9% under five years, 12.8% infants under one year. The peak incidence rate in 2007-2008 was among 6-12 month-old infants (916.2/100000), representing a significant shift from 2003-2004, where the peak incidence was in1-4 year-olds. In a case-control study (74 cases/148 controls) children who developed measles were less likely to be registered in a well-baby clinic and had lower overall immunization coverage. The differences in proportions for registration, DTaP3 and MMR1 coverage were 35.1%, 48.6% and 80.8%, respectively (all p<0.001). Increasing birth order of cases and their siblings was associated with non-registration and non-compliance with MMR immunization.

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

PRESENTED BY:
Chen Stein Zamir

Keywords: Measles, immunization uptake, epidemiology, prevention, children.
ESCAIDE REFERENCE NUMBER: 20121002

DAY 3

Poster **Abstracts**

The abstract book has been produced using authors supplied copy. Editing has been restricted to some corrections where appropriate. The information in each abstract is the responsibility of the author(s).

Poster Abstracts – Poster Session A

POSTER SESSION A 16.10 – 17.40 Wed 24

Antimicrobial Resistance

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

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

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

METHODS:
We conducted a retrospective cohort study (January 2010 – December 2011) including all the wards at Haukeland. Data sources included administrative, radiology, pharmacy, microbiology records and a ward-questionnaire. We calculated the number of patient days per ward and estimated incidence risk ratios (IRR) for factors such as single-rooms, use of hand-hygiene products and antibiotics, using a negative binomial regression.

RESULTS:
Of 39 wards 21 had cases, with one accounting for 28%. We were able to gather data at the ward-level on many possible risk-factors. High use of cephalosporins (IRR=25; 95%CI:4 -163) and metronidazole (IRR=16; 95%CI:4–59) were associated with higher number of cases. Wards using most hand-hygiene products had fewer cases (IRR=0.04; 95%CI:0.008–0.2). Data collection was not as efficient as expected as ward information was not structured appropriately for ward-based investigations.

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

PRESENTED BY:
Oliver Kacelnik

Keywords: Infectious Disease Outbreak Nosocomial Infection Vancomycin Resistance
ESCAIDE REFERENCE NUMBER: 2012663

Tigecycline multidrug resistant enterococci: an emerging issue

Julie Wilson (Health Protection Scotland, United Kingdom), Camilla Wiuff (Health Protection Scotland, United Kingdom), Alistair Leanord (University of Glasgow/ Health Protection Scotland, United Kingdom)

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

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

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

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

PRESENTED BY:
Julie Wilson

Keywords: Drug Resistance, Microbial Enterococcus Epidemiology
ESCAIDE REFERENCE NUMBER: 2012782

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

Julia Hermes (Robert Koch Institute, Germany), Wolfgang Witte (Robert Koch Insitute, Germany), Christiane Cuny (Robert Koch Institute, Germany), Niels Kleinkauf (Robert Koch Institute, Germany), Andreas Jansen (ECDC, Sweden), Eckmanns Tim (Robert Koch-Institute, Germany)

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

METHODS:
Our study is based on a cohort with 7.7% MRSA carriers from three MRSA-prevalence studies conducted in Germany 2008-09. A case was defined as a former study participant with MRSA-positive nasal swab; eligible controls were study participants without MRSA. All cases were contacted and compared to 2 controls per case. Respondents and their household contacts (HC)received questionnaires and material for self-swabbing. Retesting was offered to cases that now tested MRSA-negative. We described background data and conducted comparative molecular typing of isolates.

RESULTS:
We included 74 cases and 151 controls. MRSA was detected in 42cases (56.8%),38 carried spa types identical to the 2008-09, 69.0% carried ST398. Retesting of the MRSA-negative cases detected 4 additional ST398. In 9/151 (6.0%) controls MRSA was detected: 7 ST398, 1 ST254 and 1 ST97. Among 141 HC of cases, 18 (12.8%) were MRSA-positive; all carried the same clonal complex as the associated case (17 ST398, 1 ST225) and 77.8% the same spa type. One/251 (0.4%)HC of controls was LA-MRSA positive.

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

PRESENTED BY:
Julia Hermes

Keywords: MRSA Zoonoses Germany Veterinarians
ESCAIDE REFERENCE NUMBER: 2012789

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

Michaela Diercke (Niedersächsisches Landesgesundheitsamt, Germany), Martina Scharlach (Governmental Institute of Public Health of Lower Saxony (NLGA), Hannover, Germany), Doris Wagner (Governmental Institute of Public Health of Lower Saxony (NLGA), Hannover, Germany), Matthias Pulz (Governmental Institute of Public Health of Lower Saxony (NLGA), Hannover, Germany)

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

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

RESULTS
The SWOT analysis (12 participants) identified lack of knowledge among physicians about ARMIN next to data quality issues (e.g. different diagnostic standards between laboratories) as main weakness. Between October 2011 and March 2012, 186 persons participated in the online survey, 55% were general practitioners (GP), 25% clinicians, 12% public health physicians. Median age of respondents was 50 years, 55% were male. In their everyday work 5% of GPs and 47% of clinicians treat at least weekly patients with multidrug-resistant bacteria. Only 35% had used ARMIN before. The majority of physicians agreed that the content of the ARMIN website is informative (graphics 89%, tables 90%, texts 91%) and the layout is user-friendly (95%) and clear (92%).Physicians claimed that queries are not adapted to antibiotic prescribing in practice, reducing ARMIN's usefulness.

PRESENTED BY:
Michaela Diercke

Keywords: Antimicrobial drug resistance, surveillance system, evaluation, acceptability
ESCAIDE REFERENCE NUMBER: 2012964

DAY 1

Poster Abstracts – Poster Session A

In-vitro susceptibilities of Legionella spp environmental isolates to seven antibiotics.

Vasileios Sandlands (Regionalo Laboratory of Public Health Crete, Greece), Yannis Goniotakis (Laboratory of Clinical Bacteriology, Parasitology, Zoonoses and Geographical Medicine, Greece), Dimonsthenis Chochlakis (Regional Laboratory of Public Health of Crete, Greece), Yannis Tselentis (Regional Laboratory of Public Health of Crete, Greece), Anna Psaroulaki (Laboratory of Clinical Bacteriology, Parasitology, Zoonoses and Geographical Medicine, Greece)

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

METHODS:
The susceptibilities for seven antimicrobial agents (tetracyclineazithromycin erythromycin, rifampicin moxifloxacin and trimethoprim/sulfamethoxazole) of 68 Legionella spp isolates were investigated. The above isolates originate from water samples (1494) collected during a 7-year period (2004-2011) from 124 hotels from the four prefectures in Crete (Greece) as part of routine investigation following a human case on traveler or as part of the routine surveillance program. Legionella spp isolates were identified by PCR-Sequencing, Mass spectrometry and Latex agglutination methodology as: L. pneumophila SG1 (7/68), SG2 (2/68), SG3 (7/68), SG5 (1/68), SG6 (15/68), SG8 (3/68), SG12 (2/12), SG13 (1/68), SG15 (1/68), L. anisa (11/68), L. rubrilucens (1/68), L. maceachernii (1/68), L. quinlivanii (1/68), L. oakridgensis (1/68) and L. taurinensis (14/68). MICs were determined by disk diffusion and E-test methods, performed on BCYE.

RESULTS:
A great distribution was recorded for each species and each antibiotic tested. Rifampicin (MIC range 0.125-0.5 mg/L) was the most potent antibiotic regardless the Legionella species; tetracycline (MIC range 16-256 mg/L) had the less activity. Azithromycin and erythromycin appeared to be less active against Legionella spp, rifampicin and trimethoprim/sulfamethoxazole were more active against L. pneumophila sg1 and L. anisa, respectively, while little variation was observed with respect to moxifloxacin.

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

PRESENTED BY:
Vassilios Sandalakis

Keywords: Legionella pneumophila Legionella species Antibiotic susceptibility Minimum Inhibitory Concentration E, test
ESCAIDE REFERENCE NUMBER: 20121056

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

William Nwachukwu (Nigeria Field Epidemiology and Laboratory Training Programme, Nigeria), A M Oladimeji (Nigeria Field Epidemiology, Nigeria), A A Ahumibe (Nigeria Field Epidemiology and Laboratory Training Programme, Nigeria), P Nguku (Nigeria Field Epidemiology and Laboratory Training Programme, Nigeria), OC Ekwueme (University of Nigeria Teaching Hospital, Enugu, Nigeria)

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

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

RESULTS:
A total of Eleven cases were recorded. Four (36.4%)were laboratory confirmed cases using PCR with 2 deaths. Case fatality rate(CFR) 18.2%. Male:female ratio was 2.7:1. The mean age of cases was38 years ±8.3 years, Healthcare providers constitute 7(63.6%) of the cases. A total of 40 contacts were traced, 62.5% were females. About 39(97.5%) of the contacts fall under the high risk category. Among the contacts of cases, 14(32.5%) are health-care workers and 8(20%)were direct off-springs of the cases.

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

PRESENTED BY:
William Nwachukwu

Keywords: Lassa Fever, Outbreak, Investigation, Ebonyi State, Nigeria.
ESCAIDE REFERENCE NUMBER: 20121082

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

Helena Maltezou (Hellenic Center for Disease Control and Prevention, Greece), Flora Kontopidou (Hellenic Center for Disease Control and Prevention, Greece), Panos Katerelos (Hellenic Center for Disease Control and Prevention, Greece), Antonios Maragos (Hellenic Center for Disease Control and Prevention, Greece), Xanthi Dedoukou (Hellenic Center for Disease Control and Prevention, Greece)

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

METHODS:
Of a total of 64 ICUs across the country, 28 general ICUs serving a mixed edical and surgical population with a mean of 8 beds (range: 5-12 beds), participated to the study.

RESULTS:
During September 2009-June 2010, 20 ICUs reported 138 patients with CR-KP microbiologically documented infections. Data were collected retrospectively in 71 (51.4%) patients and prospectively in 67 (48.6%) patients. Patients had a mean age of 61.3 years. Their mean APACHE SC.II at the time of admission was 17.5. Overall, patients had received a mean of 2.3 antibiotics before the CR-KP detection. Pneumonia was the prevalent CR-KP infection, followed by bacteramia, accounting for 50 (36.2%) and 57 (42%) cases, respectively. Septic shock at the begging of the infection occurred in 19 (14.2%) patients. In terms of mechanism of carbapenem resistance, a KPC-producing pathogen was found in 73% cases. CR-KP resistance to colistin and gentanicin was 20% and 21% respectively. In 14 days of the begging of the treatment 61 (46.2%) of cases were considered clinical failures. Logistic regression analysis revealed that factors statistically significantly associated with higher survival rates were: patients ‹55 years, non-immunocompromised patients, and non-use of tigecycline in treatment regiment.

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

PRESENTED BY:
Flora Kontopidou

Keywords: Multi-resistant infections, Klebsiella pneumoniae, intensive care units
ESCAIDE REFERENCE NUMBER: 20121084

Contribution of modelling to applied epidemiology

Reduction in incidence and prevalence of toxoplasmosis among women in France, 1980-2020: Model-based estimation.

Francisco Nogareda (Institut de Veille Sanitaire / European Programme for Intervention Epidemiology Training (EPIET), France), YANN LE STRAT (InVS, France), Henriette de Valk (InVS, France), Véronique Goulet (Institut de Veille Sanitaire, France)

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

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

RESULTS:
We combined data of 42,208 women aged 15-45 years old with serology available from the three NPS. For women aged 30 years the estimated incidence decreased from 7.5 per 1,000 susceptible women in 1980 to 3.5 in 2000. In 2010 the incidence was 2.4. The predicted incidence and prevalence for 2020 was 1.6 per 1000 and 27% respectively.

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

PRESENTED BY:
Francisco Nogareda

Keywords: Toxoplasmosis, incidence, prevalence, modelling
ESCAIDE REFERENCE NUMBER: 2012669

DAY 1

DAY 1

Poster Abstracts – Poster Session A

Time series analysis of community-acquired Legionnaires' disease in Europe, 2007-2011

Julien Beauté (ECDC, Sweden), Birgitta de Jong (Sweeden)

BACKGROUND:
Legionnaires' disease (LD) is an uncommon form of pneumonia due to Legionella sp. with outbreaks peaking during the warm season. Following a period of steady increase after implementing surveillance at European level in 1996, around 5 000 cases per year were reported in 2005-2009, 70% of which were community-acquired. This study aimed at analysing trends over time in 2007-2011 and identifying outliers.

METHODS:
The surveillance of LD in Europe is carried out by the European Legionnaires' Disease Surveillance Network (ELDSNet) and coordinated by the European Centre for Disease Prevention and Control (ECDC). Each year, nominated ELDSNet members in each European country are asked to transmit their data to The European Surveillance System (TESSy) database. The analysis was restricted to community-acquired LD cases reported in 2007-2011 and meeting the European case definition. European and country-specific time series of weeks of onset were analysed for trend, periodicity and residuals. A cyclic regression model was used to identify unusual outliers.

RESULTS:
Of the 16 450 community-acquired LD cases reported in 2007-11, 15 164 (92%) were reported by France, Germany, Italy, the Netherlands, Spain and the United Kingdom. Overall, a slightly increasing trend was observed (p<0.05). The model used included a linear trend and two periodicities (52 and 26 weeks). In August-September 2010, the number of cases reported in Europe was significantly above the predictions with a maximum of 166 cases per week when 96 cases were expected (95% CI = 57-134).

CONCLUSIONS:
These results confirm that notifications of LD are still increasing in Europe. Unexpected peaks in more than one country are likely to be associated with climate conditions, as during summer 2010 which was remarkably hot.

PRESENTED BY:
Julien Beauté

Keywords: Legionnaires&rsquo, disease, Europe, Surveillance;
ESCAIDE REFERENCE NUMBER: 2012687

Time-series analysis of STEC/VTEC surveillance data, 2008-2011

Joana Gomes Dias (ECDC, Sweden), Frantiska Hruba (ECDC, Sweden), Chantal Quinten (ECDC, Sweden), Bruno Ciancio (ECDC, Sweden), Isabelle Devaux (ECDC, Sweden), Taina Niskanen (ECDC, Sweden), Therese Westrell (ECDC, Sweden), Angela Lahuerta Marin (ECDC, Sweden), Johanna Takkinen (ECDC, Sweden)

BACKGROUND:
EU-wide surveillance of Shiga toxin/verocytotoxin-producing Escherichia coli (STEC/VTEC) has been developed under coordination of European Centre for Disease Prevention and Control (ECDC) since 2006. A critical amount of data has become available to allow in depth time-series analysis. The goal of this study is to describe the temporal pattern of the STEC/VTEC based on routine surveillance data.

METHODS:
STEC/VTEC case-based data from the European Surveillance System (TESSy) for years 2008 to 2011 were used. Time-series analysis with two reported dates (date of onset and date of statistics), was performed. Cyclical regression models were fitted to the weekly time series of STEC/VTEC cases. The models were built using 2008-2010 data and validated using 2011 data.

RESULTS:
In our study, 20365 confirmed STEC/VTEC cases were reported to TESSy. Models with trend and seasonal component provided the best fit to the data based on residual diagnostics and goodness-of-fit tests. For both dates, a significant small increase in the trend and a seasonal pattern with a distinct summer peak were observed. Average time difference between date of onset and date of statistics was two weeks. Preliminary estimate for the start of the seasonal increase was the week 19 based on date of onset.

CONCLUSIONS:
Our study was able to identify trends and confirm seasonal patterns in STEC/VTEC surveillance data with an estimate of the start of the increased risk for infection in the beginning of the summer season. Further research should include additional years to improve the precision of the estimate. The estimate allows countries to enhance their preparedness for outbreaks during summer months.

PRESENTED BY:
Joana Gomes Dias

Keywords: Surveillance Time, series analysis STEC/VTEC
ESCAIDE REFERENCE NUMBER: 2012707

Modelling Legionnaires disease outbreaks: Estimating the timing of an aerosolised release using symptom-onset dates.

Joseph Egan (Health Protection Agency, United Kingdom), Ian Hall (Health Protection Agency, United Kingdom), David Lemon (Health Protection Agency, United Kingdom), Steve Leach (Health Protection Agency, United Kingdom)

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

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

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

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

PRESENTED BY:
Joseph Egan

Keywords: Legionnaires', Disease Infectious Disease Incubation Period Biostatistics Likelihood Functions
ESCAIDE REFERENCE NUMBER: 2012985

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

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BACKGROUND:
Chlamydia trachomatis infection (CT) is the most frequent sexual transmitted disease (STI) in Sweden. A prospective cohort-study among visitors of a low-threshold STI clinic in Stockholm, Sweden was carried out in 2007 to examine risk factors associated to CT re-infection. Data collection was conducted upon inclusion in the study and a follow-up visit was requested from the participants after 6-8 months. During each visit, participants answered a questionnaire on sexual behavior and risk factors to CT. Out of the 2 814 persons recruited in the study, only 1 350 came to the follow-up visit. This large proportion of drop-out could imply participation bias in the study results. This sub-study aimed at identifying demographic and behavioral factors related to drop-out in the follow-up visit.

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

RESULTS:
Participants with a positive lab test for CT tended to drop out less from the study than people with negative results (OR=0.64, 95% CI: 0.48-0.85). People who provided an answer to the question regarding relationship status, in comparison to those that did not, had higher odds for dropping-out from 1.19 to 1.80 depending on the status. Also, answering the question regarding previous tests for CT, compared to not answering, decreased the odds of drop-out.

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

PRESENTED BY:
Achilleas Tsoumanis

Keywords: Dropout, logistic regression, Chlamydia, Risk factors
ESCAIDE REFERENCE NUMBER: 2012991

DAY 1

Poster Abstracts – Poster Session A

Food and Water Borne Diseases

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

Steen Ethelberg (Statens Serum Institut, Denmark), Karin Nygård (Norwegian Institute of Public Health, Norway), Jens Lauritsen (EpiData, Denmark), Torsten Christiansen (EpiData, Denmark), Emily MacDonald (Norwegian Institute of Public Health, Norway), Annick Lenglet (EDCD, Sweden)

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

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

RESULTS:
Eight practical tools have been developed currently: 1) criteria for considering a coordinated multi-country approach, 2) checklist and agenda template for teleconferences, 3) guidance on developing case definitions, 4) recommendations for case finding, 5) EpiData tool for questionnaire construction, 6) EpiData tool for descriptive and analytical analysis, 7) guidance for environmental and microbiological investigations and 8) and overview of EU and international alert systems relevant for FWD outbreaks. Beginning summer 2012, the toolkit is being used in ECDC training sessions and multi-disciplinary teams in countries are encouraged to the use the tools during arising multi-country outbreaks. All tools are freely available at: http://ecdc.europa.eu/en/healthtopics/food_and_waterborne_disease/toolkit/Pages/index.aspx.

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

PRESENTED BY:
Annick Lenglet

Keywords: Outbreaks, Outbreak investigations, guidelines, Multi-country investigations, questionnaire;
ESCAIDE REFERENCE NUMBER: 2012597

Uncommon transmission of Vero cytotoxin-producing Escherichia coli (VTEC) among children in childcare facilities, England, 2010-11

Arnaud Le Menach (Health Protection Agency, United Kingdom), Girija Dabke (Hampshire and Isle of Wight Health Protection Unit, United Kingdom), Anne Black (Hampshire and Isle of Wight Health Protection Unit, United Kingdom), Jenny Gamblin (Hampshire and Isle of Wight Health Protection Unit, United Kingdom), Matthew Palmer (Hampshire and Isle of Wight Health Protection Unit, United Kingdom), Linda Booth(Health Protection Agency, United Kingdom), Naomi Boxall (Health Protection Agency, South East Region, United Kingdom)

BACKGROUND:
Vero cytotoxin-producing Escherichiacoli (VTEC) can cause severe gastrointestinal illness in children. Exclusion of children with gastrointestinal symptoms from childcare facilities is routine practice to prevent further fecal-oral transmission. We aimed to estimate the risk of VTEC transmission from infectious children in such facilities.

METHODS:
The study population was all children under six years attending childcare facilities in England. We defined cases as laboratory-confirmed VTEC with onset, or notification if asymptomatic, between 1 January 2010 and 7 July 2011. Secondary cases were defined as developing symptoms or being notified from 4 to 14 days after the initial case, according to national guidelines. We obtained demographic and clinical information from the national enhanced VTEC surveillance system. Health protection units provided additional information on whether cases were infectious (symptomatic or asymptomatic shedders) whilst at the facility. We estimated potential transmission events by identifying secondary cases linked to childcare facilities.

RESULTS:
There were a total of 225 VTEC cases attending 201 childcare facilities. Symptom information was available for 172 cases (76.4%) at 155 facilities (77.1%). Eighty-eight cases (51.2%) in 83 facilities (53.5%) were judged to be infectious for a median of 2 days whilst attending the facility. We identified secondary cases in six facilities (7.2%). These six transmission events involved 21 VTEC cases of which 12 were secondary cases.

CONCLUSIONS
Despite half the VTEC cases attending facilities while infectious, secondary cases only occurred in 7% of these facilities. Transmission may be overestimated as some may have occurred in households. Management of gastrointestinal illness in childcare facilities seems effective, but prospective studies looking at the role of asymptomatic shedders, timing of interventions and facilities' features are needed to refine the transmission estimate.

PRESENTED BY:
Arnaud Le Menach

Keywords: Vero cytotoxin-producing Escherichia coli, Child Day Care Centers, Transmission, Disease Outbreaks, England
ESCAIDE REFERENCE NUMBER: 2012662

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

Carlos Carvalho (Health Protection Agency, United Kingdom), H. Lucy Thomas (Health Protection Agency, United Kingdom), Koye Balogun (Health Protection Agency, United Kingdom), Richard Pebody (HPA, United Kingdom), Richard Tedder (Health Protection Agency, United Kingdom), Mary Ramsay (Health Protection Agency, United Kingdom), Siew Lin Ngui (Health Protection Agency, United Kingdom)

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

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

RESULTS:
From July to December 2011, 43 sporadic hepatitis A cases were reported. Eighty-six controls were assigned. 42% of cases and 38% of controls responded to questionnaires. Of nine cases with genotyping results, three were the SDT-strain. Sporadic hepatitis A cases did not significantly differ from Campylobacter controls in terms of SDT consumption (6/14 versus 5/27; OR=3.3; 95% Confidence Interval (CI): 0.6-18). The three SDT-strain cases, however, were more likely than the twelve other/untyped strains to have eaten SDT sold loose (3/3 versus 2/12; adjusted OR=14; 95% CI: 1.2-∞).

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

PRESENTED BY:
Carlos Carvalho

Keywords: Hepatitis A, outbreak, case-control, case-case, England, sporadic.
ESCAIDE REFERENCE NUMBER: 2012726

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

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BACKGROUND:
In November 2007, a large gastroenteritis outbreak due to faecal contamination of tap water took place in a Finnish town. Estimated 28,2 % of the 30016 inhabitants of the town had gastroenteritis. Main objective of this study is to investigate psychological effects associated with the largest reported waterborne outbreak in Finland to date.

METHODS:
Two population based surveys were conducted, one 8 weeks and another 16 months after the exposure. They covered three areas: contaminated and uncontaminated parts of the affected town and a control town. A sample of 1000 residents was randomly selected from each area and both surveys were targeted to this population. Psychological distress was measured with standard 12-item General Health Questionnaire (GHQ-12). Besides computing the GHQ-12 sum scores, we analyzed also the GHQ-12 questions separately using logistic regression, treating the bimodal score in each question as outcome variable and self-reported disease status and geographical area as independent variables. The analyses were restricted to persons between 18 and 65 years (N=1317 in the 1st and N=480 in the 2nd survey).

RESULTS:
In the contaminated area the mean GHQ-12 sum score was 3,0 (95% CI 2,7-3,3) in the 1st survey and 2,0 (1,6-2,5) in the 2nd survey, compared to 1,5 (1,3-1,8) and 1,4 (1,0-1,9) in the uncontaminated area and 1,0 (0,8-1,2) and 1,8 (1,3-2,3) in the control town. Furthermore, 8 weeks after the exposure respondents from the contaminated area had significantly more often scores indicating psychological distress in every GHQ-12 question compared to the control town (OR:s ranging from 2,0 to 5,8). In the second survey the differences between areas were no longer significant.

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

PRESENTED BY:
Salla Toikkanen

Keywords: Epidemiology Infectious Disease Outbreaks Psychology Survey
ESCAIDE REFERENCE NUMBER: 2012780

DAY 1

DAY 1

Poster Abstracts – Poster Session A

Salmonella Napoli waterborne outbreak in a school in Italy

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BACKGROUND:
Human infections caused by Salmonella Napoli are relatively uncommon in Europe however, in Italy, it represents the 4th more common serovar. No food animal has been identified as reservoir for this serovar which is frequently isolated from environmental sources and in some occasions from vegetable foods. We describe a waterborne outbreak due to S. Napoli in a primary school in northern Italy occurred in October 2011.

METHODS:
A case was defined as a schoolchild presenting diarrhea, abdominal pain, fever or vomiting. Stool samples were examined for enteric pathogens according to standard procedures. Salmonella isolates were send to the regional reference laboratory for serotyping and to the National Reference Laboratory for subtyping including antimicrobial susceptibility and Pulsed-Field-Gel-Electrophoresis. Water samples, from water taps internal and external to the school, were took and investigated for microbiologic contamination and for the presence of Salmonella.

RESULTS:
Stool samples were obtained from 13 symptomatic children, 9 of which were positive for Salmonella. All strains, but one, were serotyped as S. Napoli. S. Napoli was also isolated from the asymptomatic brother of a case, as well as from a sample from the indoor water network while samples from an outdoor small fountain directly connected with an artesian well was negative. All strains were sensitive to a panel of 12 antimicrobials and showed a high genetic similarity.

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

PRESENTED BY:
Claudia Lucarelli

Keywords: Salmonella Napoli, outbreak, waterborne, school, Italy
ESCAIDE REFERENCE NUMBER: 201288

Post-outbreak surveillance for cases of STEC O104:H4 in Germany, July 5th through December 31st, 2011

Christina Frank (Robert Koch Institute, Germany), Astrid Milde-Busch (Robert Koch Institute, Berlin, Germany), Dirk Werber (Robert Koch Institute, Berlin, Germany)

BACKGROUND:
The unprecedented outbreak of gastroenteritis and hemolytic uremic syndrome (HUS) caused by Shiga toxin-producing Escherichia coli (STEC) O104:H4 in Germany was declared over July 4, 2011. At this time it was unknown, whether the pathogen would cause future cases.

METHODS:
Post-outbreak surveillance based on mandatory reporting was maintained until year's end. Notified infections with STEC of serogroup O104 (asymptomatic, gastroenteritis or HUS) were considered confirmed post-outbreak infections if additionally available laboratory detail (on stx, eae, ESBL status) did not contradict outbreak strain involvement. Among contacts of outbreak cases, symptomatic STEC infections without serogroup information but also no contradictory laboratory detail were considered probable post-outbreak cases.

RESULTS:
There were no confirmed HUS, but one probable case of HUS in the mother of a child with HUS during the outbreak. There were 17 confirmed and 2 probable cases of STEC gastroenteritis; among those, 5 confirmed and 1 probable case are secondary infections in a cluster linked to a hospital procedure performed on an adult patient with diarrhea, later confirmed as a post-outbreak case (household contact to an outbreak case). Fife confirmed asymptomatic STEC O104 infections were newly diagnosed. Most confirmed infections were also epidemiologically linked to outbreak cases – often with long periods between primary and secondary disease onset. Three children and 22 adults were affected, 9 were male and 16 female. No case remembered sprout consumption. Latest known date of gastroenteritis onset was October 11.

CONCLUSIONS:
Post-outbreak surveillance counted a reassuringly diminishing trickle of 24 confirmed or probable post-outbreak STEC O104 infections. Most were secondary to outbreak cases, sprouts played no role. From these data there is no indication that the outbreak strain is established in the German environment.

PRESENTED BY:
Christina Frank

Keywords: Shiga, Toxigenic Escherichia coli Infectious Disease Outbreaks Gastroenteritis Hemolytic, Uremic Syndrome
ESCAIDE REFERENCE NUMBER: 2012901

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

Elisabeth Aichinger (Robert Koch-Institute (FETP), Baden-Wuerttemberg State Health Office, Germany), Elke Zimmermann (Amt für Veterinaerwesen und Lebensmitteluebeerwachung Ortenaukreis, Germany), Rita Prager (Robert Koch Institute, Germany), Norman Mauder (Chemisches und Veterinaeruntersuchungsamt (CVUA) Stuttgart, Germany), Gerda Klittich (Baden-Wuerttemberg State Health Office, District Government Stuttgart, Germany), Günter Pfaff (Baden-Württemberg State Health Office, District Government Stuttgart, Germany)

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

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

RESULTS:
We identified 11 cases, aged 0 to 75 years; 6 males, 2 died. All cases had a migration background from Eastern Europe. Of the 9 adults, 7 had consumed product X, two could not be questioned due to poor health. After notification of the first two cases, food control services found the outbreak clone in merchandise samples of product X which was recalled from the market. At factory A, the outbreak clone was detected in an industrial fish slicer, but neither in stored, raw fish nor in stool samples of staff. Several attempts of disinfection included thorough dismantling of the machine, but failed to achieve decontamination. Thus, the slicer was banned from the manufacturing process.

CONCLUSIONS:
Consistent use of PFGE-genotyping is crucial for routine listeriosis surveillance. Industrial food slicers were previously reported as contaminators especially of cold cuts, but rarely of fish products. Only food slicers that are easy to clean and disinfect should be used in the manufacturing process of foods not cooked prior to consumption.

PRESENTED BY:
Elisabeth Aichinger

Keywords: Listeria monocytogenes Listeriosis Fish Products Foodborne Diseases Food, Processing Industry
ESCAIDE REFERENCE NUMBER: 2012908

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

Rysard Tomialoic (National Institute of Public Health in Poland, Poland), Magdalena Rosinka (National Institute of Public Health-National Institute of Hygiene, Poland), Krystyna Zwierzynska (Department of Epidemiology, Local Sanitary Station in Warsaw, Poland), Małgorzata Sadkowska-Todys (National Institute of Public Health – National Institute of Hygiene, Warsaw, Poland)

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

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

RESULTS:
Of 427 eligible persons, 347 (81.3%) responded to questionnaires, and 172 (49.6%) were classified as cases. ARs among students and staff were 58% and 9% respectively. Risk factors for illness among students were: shared school lunches (aRR 1.19, 95%CI: 1.01-1.41), having household contact with a symptomatic person (1.40; 1.18-1.66) and being male (1.27, 1.03-1.55). Using school toilets was protective (0.81; 0.72-0.90) for students. Among early cases, household contacts (1.63; 1.13-2.35) and shared school lunches (1.52; 1.01-2.30) were risk factors for illness. Among late cases, being male was a risk factor (1.71; 1.14-2.56), whilst using school toilets was protective (0.71, 0.55-0.91). Norovirus was detected in 3/7 samples.

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

PRESENTED BY:
Rysard Tomialoic

Keywords: Gastroenteritis, outbreak, infection transmission, school
ESCAIDE REFERENCE NUMBER: 2012941

Poster Abstracts – Poster Session A

Epidemiology & Microbiology driving Public Health Policy

Personal protective equipment, hygiene behaviours and occupational risk of gastrointestinal and respiratory illness after the 2 July 2011 flood in Copenhagen,Denmark

Oktawia Wojcik (Statens Serum Institut, Denmark), Jette Holt (Statens Serum Institut, Denmark), Anne Kjerulf (Statens Serum Institut, Denmark), Luise Müller (Statens Serum Institut, Denmark), Steen Ethelberg (Statens Serum Institut, Denmark), Kåre Mølbak(Statens Serum Institut, Denmark)

BACKGROUND:
Incidence of gastroenteritis and respiratory infections can increase after floods. The use of personal protective equipment (PPE) can decrease risk of illness. We investigated the risk of these illnesses following exposure to flood water/sediment, after an unusually heavy rain event, among professionals according to various exposures, including use of PPE.

METHODS:
We conducted a cohort study among insurance agents, cleaners, engineers, maintenance workers, garbage workers, pest controllers, fire/rescue workers, and police officers with flood water/sediment contact. Participants were identified using Copenhagen business listings. We used online and paper-based questionnaires to collect information about demographics, PPE use (gloves, masks, goggles and rubber boots), hygiene behaviours after contact with flood water/sediment (eating/drinking, smoking, hand hygiene, bathing, and treatment of work clothes and boots) and symptoms of gastrointestinal and respiratory illness within three weeks of contact with flood water/sediment. We calculated relative risks (RRs) using univariate analyses.

RESULTS:
Of 257 respondents (47% response rate), 22% developed disease: 26 gastrointestinal illness, 19 respiratory illness, and 11 both. Forty-six percent of professionals wore boots/waders, 39% gloves, 4% goggles and 2% mask. Risk of gastrointestinal illness was higher among smokers (RR=2.3, 95%, confidence interval [CI] 1.3-4.2), those who did not wash hands after glove use (RR=1.9, 95% CI 0.8-4.5) and those who did not wear boots/waders (RR=1.4, 95% CI 0.8-2.7). For respiratory illness, the RRs for these three exposures were as follows: RR=1.7, 95% CI 0.8-3.6, RR=1.3, 95% CI 0.5-3.6, and RR=1.2, 95% CI 0.6-2.5, respectively.

CONCLUSIONS:
Not complying with existing hygiene guidelines increased the risk of developing gastrointestinal illness. We recommend training in PPE use and hygienic practices, including after PPE use, for persons with occupational contact with flood water/sediment.

PRESENTED BY:
Oktawia Wojcik

Keywords: Flooding, personal protective equipment, clean-up, Denmark
ESCAIDE REFERENCE NUMBER: 2012947

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

Zaida Herrador (EDCD (ECDC, Sweden), Annick Lenglet (ECDC, Sweden), Anna-Pelagia Magiorakos (ECDC, Sweden), Katrin Leitmeyer (ECDC, Sweden),Denis Coulombier (ECDC, Sweden)

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

METHODS:
National competent bodies in the European Union and the European Economic Area completed an email-based survey in January 2012. The questionnaire addressed aspects of MP linked to the current epidemiological situation, surveillance activities, diagnosis capacities and existence of clinical guidelines for treatment.

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

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

PRESENTED BY:
Zaida Herrador

Keywords: Mycoplasma infections, Mycoplasma pneumoniae, Pneumonia, Surveillance, Europe
ESCAIDE REFERENCE NUMBER: 2012423

The need to develop control measures for salmonellosis to ensure safety of home-produced eggs, Poland 2011: Lessons from an outbreak

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

METHODS:
We conducted a retrospective cohort study among christening party attendees, where angel cake prepared using home-produced eggs had been served. Cases were defined as: Probable – a party attendee who, within 72 hours, developed one of the following: diarrhoea, vomiting, stomach cramps, or temperature ›39C; Confirmed: as above, with a positive stool test for Salmonella Enteritidis. We calculated food-specific attack rates (AR), relative risks (RR) and 95% confidence intervals (CI). We established factors associated with becoming a case using multivariable analysis. Selected strains from human and egg samples were phage typed to establish a link between consumption of cake and Salmonella symptoms.

RESULTS:
Of the 48 attendees, 26 (54%) reported gastroenteritis-like symptoms. Angel cake was associated with illness (aOR=192, 95% CI: 7-5200). The laboratory isolated S. Enteritidis in stool samples from 18 people and in 2 egg samples. Of 20 S. Enteritidis strains, seven were identified as phage type PT21c. Privately owned laying hens that lived on site at the party, were identified as the source of the outbreak and destroyed.

CONCLUSIONS:
Food items consisting of raw eggs that have not been screened for Salmonella, should not be overlooked as a risk factor for infection, associated with their consumption. Control measures should include raising public health awareness to ensure safety when handling and consuming home-produced eggs.

PRESENTED BY:
Anna Zielicka-Hardy

Keywords: Salmonella, home-produced eggs, laying hens, Poland, control, phage typing
ESCAIDE REFERENCE NUMBER: 2012734

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

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

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

RESULTS:
The total number of cases associated with laboratory positive tests in the merged data set were 377 in 2009, 96 in 2010 and 50 in 2011. Among those, 186 (49%) in 2009, in 12 (13%) 2010 and 9 (18%) in 2011 were associated with a confirmed laboratory interpretation regardless of IgM phase II antibodies detection. The number of acute Q fever notifications to the NCR by the MHS were 338 (90%) in 2009, 21 (22%) in 2010, and 12 (24%) in 2011.

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

PRESENTED BY:
Giovanna Jaramillo-Gutierrez

Keywords: Acute Q fever notification, Coxiella burnetti, laboratory diagnostics
ESCAIDE REFERENCE NUMBER: 2012741

DAY 1

Poster Abstracts – Poster Session A

The efforts to contrast the spread of Klebsiella pneumoniae resistant to carbapenems in Italy

Fortunato D'ancona (Istituto Superiore di Sanità, Italy), Annalisa Pantosi (Istituto Superiore Di Sanita, Italy), Gian Maria Rossolini (University of Sienna, Department of Biotechnologies, Sienna University Hospital, Sienna, Italy), Pasquale Salcuni (Communicable Diseases Unit, Directorate General of Prevention, Ministry of Health, Rome, Italy), Annamaria Sisto (CINECA, Italy)

BACKGROUND:
Carbapenem-resistant Klebsiella pneumoniae(CR-Kp) has recently been reported as multidrug-resistant pathogen in several Italian hospitals. According to the EARS-Net data, the percentage of CR-Kp isolated from blood increased dramatically in Italy (1.6% in 2009; 15.2% in 2010). After Greece, Italy has become the second endemic country in Europe. The few therapeutic choices and the high lethality impose to tackle the problem with a multidisciplinary approach at national level.

METHODS:
In 2012 a workshop was organized to increase the awareness of CR-Kp and discuss possible solutions. The surveillance was reinforced: Micronet network, developed by Istituto Superiore di Sanità and CINECA monitors in real time antimicrobial resistance data in 15 laboratories from all clinical samples. From October 2011 to March 2012, 35 centers reporting data to EARS-NET were requested to send invasive isolates of CR-Kp for an advanced microbiological characterization. A circular letter implementing a new nationwide surveillance for all invasive cases of CR-KP and carbapenem-resistant Escherichia coli and describing the control measures to be taken at hospital level is going to be issued by MoH to raise the awareness about carbapenem-resistant infections and to invite the regional and local authorities to take effective actions.

RESULTS:
Micronet: the non susceptibility to carbapenems in the first four months of 2012 was 19.4% (38.5% from respiratory tract samples and 29.2% from blood). In the characterization study, 104 Cr-Kp were reported by 23 hospitals. KPC carbapenemase (KPC-2 and KPC-3) was the most prevalent resistance mechanism (98%); most CR-Kp belonged to clonal complex 258.

CONCLUSIONS:
The effect of this integrated strategy, combined with control actions at local level, should lead to a reduction of CR-Kp in Italy in 2013-2014.

PRESENTED BY:
Fortunato D'ancona

Keywords: Klebsiella pneumoniae, Surveillance, Drug resistance, Carbapenems
ESCAIDE REFERENCE NUMBER: 2012747

Epidemiological situation of measles in Lithuania

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BACKGROUND:
Measles is usually a mild self-limited viral disease mainly affecting children and young adults. In recent years,European countries have reported large numbers of measles cases and outbreaks among the general population. In 2002 a measles outbreak was reported in Lithuania with 102 registered cases

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

RESULTS:
From 2002 to 2011, 116 cases of measles were registered in Lithuania. Since 2002, the number of measles cases has decreased noticeably. After measles outbreak in 2002, only several cases were reported. No measles cases were registered in 2007 and 2009. Almost all persons exposed to measles were not vaccinated with MMR vaccine. Most of measles cases were imported from other countries. During the last two years, 5 of the 9 cases were imported from other countries.

CONCLUSIONS:
Cases of measles have fallen to a minimum, but travelling is a great opportunity to be exposed to measles infection, especially if the person is not vaccinated. Decreasing coverage of measles vaccination may result in measles outbreak. Only routine vaccination of children can stop virus spread and prevent outbreaks, without prejudice to the recommended immunization schedule schemes. Measles remains one of the leading causes of death among all vaccine-preventable diseases.

PRESENTED BY:
Giedrius Foktas

Keywords: Measles, Lithuania, outbreak, vaccination
ESCAIDE REFERENCE NUMBER: 2012802

Ongoing mother to child transmission of HIV, syphilis and hepatitis B in EU/EEA ¬Strengthen antenatal screening programmes!

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

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

RESULTS:
Of the 242 HIV cases being reported as acquired through MTCT in 2010, 33% (81) were diagnosed in persons born in the EU/EEA, 49% (118) in persons originating from Sub-Saharan countries and 43 cases from other regions or unknown. Rates of HIV MTCT diagnosed in individuals born in the reporting country (81) varied between 0.2 and 20.8, being highest in Latvia, Portugal, Romania and Bulgaria. Fifty-nine congenital syphilis cases were reported in 2010 from 13 countries. Rates higher than 4 per 100 000 were reported in Portugal, Estonia, Lithuania and Poland. While data at EU-level on MTCT for HBV is limited, fifteen countries reported 164 HBV infections in children ‹ 5 years. The UK, Romania and Sweden, reported 74% of these cases. Among the 32 cases where transmission was reported, 26 were due to MTCT.

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

PRESENTED BY:
Otilia Sfetcu

Keywords: Mother-to-child transmission, HIV, HBV, congenital syphilis, antenatal screening
ESCAIDE REFERENCE NUMBER: 2012950

Using epidemiological data from point prevalence surveys to inform national healthcare associated infection policy

Shona Cairns (Health Protection Scotland, United Kingdom), Jacqui Reilly (Health Protection Scotland, United Kingdom), Chris Robertson (University of Strathclyde, United Kingdom)

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

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

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

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

PRESENTED BY:
Shona Cairns

Keywords: Epidemiology Infection Control Cross infection Prevalence
ESCAIDE REFERENCE NUMBER: 2012992

DAY 1

Poster Abstracts – Poster Session A

Vaccine Coverage, effectiveness and safety

Inequalities in uptake of vaccination against Human Papillomavirus (HPV) in Wales

Simon Cottrell (Public Health Wales, United Kingdom), Richard Roberts (Public Health Wales, United Kingdom), Daniel Thomas (Public Health Wales, United Kingdom)

BACKGROUND:
Immunisation against HPV, which can lead to cervical cancer, began in Wales in 2008. Girls aged 12-13y are routinely offered immunisation, a catch-up campaign for girls aged 13-18y in 2008 was also initiated.

METHODS:
We investigated inequalities in HPV immunisation uptake in 122,280 girls born 01/09/1991 to 31/08/1999, using Child Health System data and the Welsh Index of Multiple Deprivation. Multivariate logistic regression was used to investigate factors affecting uptake and drop-out.

RESULTS:
The odds ratio for girls in the most deprived areas completing three doses, compared to those in the least deprived areas was 0.61 (95% CI 0.58–0.64). The odds of girls dropping out was higher in more deprived areas (OR 2.05 95% CI 1.91-2.2). Age predicted uptake; the odds of 18y old girls completing, compared to 13y olds was 0.08 (95% CI 0.08-0.09), older girls were less likely to start the vaccination course (OR 6.95 95% CI 6.59-7.34) and less likely to complete once started (OR 17.17 95% CI 15.57-18.93). Inequalities were greater in girls scheduled to be immunised at older ages.

CONCLUSIONS:
Girls in the most deprived areas are least likely to receive HPV vaccination, they are also potentially more likely to be at risk of HPV infection and less likely to attend cervical screening. This highlights the importance of interventions to improve vaccine uptake and promote screening, particularly in areas of high deprivation. This study also confirms that vaccination campaigns are most successful when delivered to younger school children.

PRESENTED BY:
Simon Cottrell

Keywords: Immunization Vaccination HPV Human Papillomavirus Cervical cancer Inequality
ESCAIDE REFERENCE NUMBER: 2012630

Influenza vaccine effectiveness in Romania 2011/2012: results of a case-control study

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BACKGROUND:
Cantacuzino Institute participates to the ECDC funded I-MOVE project(Influenza Monitoring Vaccine Effectiveness in Europe) from its first season with a case-control study based on the influenza sentinel surveillance network. We aimed to estimate 2011/12 seasonal influenza vaccine effectiveness(IVE) against medically-attended influenza-like illness (ILI) laboratory-confirmed for influenza

METHODS:
We conducted a test-negative case control study embedded in the influenza sentinel surveillance system,between week 48/2011 and 16/2012. Cases were ILI laboratory confirmed for influenza A(H3N2). Controls were ILI cases testing negative for any influenza. Data collected included laboratory information, vaccination status and data on different confusion factors identified in the literature. IVE was calculated as 1 minus the odds ratio for vaccination. A 95% confidence interval (CI) was calculated around the point estimate.

RESULTS:
One hundred sentinel GPs (31.9%) from 16 districts (38.1%)participated in the study and 71 recruited at least one case. A total of 238 ILI patients were enrolled and 207 (87%) were analyzed: 107 cases (three vaccinated) and 100 controls (eight vaccinated). Compared to controls a higher proportion of cases were male, living in urban area and a lower proportion had chronic conditions (p<0.05). The crude IVE was 67% (95% CI: -44, 94). The adjusted IVE for age, sex, residence, chronic conditions, previous seasonal vaccination and month of swabbing was 42% (95% CI: -295, 92). The crude IVE for patients eligible for vaccination (N= 78) was 70% (95% CI: -67, 97) and the adjusted IVE was 40% (95% CI: -534, 94).

CONCLUSIONS:
The results suggested a moderate protection of the 2011/12 seasonal influenza vaccine against medically-attended influenza taking into account the small sample size and the low vaccination coverage (3%).

PRESENTED BY:
Daniela Pitigoi

Keywords: Influenza, vaccin effectiveness, case control,
ESCAIDE REFERENCE NUMBER: 2012696

Universal pertussis vaccination in a secondary school in South East England following a whooping cough outbreak: few serious adverse reactions reported

Lucy McCann (Health Protection Agency, United Kingdom), Noel McCarthy (Health Protection Agency, United Kingdom), Karen Ford(University of Oxford, United Kingdom), Andrew Pollard (University of Oxford, United Kingdom), Rutuja Kulkarni (NHS Berkshire, United Kingdom), Gayatri Amirthalingam (Health Protection Agency, United Kingdom), Alyson Smith (Health Protection Agency, United Kingdom)

BACKGROUND:
Pertussis-containing vaccines are not routinely offered to children over 10 years in the UK but may be in outbreak settings. Following such an outbreak in 2012 in a boarding school in South East England, pertussis-containing vaccine was offered to all pupils (n=1315; age range: 13-18 years). Current increases in pertussis in this age group highlight the need for evidence of adverse reactions following mass vaccination of adolescents with pertussis-containing vaccines. We investigated self-reported symptoms potentially associated with recent vaccination.

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

RESULTS:
Of 740 vaccinated, 23% (n=169) completed the card. Ninety (53.6%) reported feeling 'generally unwell' (overall 7% reported maximum severity); 84.6% reported pain at injection site (overall 0.6% reported maximum severity); 22.2% reported swelling (range: 0.5mm-25mm) and 19% reported fever (overall 1.3% reported maximum severity). Pain, swelling and fever were not significantly associated with having recently received another vaccination.

CONCLUSIONS:
We found that although symptoms potentially linked with pertussis-containing vaccine administration were reported, their severity was low. There was no evidence of more adverse reactions among those who recently received another vaccination. The low response rate and use of self-reported symptoms highlight the issue of possible bias within this study, suggesting improved data capture is needed to estimate potential adverse reactions more accurately.

PRESENTED BY:
Lucy McCann

Keywords: Pertussis vaccine Mass vaccination Adverse effects Adolescent Schools
ESCAIDE REFERENCE NUMBER: 2012744

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

Cornelia Adlhoch (Robert Koch Institute, Germany), Marina Hoehne (Robert Koch Institute, Germany), Martina Littmann (State Office for Public Health and Social Affairs, Mecklenburg-Western Pomerania, Germany), Andreas Mas Marques (Robert Koch Institute, Germany), Almuth Lerche (State Office for Public Health and Social Affairs, Mecklenburg-Western Pomerania, Germany), Manuel Dehnert (Robert Koch Institute, Germany), Eckmanns Tim (Robert Koch-Institute, Germany), Ole Wichmann (Robert Koch Institute, Germany), Judith Koch (Robert Koch Institute, Germany)

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

METHODS:
Local health authorities interviewed parents of children <2 years notified in 2010/2011 with laboratory-confirmed RV-infection. We compared unvaccinated and completely vaccinated cases aged 5-24 months regarding clinical and non-clinical parameters. Genotyping was performed on stool samples of included cases. Complete vaccination was defined as 2 or 3 doses of Rotarix® or RotaTeq® following the manufacturers' requirements. For analysis of the severity of diarrhea, a 20-point modified Vesikari scoring scale was applied. Rank-sum, Chi2 and Fisher´s exact test were used. We calculated Odds Ratios (OR) using multivariable logistic regression adjusting for age and sex.

RESULTS:
Of the 678 reported RV-infected children, 368 were included in the case-case analysis. Of those, 86 (23%) were completely vaccinated (44 RotaTeq®; 42 Rotarix®) and 282 unvaccinated. Vaccinated cases had lower severity scores (median: 8 vs. 12; p<0.001) than unvaccinated cases. Genotype G1P[8] was detected in 8/18 (44%) RotaTeq®¬vaccinated and 2/19 (11%) Rotarix®-vaccinated (p<0.03), whereas G2P[4] was detected in 8/19 (42%) in Rotarix®¬vaccinated and 1/18 (6%) RotaTeq®-vaccinated children (p<0.02). Children who were breastfed (OR=4.0; 95%CI: 1.9-8.3) or who attended daycare (OR=3.4; 95%CI: 1.6-7.1) were more likely to present with breakthrough-infections.

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

PRESENTED BY:
Cornelia Adlhoch

Keywords: Rotavirus vaccine GP-typing, case-case study, breakthrough infection, breastfeeding
ESCAIDE REFERENCE NUMBER: 2012835

Poster Abstracts – Poster Session A

Influenza vaccine effectiveness in Spain, 2011-12: estimates from the cycEVA case-control study

Silvia Jiménez-Jorge (National Center of Epidemiology, ISCIII, Madrid / Ciber Epidemiología y Salud Pública (CIBERESP), Spain), Salvador de Mateo (Ciber Epidemiología y Salud Pública (CIBERESP), Ministry of Science and Innovation, Institute of Hea, Spain), Francisco Pozo (National Center of Microbiology, ISCIII, Madrid, Spain), Inmaculada Casas (National Center of Microbiology, ISCIII, Madrid, Spain), Amparo Larrauri (Ciber Epidemiología y Salud Pública (CIBERESP), Ministry of Science and Innovation, Institute of Hea, Spain)

BACKGROUND:
Since the season 2008-9, Spain is participating in the ECDC-funded project I-MOVE "Influenza Monitoring Vaccine Effectiveness in Europe" with the test-negative case-control cycEVA study. Intra-seasonal estimates suggested a moderate protective effect of the trivalent 2011-12 influenza vaccine in a late season with a limited match between vaccine and circulating strains. We aimed to obtain the 2011-12 end-season estimates

METHODS:
Practitioners systematically swabbed ILI patients collecting information on exposure, outcome and confounding factors. Cases were A(H3N2) confirmed patients and controls those negative for any influenza virus. VE was estimated for the target groups for vaccination swabbed ‹8 days after symptom onset taking into account the phase of the influenza season (early until week 7/2012 and late from 8/2012) and time from vaccination to symptoms onset (time since vaccination)

RESULTS:
The overall adjusted VE was 45% (95% CI, 48;69). During the early but not in the late phase, the VE decreased with time since vaccination, 65% (95% CI, 19;85), 32% (95% CI, -90;75) and 22% (95% CI, -762;93) among those with time since vaccination ‹104 days, 105-123 days and ›123 days, respectively. By age group, we only observed a decreasing VE over time in the older group

CONCLUSIONS:
2011-12 trivalent influenza vaccine showed a moderate protective effect against A(H3N2) influenza infections in target groups for vaccination in Spain. A decreasing VE over time, mostly seen in the older group, could be suggesting an increasing proportion of discordant A(H3N2) through the season or/and waning immunity. In – and end-season estimates were consistent supporting the feasibility of generating and disseminating preliminary estimates. cycEVA results have guided the establishment of a system capable to provide and share rapid and reliable information on annual influenza VE in Spain

PRESENTED BY:
Silvia Jiménez-Jorge

Keywords: Influenza, vaccine effectiveness, case-control studies, sentinel networks
ESCAIDE REFERENCE NUMBER: 2012891

Epidemiology and antimicrobial susceptibilities of streptococcus pneumoniae following introduction of pneumococcal conjugate vaccines in Greece

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BACKGROUND:
Streptococcus pneumoniae is a major cause of morbidity and mortality worldwide. The aims were to describe the serotypes and antimicrobial susceptibilities of S. pneumoniae isolates causing invasive pneumococcal disease (IPD) in children ≤14 y.o. following the introduction of pneumococcal conjugate vaccines (PCVs) in the Greek National Immunization Programme

METHODS:
A prospective nationwide study was conducted between September 2008 and November 2011 in 10 pediatric hospitals. Serotyping was performed by latex agglutination and Quellung reaction using anti-sera (SSI, Copenhagen, Denmark). Susceptibilities to penicillin and other antimicrobials were determined by E-test and interpreted by the CLSI criteria.

RESULTS:
Among 143 isolates collected (80 boys, 63 girls; 74.1% ‹5 y.o) the commonest serotypes for IPD were 7F (23.8%), 19A (22.4%), 1 (11 .9%) and 3 (6.3%). In this period a 18.5 % reduction has been observed in the total number of IPD cases mainly due to the reduction of PCV7 serotypes. In children ≤5 y.o the theoretical coverage for PCV7, PCV10 and PCV13 changed from 11.9%, 35.7% and 73.8% respectively in 2008-2009 to 6.7%, 40.0% and 73.3% in 2010-2011. Respective percentages for theoretical coverage of the 3 vaccines in children ›5 years old were 16.7%, 66.7%, 83.3% and 0.0%, 50.0%, 71.4% for the two time periods. Resistance to penicillin and erythromycin was exhibited by 4.9% and 16.2% of isolates respectively. The most prevalent resistant serotype was19A.

CONCLUSIONS:
After wide use of PCV7, the frequency of PCV7 serotypes causing IPD is low. The majority of IPD in children both ≤5 and ›5 y.o. are caused by the 6 additional serotypes included in PCV13. Local epidemiological data show that children ›5 y.o. could also benefit from pneumococcal vaccination.

PRESENTED BY:
Damianos Menegas

Keywords: Streptococcus pneumoniae, pneumococcal infections, pneumococcal vaccines, 13-valent pneumococcal vaccine, 10-valent pneumococcal vaccine
ESCAIDE REFERENCE NUMBER: 20121075

Monitoring anti-vaccination web pages from Slovakia

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BACKGROUND:
The aim of the work was to analyse content of websites from Slovakia focused on information regarding vaccination.

METHODS:
During October 2010 – October 2011 a systematic search of Slovak websites was carried out. By means of two international search engines (Google and Bing) and one Slovak search engine (Atlas) a search for information on vaccines and vaccination was done. Evaluation of websites was done according to their attitude toward vaccination, source of information, according to support of the information by scientific literature and according to the relevance of the website.

RESULTS:
During the systematic search some 2,700 hits (results) were evaluated – there were 52 websites from Slovakia meeting the inclusion criteria. According to the survey there is a higher probability for the Internet users to come across Slovak websites containing positive information on vaccination, such as websites of regional offices of the Public Health Authority or other state/public institutions or organisations which are in charge of vaccination. Differences in average numbers of visitors of pro- or contra-vaccination websites are not significant. Further evaluation of the websites shows that majority of available information is presented without reference to particular sources of scientific literature. On the contrary, opponents of vaccination use evidence-based argumentation more often.

CONCLUSIONS:
The authors are convinced that it is necessary to stress systematic use of principles of evidence-based medicine and establish the professional activities on transparency and reproducibility of scientific opinions so that there would not be a need to rely on automatic trust of patients. Reasons for correct decision-making should be presented in more strict scientific way.

PRESENTED BY:
Lukas Murajda

Keywords: Vaccination, Internet, Slovakia, health communication
ESCAIDE REFERENCE NUMBER: 20121076

Healthcare-associated infections

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

Adel Elduma (National Laboratory for Public Health, Sudan), Nageeb Sulaiman (National Laboratory for Public Health, Sudan)

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

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

RESULTS:
168 of study population were female and 77 were male. 12 participants reacted positive for HBsAg (4.89). 6 of the positive cases were nurses (50%), 4 workers (33.33%) and 2 of them were laboratory staff (16.66 %) Distribution of infection among female participants was 7 out of 168 (4.16%) and in male were 5 out of 77 (6.49%). Distribution of infection by hospital was one case in Khartoum hospital (2.5%), Khartoum North 4 case (5%) and 7 (5.5%) cases were in Omdurman hospital. Only 37 participants (15.1%) said that they attended training courses in biosafety. Regarding the history of hepatitis b vaccination, only 11 (4.5%) of participants indicated that they received full vaccination dose. 123 of participants (52.2%) declared they practiced a history of needle pricks and sharp injuries during their work

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

PRESENTED BY:
Adel Elduma

Keywords: Hepatitis B, Health care workers, Sudan
ESCAIDE REFERENCE NUMBER: 2012654

DAY 1

Poster Abstracts – Poster Session A

A new preoperative index identifies patients at high-risk of surgical site infection after Coronary artery bypass grafting, Scotland

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

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

RESULTS:
A total of 2,507 CABG patients included developed 135 SSIs. Independent factors included in the new index were age above 74 years (Incidence rate ratio [IRR]: 1.3, 95% Confidence Interval [CI]: 0.9-2.0), female gender (IRR: 1.9; 95% CI: 1.4-2.7), body mass index class (IRR:1.6, 95% CI: 1.04-2.3 for obese class I to IRR: 3.5, 95% CI: 1.9-6.5 for class III), complex procedure (IRR: 1.7, 95% CI: 1.2-2.5), left ventricular ejection fraction ‹50% (IRR: 1.6, 95% CI: 1.1-2.3) and insulin-dependent diabetes mellitus (IRR: 2.4, 95% CI: 1.4-3.9). The new risk index (c-index: 0.7125; p‹0.001) exceeded the predictive performance of the CDC index (c-index: 0.5641).

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

PRESENTED BY:
Ida Prantner

Keywords: Surgical Wound Infection, Coronary Artery Bypass, Risk Factors, Risk Adjustment,Infection Control,Scotland
ESCAIDE REFERENCE NUMBER: 2012667

Methicillin-resistant Staphylococcus aureus (MRSA) incidence in hospitals: Results from a regional surveillance program -Montérégie, Québec, Canada, 2008-2011

Philippe Belanger (Public Health Agency of Canada, Canada), Christine Lacroix (Direction de santé publique de la Montérégie, Canada),Josee Massicotte (Direction de santé publique de la Montérégie, Canada)

BACKGROUND:
Methicillin-resistant Staphylococcus aureus (MRSA) is a major cause of hospital-acquired infections. Canadian surveillance data showed that the incidence rates of hospital-acquired MRSA (HA-MRSA) increased 17-fold from 1995 to 2009. In 2008, Montérégie region implemented a revamped surveillance program in order to monitor rates of newly identified MRSA cases in the region's ten hospitals.

METHODS:
A newly positive MRSA case was defined as a patient with a first MRSA positive laboratory result obtained in hospital. An HA-MRSA case was a newly positive case hospitalized for more than 72hr or hospitalized in the same hospital in the year prior to the first MRSA positive laboratory result.Infected cases were defined as cases displaying symptoms. Basic demographics and incidence rates of newly positive and HA-MRSA cases per 10,000 patient-days and per 1000 admissions were calculated using Montérégie region hospital data from April 2008 to March 2011.

RESULTS:
Between 2008 and 2011, 3769 newly positive MRSA cases were reported and of those, 1929 (51%) were hospital-acquired. The newly positive MRSA case incidence rate was 19.5 per 10,000 patient-days (15.4 per 1000 admissions) and the HA-MRSA incidence rate was 10.0 per 10,000 patient-days (7.9 per 1000 admissions). These rates were stable over time. Less than 5% of HA-MRSA cases were ‹ 50 years old compared to 24% of non–HA-MRSA cases. Infected cases represented 13% of HA-MRSA cases overall, with the proportion decreasing over time.

CONCLUSIONS:
HA-MRSA incidence rates in Montérégie were stable during the study period and were similar to some other Quebec regions. A large majority of HA-MRSA cases were ›50 years of age. The proportion of infected cases decreased over time and was lower than reported in the literature (20-60%).

PRESENTED BY:
Philippe Belanger

Keywords: MRSA Healthcare, associated infection Surveillance Quebec
ESCAIDE REFERENCE NUMBER: 2012672

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

Eleni Jelastopulu (Department of Public Health, School of Medicine, University of Patras, Greece), Ioanna Ioannou (Nicosia General Hospital, Greece), Georgios Charalambous (Frederick University, Nicosia, Cyprus))

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

METHODS:
During the period from 17 to 26 October 2011 data on HAI, including demographic characteristics, infection type and site, predisposing factors and laboratory results, were subsequently collected and electronically recorded in a patient-based standard protocol of ECDC by the infection control nurse of the 468-bed Nicosia General Hospital.

RESULTS:
A total of 23 patients with 25 healthcare-associated infections were recorded, giving an overall prevalence of 6.9% (ICU 20.0%, surgical 6.1%, medical 5.6%). The prevalence ranged from 0-36.4% with highest rates in nephrology (36.4%) and mixed intensive care (35.3%), followed by neurosurgery (13%) and cardiovascular surgery (11.1%). HAI were located most frequently in bloodstream (28%), followed by surgical sites (20%), lower respiratory (20%) and gastro-intestinal system (12%). In 19 (76%) of the recorded HAI, a total of 26 microorganisms were isolated, most frequently Staphylococcus aureus (19.2%), Pseudomonas aeruginosa (19.2%), Acinetobacter (15.4%), Clostridium difficile (11.5%) and Enterococcus spp. (7.7%). Antimicrobial resistance was observed in S. aureus (100%), P. aeruginosa (80%) and Acinetobacter (75%). In 76% of patients device-associated HAI were observed.

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

PRESENTED BY:
Eleni Jelastopulu

Keywords: Healthcare-associated infections, prevalence, infection control, antimicrobial resistance, Cyprus
ESCAIDE REFERENCE NUMBER: 2012686

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

Paulius Gradeckas (National Centre for Epidemiology of Hungary, Lithuania), Karolina Böröcz (National Center for Epidemiology, Budapest, Hungary), Andrea Kurcz (National Center for Epidemiology, Budapest, Hungary

BACKGROUND:
In 2005, a study concluded that 51.7% of patients received appropriate antimicrobial prophylaxis (AP) regarding the choice of agent and duration of administration in hip prosthesis (HPRO) in Hungary. We investigated whether AP practice in HPRO has improved during recent years.

METHODS:
We analysed data reported to the surgical site infection module of the Hungarian National Nosocomial Surveillance System (NNSS) in 2010-2011. We calculated proportions of appropriate AP practice in relation to the choice of antimicrobial and duration of its administration.

RESULTS:
We analysed records on 798 HPRO surgeries performed in 8 hospitals. Recommended Cefazolin and Cefuroxime were used in 42.0% and 24.9% of surgeries, respectively, as first-and-only choice. There was an increase of recommended Cefazolin usage compared to previous study (42% vs. 34%, p ‹0.001). Not recommended third-generation cephalosporins (Cefotaxim, Ceftriaxone) were used (24.9%). More than one antimicrobial was prescribed to 5% patients. The proportion of cases with AP lasting less than 24 hours on the day of surgery decreased compared to the previous study (79.4% vs. 54.0%, p‹0.5). Overall 44% of patients received appropriate surgical prophylaxis, regarding both type of antimicrobial and duration of AP.

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

PRESENTED BY:
Paulius Gradeckas

Keywords: Hip prosthesis antibiotic prophylaxis recommendations
ESCAIDE REFERENCE NUMBER: 2012803

DAY 1

Poster Abstracts – Poster Session A

First results of the national surveillance of healthcare-associated Clostridium difficile infections in Hungary, 2011

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

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

RESULTS:
Overall 1,803 healthcare-associated CDI-cases were included from 69 hospitals. The mean incidence density was 1.2 per 10,000 patient-days, with variation across hospitals and regions (0.04–5.3 and 0.06–1.9 per 10,000 patient-days, respectively). Mean age of patients with CDI was 71 years (median:74, range: 0–103), 55% were female. Median length of stay was 17 days. Three percent of the CDI-cases were reported to be outbreak-related and 16% as imported from another healthcare facility. Antimicrobial treatment prior to CDI was given to 74% of the patients. The most frequently reported clinical presentation was diarrhea (90%), followed by colitis without pseudomembrane formation (7%), pseudomembranous colitis (6%) and toxic megacolon (1%). Every fifth patient died. Of 367 deaths, 48 (13%) were reported to be related to CDI. Of these, 23 had pseudomembranous colitis or toxic megacolon.

CONCLUSIONS:
The first reference data show that CDI is a relevant healthcare-associated infection in Hungary, affecting primarily elderly patients. The distribution of PCR-ribotypes among the reported cases is unknown. Further efforts should focus on improving reporting compliance and complementing epidemiological data with detailed microbiological information.

PRESENTED BY:
Ágnes Hajdu

Keywords: Clostridium difficile, Enterocolitis, Diarrhea, Anti-bacterial agents
ESCAIDE REFERENCE NUMBER: 2012905

The implementation of hygienic measures during norovirus outbreaks: development and evaluation of a short, demonstrative film for nursing home personnel

Aimée Tjon-a-Tsien (Rotterdam Public Health Service, The Netherlands), Jeanelle Breemer (Rotterdam Public Health Service, The Netherlands), Cornella Visser-Mol (Aafje thuiszorg huizen zorghotels, The Netherlands), Hélène Voeten (Rotterdam Public Health Service, The Netherlands)

BACKGROUND:
Norovirus is highly contagious and causes the majority of gastro-enteritis outbreaks in nursing homes. National outbreak guidelines require adherence to extensive, practically complicated hygiene measures. A short, demonstrative film on norovirus transmission and hygiene measures could support personnel in prevention. However, no such film existed.

METHODS:
Phase A: focus group dialogues and written questionnaires provided practical information for film composition: attitudes; social influences; self-effectiveness (perceived “usefulness” and “feasibility” of hygiene measures); barriers; and knowledge. Phase B: professional film production using virus animation and health care professionals for actors. Phase C: film was shown at the beginning of gastrointestinal outbreaks, followed by evaluation questionnaires among personnel and managers.

RESULTS:
Phase A (22 respondents; 4 institutions): subject was relevant to all; 27,2% did not know about respiratory and alimentary virus transmission. Main motivators for maintaining hygiene measures included protection of own and relatives’ health, and to minimize outbreak duration. Phase B: the film focused on understanding transmission and feasible measures. Phase C (44 respondents; 4 outbreaks): mean rating score 8,0 (scale 1-10); 91% increased knowledge of virus transmission; 88% reported a better understanding of measures and 67% washed hands more thoroughly. The DVD film was shown during morning report; residents were also interested and enlightened. Phase C respondents scored significantly more measures as “useful” (mean 7.6/8) and “feasible” (7,0/8) compared to Phase A where “useful” was scored 6.6/8 (p=0.015) and “feasible” 4,9/8 (p=0.002).

CONCLUSIONS:
Film was well received, rated good and is available for free (www.ggd.rotterdam.nl/filmnorovirus). It can be used in local hygiene protocols, staff introduction programmes and nursing schools. The concept seems to work well and could be extended to other situations: pictures speak lounder than words.

PRESENTED BY:
Aimée Tjon-a-Tsien

Keywords: Outbreak norovirus hygienic measures nursing home
ESCAIDE REFERENCE NUMBER: 2012975

Adequacy of surgical antibiotic prophylaxis

García Román Vicente (Hospital General Universitario de Alicante, Spain), Jose L Mendoza Garcia (Hospital General Universitario de Alicante, Bolivia), Javier Silva Contreras (Hospital General Universitario de Alicante, Colombia), Cesar O Villanueva Ruiz (Hospital General Universitario de Alicante, Mexico), Isidra Tenza Iglesias (Hospital General Universitario de Alicante, Spain), F Javier Conesa Peñuela (Hospital General Universitario de Alicante, Spain), Maria Gonzalez Hernandez (Hospital General Universitario de Alicante, Spain), José Sánchez Payá (Hospital General Universitario de Alicante, Spain)

BACKGROUND:
Surgical site infections (SSI) are a cause of healthcare-associated infections (HAI) in our center. The aim of this study is to quantify the adequacy in our center of the surgical prophylaxis (SP) due to its importance in the prevention of SSI

METHODS:
An observational prospective cohort study. The study is subjected to patients who underwent surgery between 16th and 30th June 2011, and were hospitalized for 24 or more hours after its completion. To assess the adequacy, SP protocols approved in our center were used as reference. To quantify the degree of adaptation, two indicators have been used: the overall adequacy of SP use and the adequacy of SP when it has been indicated. To quantify these indicators, we calculated the percentage of adequacy within a confidence intervals of 95%

RESULTS:
The overall adequacy of SP use (n=453) was 57.6% (52.9-62.2), and the adequacy of SP when it has been indicated (n=272) was 61.4% (55.3-67.2). The overall SP use (n=453) was distributed as follows: 20.8% was not indicated and unrealized, 11.0% was not indicated and realized (overuse), 8,2% was indicated and unrealized (underuse) and 60% was indicated and realized. In 105 patients, SP was inadequate and indicated; the reasons for inadequacy were as follows: 11.4% by election, 4.8% by start date, 61.0% by duration, 16.2% by election and duration, 4.8% by start date and duration and finally 1.9% by election, start date and duration

CONCLUSIONS:
The collaboration of all professionals involved in the care of these patients is crucial to improve progressively the adequacy of the SP, because it decreases the appearance frequency of SSI

PRESENTED BY:
Javier Silva Contreras

Keywords: Surgical Procedures, Operative Antibiotic Prophylaxis Program Evaluation Guideline Adherence
ESCAIDE REFERENCE NUMBER: 20121036

HIV and sexually transmitted infections

Perceptions of social support, treatment expectations, and HIV-related stigma amongst men who have sex with men (MSM) newly diagnosed with HIV, the Netherlands

Georgia Ladbury (Dutch National Institute for Public Health and the Environment (RIVM), EPIET, The Netherlands), Maaike van Veen (Public Health Service Amsterdam, The Netherlands), Titia Heijman (Municipal Health Service Amsterdam, The Netherlands), John de Wit (Utrecht University, University of New South Wales, The Netherlands), Marianne van der Sande (National Institute of Public Health and the Environment - RIVM, The Netherlands)

BACKGROUND:
We conducted a study to quantify perceived social support, treatment expectations and HIV-related stigma amongst MSM newly diagnosed with HIV in the Netherlands in order to inform ongoing research regarding delay into care.

METHODS:
Between February 2009 and January 2012, MSM newly diagnosed with HIV were invited to complete self-administered questionnaires at three urban STI clinics. Participants were asked to what degree (on a scale of 1 to 7) they agreed with sets of statements regarding (1) personal social support available; (2) treatment expectations; and (3) perceived HIV-related stigma. We measured internal consistency of responses using Cronbach’s alpha (values >0.7 indicate good consistency). We calculated mean scores for each statement set and subsequently created three binary “Yes/No” variables: “Support”, “Unrealistic treatment expectations” and “Perceived stigma”. We used descriptive and univariable analysis to explore the distribution of these variables amongst participants.

RESULTS:
In total, 278 individuals participated (response 75%). Cronbach’s alpha was 0.95, 0.89 and 0.71 for “Support”, “Unrealistic treatment expectations” and “Perceived stigma” respectively. Those less likely to have unrealistic treatment expectations included Western Europeans (Prevalence ratio [PR]=0.66, 95%CI 0.52-0.85) and people who had a previous HIV test (PR=0.73, 95%CI 0.55-0.96). Those less likely to feel stigma included Western Europeans (PR=0.74, 95%CI 0.57-0.94), people who had completed higher education (PR=0.74, 95%CI=0.57-0.95) and people who had a previous HIV test (PR=0.66, 95%CI 0.50-0.86). No specific determinants were identified regarding social support.

CONCLUSIONS:
We identified that Western European ethnicity, higher education and previous HIV testing were associated with less perceived stigma and more realistic treatment expectations. Ongoing research will explore these relationships further since they may influence care-seeking behaviour, offering opportunities to develop targeted strategies to reduce care delay.

PRESENTED BY:
Georgia Ladbury

Keywords: HIV, MSM, social stigma, social support
ESCAIDE REFERENCE NUMBER: 201268

DAY 1

Poster Abstracts – Poster Session A

Estimating sensitivity of HIV reporting in Poland 1986-2010: the importance of completeness

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

METHODS:
We conducted a capture-recapture study to estimate the number of people diagnosed with HIV (western blot or PCR) between 1986-2010, excluding those who died before 2006. A log linear model was run on 3 datasets: National HIV Surveillance System 1986-2010 (NHSS), anti-retroviral treatment dataset 2006-2010 (ARV) and hospital discharge records 2006-2010 (HD) using ICD codes B20–B24, Z21 or R75. The datasets were restricted to records that could be matched on gender, date of birth and area of residence. We based final model selection on Akaike's information criteria. Sensitivity was defined as the proportion of complete records (for matching variables) in NHSS compared with the capture-recapture estimate.

RESULTS:
NHSS contained 13,522 eligible records but only 8,433 (62%) had information on all matching variables. A total of 6,060 records from ARV and 5,445 from HD were used. The final model estimates the number of HIV cases is 22,006 (95%CI:21,326-22,744), hence the sensitivity of the NHSS is 38%. The final model demonstrated a positive dependency between: ARV and HD and NHSS and HD, respectively.

CONCLUSIONS:
Though HIV is clearly under-reported to NHSS, this evaluation is limited by the absence of a unique identifier as stated in current legislation and the low completeness of variables selected for identification. A revision of the current reporting system in terms of simplicity and acceptability is required to understand difficulties in notifying.

PRESENTED BY:
Anna Zielicka-Hardy

Keywords: HIV, estimation, surveillance, sensitivity, capture-recapture, Poland
ESCAIDE REFERENCE NUMBER: 2012727

What shapes the current HIV epidemic in southern Poland?

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BACKGROUND:
Current surveillance data suggest that injecting drug use (IDU), a previous driving force for the Polish HIV epidemic, has been overtaken by new diagnoses among men who have sex with men (MSM). To gain insight into current transmission patterns, we evaluated the proportion recently infected (within 6 months) at the time of their first presentation for care at an HIV clinic.

METHODS:
We tested blood samples from patients, newly-diagnosed positive, at their first presentation for care at one of four HIV clinics in southern Poland between 2008-2010. The BED assay (OD ≤0.8) was used to assign recent infection status. Using logistic regression we examined the effect of sex, risk group (IDU, MSM, heterosexuals (HET)) and age (‹30, ≥30 years) on the probability of testing recent.

RESULTS:
Of 442 patients who first presented during that period, 62 (14%) had AIDS . Of the remaining 380, 172 (45%) were recruited into the study. Median (IQR) age was 30 (25-36) years and the majority (145, 84%) were male. Overall median (IQR) interval between HIV diagnosis and presentation to an HIV clinic was 32 (15-78) days, with no significant difference between risk groups . Of these 172, 54 (31%) were classified as recently infected of whom 27 (50%) were MSM, 15 (28%) HET, 3 IDU (5.5%), and 9 (16.5%) of unknown risk group. Compared to older individuals ‹30 years were more likely to be recently-infected (OR=2.00, 95% CI= 0.99-4.07; p=0.052). We found no evidence that sex or risk group were independently associated with the probability of being recently-infected.

CONCLUSIONS:
Our results argue for continuous enhanced harm reduction and safe sex education not limited to selected age and/or risk groups.

PRESENTED BY:
Janusz Janiec

Keywords: HIV epidemics surveillance Poland
ESCAIDE REFERENCE NUMBER: 2012834

Increasing HIV infection among men who have sex with men in Slovenia: surveillance data for 2002-2011

Tanja Kustec (National Institute of Public Health , Slovenia), Irena Klavs (National Institute of Public Health, Slovenia)

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

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

RESULTS:
In 2011, 35 of all 55 newly diagnosed HIV cases were reported among MSM. During 2002-2011, the annual reported incidence rate of HIV diagnoses among MSM increased from 12.6 to 48.0 per million men aged 15-64 years. Proportion of new HIV diagnosis among MSM that were late (CD4 counts ‹350/mm3) varied from 39% in 2005 to 62% in 2008. HIV prevalence in male STI patients tested for syphilis varied from 0.2% in 2005 to 3.4% in 2008 and in MSM increased from 0% in 2002 to 7.6% in 2011 (more than 5% for the first time). In the same sentinel population of MSM, the proportion reporting "condom use" increased from 47% in 2002 to 52% in 2011, and "HIV testing" varied from 27% in 2007 to 40% in 2009.

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

PRESENTED BY:
Tanja Kustec

Keywords: HIV, men who have sex with men, surveillance, Slovenia
ESCAIDE REFERENCE NUMBER: 2012864

Unlinked anonymous testing for monitoring HIV prevalence in sentinel groups in Slovenia, 2002-2011

Tanja Kustec (National Institute of Public Health , Slovenia), Irena Klavs (National Institute of Public Health, Slovenia)

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

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

RESULTS:
2,048 saliva specimens were collected from IDU, 1,066 from MSM, 6,327 serum specimens from patients with STI, and 39,818 from pregnancies. Prevalence estimates for MSM varied between 0% in 2002 and 7.6% in 2011, for patients with STI between 0.2% in 2003 and 2.7% in 2008, and for pregnancies from 0% in 2003 and 2007 to 0.03% in 2011. Among IDU specimens, only two tested anti-HIV positive, one in 2010 and one in 2011 (0.4% and 0.5% respectively).

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

PRESENTED BY:
Tanja Kustec

Keywords: HIV, unlinked anonymous testing, injecting drug users, men who have sex with men, sexually transmitted infections, pregnant women, Slovenia
ESCAIDE REFERENCE NUMBER: 2012866

DAY 1

Poster Abstracts – Poster Session A

Who is at risk of presenting late with advanced HIV disease among men who have sex with men?

Paola Scognamiglio (National Institute for Infectious Diseases "L. Spallanzani", IRCCS, Rome, Italy), Assunta Navarra (National Institute for Infectious Diseases "L. Spallanzani", IRCCS, Rome, Italy), Antonio Palummieri (National Institute for Infectious Diseases "L. Spallanzani", IRCCS, Rome, Italy), Massimo Giuliani (San Gallicano Dermatological Institute (IRCCS), Rome, Italy), Claudio Maria Mastroianni (Sapienza University, CRAIDS S.M. Goretti Hospital, Latina, Italy , Italy), Laura Spizzichino (U.O. AIDS ASL RME Via Catone, Rome, Italy), Rosa Brancatella (U.O. AIDS ASL RMB Pertini Hospital, Rome, Italy), Susanna Grisetti (National Institute for Infectious Diseases "L. Spallanzani", IRCCS, Rome, Italy), Alessandro Sampaolesi (National Institute for Infectious Diseases "L. Spallanzani", IRCCS, Rome, Italy), Angela Corpolongo (National Institute for Infectious Diseases "L. Spallanzani", IRCCS, Rome, Italy), Nicoletta Orchi (National Institute for Infectious Diseases "L. Spallanzani", IRCCS, Rome, Italy), Vincenzo Puro (National Institute Infectious Diseases L. Spalanzani Rome, Italy), Enrico Girardi (National Institute Infectious Disease L. Spallanzani, Italy), SENDIH Study Group (National Institute for Infectious Diseases "L. Spallanzani", IRCCS, Rome, Italy)

BACKGROUND:
Although most studies indicate that men who have sex with men (MSM) have a lower risk of late diagnosis than heterosexuals, some MSM are still diagnosed with advanced HIV-1 disease. Aim of our study was to identify among MSM who is at increased risk of presenting late with advanced HIV disease.

METHODS:
We studied the epidemiological and behavioral characteristics of 1,264 HIV-1 infected MSM newly diagnosed in 13 public HIV counselling/testing sites from October 2003 to December 2010) in Lazio Region, Italy. We compared "late presenters with advanced infection" (CD4 count<200/mL or an AIDS-defining event) with "early presenters"(a documented previous negative HIV test within 6 months or HIV-1 RNA positive and negative/indeterminate HIV test or an avidity index <0.80). We performed Mann-Whitney test for age and chi-square test for proportion.

RESULTS:
We included in the analysis 268 (21.2%) "late presenters" and 226 (17.9%) "early presenters". Late presenters were significantly (p<0.01) older, less educated, more frequently foreign-born and ever married than early presenters. Moreover, with respect to early presenters, a higher proportion were never tested before and diagnosed by provider-initiated testing (p<0.001). They reported fewer male sexual partners lifetime, fewer occasional partners during the previous 12 months and were less likely to have used recreational drugs (p<0.05). On the other hand, they less frequently declare their homosexual orientation (p<0.05) and less frequently perceived to have been infected with same gender sex (p<0.001).

CONCLUSIONS:
Our data suggest that, among MSM is possible to identify a sub-group of individuals with specific characteristics associated to an increased risk of late HIV-1 diagnosis. Therefore the interventions for prevention and/or early diagnosis of HIV-1 addressed to MSM should be differentiated taking in account these characteristics.

PRESENTED BY:
Paola Scognamiglio

Keywords: HIV infection, late diagnosis, Male Homosexuality, Risk Behaviors
ESCAIDE REFERENCE NUMBER: 2012900

Trends in HIV prevalence and risk behaviors among vulnerable young populations aged 15-24 years in Nepal, 2001-2010

Keshab Deuba (Department of Public Health Sciences, Karolinska Institutet, Sweden), Anna Mia Ekström (Karolinska Institutet, Department of Public Health Sciences, Sweden), Rachana Shrestha (Nobel College, Pokhara University, Nepal), Krishna Kumar Rai (National Centre for AIDS and STD Control, Nepal), Deepak Kumar Karki (National Centre for AIDS and STD Control, Nepal)

BACKGROUND:
Over past two decades, the Nepalese government has launched various HIV prevention programs targeting vulnerable populations: people who inject drugs (PWIDs), female sex workers (FSWs), men who have sex with men (MSM) and male labor migrants. In order to monitor the HIV epidemics, this study analyzes trends in HIV prevalence (as a proxy for HIV incidence) and associated risk behaviors among vulnerable young populations.

METHODS:
Cross-sectional surveillance survey data collected across Nepal between 2001-2010 including 6170 vulnerable individuals aged 15-24 years, was used to describe trends in HIV prevalence and risk behaviors using chi-square tests for trend.HIV risk behaviors assessed included self-reported non-use of condoms in last sex among MSM, FSWs and labor migrants, and unsafe needle use in past week among PWIDs. Significance level was set at ptrend=0.05.

RESULTS:
We found a consistent decline in HIV prevalence over the past decade among most vulnerable groups: PWIDs (35.4% to 4.6%, ptrend =<0.0001), FSWs (2.4% to 1.2%, ptrend = 0.314), MSM (3.7% to 1.3%, ptrend= 0.109) and migrants (0.4% to <0.1%, ptrend= 0.769), most likely due to a parallel reduction in HIV risk behaviors: PWIDs: 19.4% to 9.7%, ptrend= 0.028; FSWs: 39.8% to 9.2%, ptrend= <0.0001; migrants: 2.4% to 0.8%, ptrend= 0.122). However, non-use of condoms in last anal sex was slightly increased over time among MSM (18.1% to 22.8%, ptrend= 0.210).

CONCLUSIONS:
In Nepal, the decline in recent HIV infections was consistent with a decline in non-use of condoms among young FSWs and male labor migrants, and unsafe needle/syringe use among young PWIDs. In-depth evaluation is needed to identify what specific HIV prevention interventions that are most effective for behavioral change among young MSM and other vulnerable populations.

PRESENTED BY:
Keshab Deuba

Keywords: Vulnerable Populations, Young adult; HIV Prevalence; Trends; Risk Behaviors; Surveillance, Nepal/Epidemiology
ESCAIDE REFERENCE NUMBER: 2012963

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

Bernard Sawadogo (Centre of International Research for Health, University of Ouagadougou, Burkina Faso), Nicolas Meda (Centre of International Research for Health, University of Ouagadougou, Burkina Faso), Mamadou Sawadogo (University of Ouagadougou, Burkina Faso), Joseph Drabo (Centre Hospitalier Universitaire Yalgado Ouedraogo, Ouagadougou, Burkina Faso), Souleymane Zan (Centre Hospitalier Universitaire Yalgado Ouedraogo, Ouagadougou, Burkina Faso), Olga Lompo(Centre Hospitalier Universitaire Yalgado Ouedraogo, Ouagadougou, Burkina Faso), Yacinthe Zamane (Centre Hospitalier Universitaire Yalgado Ouedraogo, Ouagadougou, Burkina Faso, Burkina Faso), Leila Kantagba (Centre of International Research for Health, University of Ouagadougou, Burkina Faso), Valery Bazie (Centre de Recherche Biomoléculaire Pietro Annigoni, Ouagadougou, Burkina Faso), Florencia Djigma (Centre de Recherche Biomoléculaire Pietro Annigoni, Ouagadougou, Burkina Faso), Cyrille Bisseye (Centre de Recherche Biomoléculaire Pietro Annigoni, Ouagadougou, Burkina Faso), Albert Yonli (Centre de Recherche Biomoléculaire Pietro Annigoni, Ouagadougou, Burkina Faso), Nicolas Nagot (University of Montpellier 1, France), Michel Segondy (University of Montpellier 1, France), Helen Kelly (London School of Hygiene & Tropical Medicine, United Kingdom), Clare Gilham (London School of Hygiene & Tropical Medicine, United Kingdom), Helen Weiss (London School of Hygiene & Tropical Medicine, United Kingdom), Sheba N Gitta (African Field Epidemiology Network, Uganda), Phillipe Mayaud (London School of Hygiene & Tropical Medicine, United Kingdom)

BACKGROUND:
Acquisition of sexually transmitted infections (STIs) is an epidemiological marker of high-risk sexual behavior. We assessed the prevalence of STIs among HIV-infected women attending a cervical cancer screening centre

METHODS:
Women were screened with polymerase chain reaction (PCR) for Neisseria gonorrhoeae (NG), Chlamydia trachomatis (CT), Trichomonas vaginalis (TV), and Mycoplasma genitalium (MG); with serological tests for syphilis and herpes simplex virus type 2 (HSV-2); and with microscopy for bacterial vaginosis (Nugent's score 7-10) and Candida albicans (CA). The patient's most recent CD4+ count and plasma viral load results were recorded. Demographic, clinical and behavioral data were collected by nurse-administered questionnaire

RESULTS:
Of the 368 HIV-seropositive women screened with mean age 36.6 years (SD ±6.6), 80% (n=235) were on ART with mean CD4+ count 405 cells/µL (mean CD4+ count 586 cells/µL in the 133 who were not taking ART); 46% were not married, 87% were unemployed, 42% have never been to school; 84% were living with an HIV-negative partner and 13% had never used condoms. The most frequent reported symptoms were abnormal vaginal discharge (44%), itching in the genital area (41%) and pain during sexual intercourse (35%). The prevalence of STIs was: NG 0.81% (3/368), CT 1.08% (4/368), MG 14.40% (53/368), TV 26.90% (99/368), bacterial vaginosis51.35% (189/368), CA 11.95% (44/368), syphilis 0% and HSV-2 79.89% (294/368)

CONCLUSIONS:
Unprotected sexual intercourse and STIs are common among women in HIV care in Burkina Faso. There is need to emphasize health education, screening and treatment of STIs among HIV-infected women

PRESENTED BY:
Bernard Sawadogo

Keywords: Women,STI screening, HIV-infected population, Prevalence
ESCAIDE REFERENCE NUMBER: 20121030

POSTER SESSION B 13.25 – 14.45 Thurs 25

Influenza

New tools available through TESSy to monitor influenza antiviral resistance in Europe

Eeva Broberg (ECDC, United Kingdom), Daniel Faensen (ECDC, Sweden), Angie Lackenby (HPA, United Kingdom), Rod Daniels (MRC-National Institute for medical Research, United Kingdom), John McCauley (MRC-National Institute for medical Research, United Kingdom),Maria Zambon (HPA, United Kingdom), Adam Meijer (RIVM, The Netherlands)

BACKGROUND:
Monitoring of influenza virus antiviral susceptibility is crucial for continuous risk assessment of circulating influenza viruses, important to inform public health stakeholders. The Community Network of Reference Laboratories for Human Influenza (CNRL) and ECDC have developed a set of influenza antiviral susceptibility analysis tools, which facilitate automated report generation.

METHODS:
The reports summarise and display genotypic and phenotypic antiviral susceptibility data. They allow monitoring of amino acid substitutions previously associated with resistance and determine outlier IC50values for the neuraminidase inhibitors and the M2 blockers by method, subtype and country. For evaluation of IC50values, outliers are identified using automatically calculated interquartile ranges and Scaled Median Absolute Deviation of the Median based on available data. If less than 10 values are available for a virus (sub)type and method in the study period, the tools automatically utilise data from the previous season.

RESULTS:
An interactive summary table on genotypic and phenotypic resistance has been made available on the ECDC web portal. The user can define the period of interest, country, influenza virus (sub)type, antiviral drug and method used for susceptibility testing. For internal use, a set of graphs displaying the distribution of IC50values has been added to the online reports available to nominated TESSy users. In the influenza season 2011/12, no influenza viruses resistant to oseltamivir or zanamivir were reported. However, all influenza type A viruses tested were resistant to M2 blockers.

CONCLUSIONS:
The newly developed tools are essential in the monitoring of antiviral susceptibility in circulating influenza viruses. They facilitate rapid analysis of antiviral susceptibility testing data, which shows that current resistance against neuraminidase inhibitors must be considered low in Europe.

PRESENTED BY:
Eeva Broberg

Keywords: Influenza Antiviral Resistance Surveillance
ESCAIDE REFERENCE NUMBER: 2012426

Poster Abstracts – Poster Session B

Low compliance with influenza outbreak recommendations in Norwegian nursing homes, season 2011-2012

Horst Bentele (Norwegian Institute of Public Health, Norway), Siri Helene Hauge (Norwegian Institute of Public Health, Norway), Berit Tafjord Heier (Norwegian Institute of Public Health, Norway), Karin Nygård (Norwegian Institute of Public Health, Norway), Jørgen Vildershøj Bjørnholt (Norwegian Institute of Public Health, Norway)

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

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

RESULTS:
Ten RTI-outbreaks (in total 120 cases) in NHs were reported. Influenza was reported as suspected causative agent in all outbreaks. Influenza was confirmed in patients from 8/10 NHs that submitted patient specimens for microbiological investigation. 8/10 NHs (100 cases) responded to the questionnaire; the vaccination coverage among the cases for seasonal influenza vaccine was 58/100 cases (58%). Two NHs had vaccinated all 24 cases while in five nursing homes 34/86 cases (40%) were vaccinated. Pneumococcal vaccination status was known in 5/8 NHs; 11/63 cases (18%) were vaccinated. 67/100 cases were given empiric antibiotics treatment irrespective of microbiological diagnosis and 7/100 cases was given antiviral treatment.

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

PRESENTED BY:
Horst Bentele

Keywords: Influenza, Disease Outbreaks, Anti-Bacterial Agents, Vaccination, Standard of Care,
ESCAIDE REFERENCE NUMBER: 2012613

Symptoms associated with influenza and RSV infections among children with acute respiratory illness in Bavaria, Germany, 2012

Hélène Englund (Bayerisches Landesamt für Gesundheit und Lebensmittelsicherheit, Germany), Wolfgang Hautmann (Sachbereich Epidemiologie, Germany), Hartmut Campe (Bayerisches Landesamt für Gesundheit und Lebensmittelsicherheit, Germany)

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

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

RESULTS:
In 2012, 116/364 (32%) and 83/358 (23%) tested specimens were positive for influenza and RSV, respectively. Compared to patients negative for both viruses (test-negatives), influenza-positives more often reported cough (89.9% vs 73.3%; p=0.001), sore throat (64.6% vs 46.0%; p=0.007) and muscle/joint pains (66.3% vs 46.0%; p=0.005). Cough (aOR 2.5, 95% CI 1.2-5.5) and sore throat (aOR 1.8, 95% CI 1.1-3.1) were independently associated with influenza infection. RSV-positives more often reported cough (95.6% vs 74.0%; p<0.001), bronchitis (49.3% vs 22.1%; p<0.001) and pneumonia (7.7% vs. 1.8%; p=0.030) than test-negatives; cough (aOR 3.8, 95% CI 1.3-10.9) and bronchitis (aOR 2.6, 95% CI 1.5-4.5) were associated with RSV infection. Comparing the two infections, patients positive for influenza reported muscle/joint pains more often (65.0% vs. 45.5%; p=0.037), whereas RSV patients more often had bronchitis (49.3% vs. 24.2%; p=0.001) and pneumonia (7.7% vs. 1.1%; p=0.033).

CONCLUSIONS:
Sore throat and muscle/joint pains in children

PRESENTED BY:
Hélène Englund

Keywords: Respiratory syncytial viruses; influenza; sentinel surveillance; signs and symptoms; diagnosis
ESCAIDE REFERENCE NUMBER: 2012656

National seasonal influenza vaccination surveys in Europe. Overview of consecutive surveys conducted by Vaccine European New Integrated Collaboration Effort (VENICE) project

Jolita Mereckiene (Health Protection Surveillance Centre, Ireland), Suzanne Cotter (EpiConcept, United Kingdom), Angus Nicoll (ECDC, United Kingdom), PL Lopalco (ECDC, United Kingdom), Fortunato D'ancona (Istituto Superiore di Sanità, Italy), Cristina Giambi (Istituto Superiore di Sanità, Italy), Daniel Levy-Bruhl (InVS, France), Luca Dematte (CINECA Consortium of University, Italy), Palle Valentiner-Branth (Statens Serum Institut, Denmark), Iwona Paradowska-Stankiewicz (NIPH-NIH, United Kingdom), Eva Appelgren (Istituto Superiore di Sanità, Italy), Darina O'Flanagan (Health Protection Surveillance Centre, Ireland)

BACKGROUND:
Of 28 responding countries, all recommend seasonal influenza vaccine to the older age groups:19 countries recommend vaccine for individuals › 65 years; nine countries have lower age cut-off (ranging from › 50 to › 60 years of age). Seven countries recommend vaccine to children. Most countries recommend influenza vaccine for clinical risk groups, pregnant women and Health Care Workers (HCWs). The reported vaccination coverage varied by country and targeted group, ranging from 1.1% – 80.6% for older age groups (n=19); to between 29.4% – 68.9% for clinical risk groups (n=5); from 14%-63.9% for HCWs (n=7); and from 3.7% – 74.8% for pregnant women (n=2). Netherlands achieved and United Kingdom almost achieved EU goal among older targeted age groups.

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

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

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

PRESENTED BY:
Jolita Mereckiene

Keywords: Influenza, immunisation, vaccination, vaccination coverage, risk groups
ESCAIDE REFERENCE NUMBER: 2012699

External Quality Assessment for human influenza detection and characterisation in Europe, 2008 and 2010/11: evaluation of results (On behalf of the members of the Quality and Training task group and the Community Network of Reference Laboratories (CNRL))

Katherina Zakikhany (1) Health Protection Agency, London; 2) The EUPHEM programme , ECDC, Stockholm, Sweden),Martine Valette (Institute de Microbiology, Lyon, France), Rod Daniels (MRC-National Institute for medical Research, United Kingdom), John McCauley (MRC-National Institute for medical Research, United Kingdom), Maria Zambon (HPA, United Kingdom), Catherine Thompson(Health Protection Agency, United Kingdom)

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

METHODS:
For the analysis, CNRL-associated laboratories from 26 different countries which participated in both EQAs were considered. EQA panels consisted of 10 coded samples containing influenza A and B viruses for rapid molecular detection and virus culture (typing/subtyping and strain determination).

RESULTS:
Twenty-nine (87.9%) laboratories returned results for both EQA panels (2008 and 2010/11). Improving trends in technical proficiency for rapid molecular detection and subtyping were observed from 2008 to 2010/11, but equally small trends in decreasing performance in virus culture proficiency were noted. Overall, 60% of participants achieved maximum scores in virus rapid detection in both years with an improvement of 7.1% in 2010/11 compared to 2008. Although most laboratories scored well in virus culture, wide-ranging capabilities for strain characterisation between laboratories were apparent.

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

PRESENTED BY:
Katherina Zakikhany

Keywords: Influenza, EQA, CNRL network
ESCAIDE REFERENCE NUMBER: 2012742

DAY 2

Poster Abstracts – Poster Session B

2011-12 seasonal influenza vaccine effectiveness against laboratory confirmed influenza hospitalisation: Pooled analysis from a European network of hospitals

Marc Rondy (EpiConcept, France), Joan Puig-Barbera (Centro Superior de Investigación en Salud Pública, Valencia, Spain), Odile Launay(Inserm, CIC BT505 , Hôpital Cochin, Paris , France), Xavier Duval (Inserm CIC 007, APHP, Hôpital Bichat, Paris, France), Jesus Castilla Catalan (Instituto de Salud Pública de Navarra, Spain), Marcela Guevara (Instituto de Salud Pública de Navarra, Spain), Simona Costanzo(Fondazione di Ricerca e Cura "Giovanni Paolo II",Campobasso, Italy), Lara Campana (.Institute of Infectious Diseases, Università Cattolica del Sacro Cuore, Rome, Italy), Alain Moren (EpiConcept, France)

BACKGROUND:
One goal of influenza vaccination strategies is to protect high-risk population from severe outcomes. Estimating the effectiveness of seasonal vaccines against influenza related hospitalisation is important to guide these strategies. To reach an appropriate sample size to estimate the vaccine effectiveness (VE) against laboratory confirmed influenza hospitalisation, we pooled data from France (seven hospitals), Italy (one hospital), Navarra region (four hospitals) and Valencia region (nine hospitals) sharing the same case-control test negative design protocol.

METHODS:
All ≥18 years hospitalised patients presenting an influenza-like illness (ILI) within seven days were swabbed. Cases were patients RT-PCR positive for influenza A (H3N2 or untyped); controls were patients negative for any influenza virus. Using logistic regression with study as a fixed effect we calculated VE adjusted for potential confounders.

RESULTS:
Overall, 1922 patients were recruited, including 600 cases. The overall VE (N=1899) adjusted for week of onset, study site, health care utilisation, chronic conditions and age was 17.4% [95%CI: -4.4;34.6] . In the target group for vaccination (N=1750) VE was 21.5% [95%CI:0.2;38.2], 52.2% [95%CI: 8.0;75.2] among those younger than 65 years and 12.3% [95%CI : -13.5;32.3] in those aged ≥65 years. Among patients swabbed less than 72 hours (N =743) following ILI onset the adjusted VE was 35.3% [95%CI: 4.8;56.1].

CONCLUSIONS:
Poor immune response in the high-risk population, imperfect match between vaccine and circulating strain, waning immunity due to a late season or a low efficacy vaccine may have contributed to the low VE. Early swabbing should be promoted to prevent false negatives in hospital settings. Further extension of this hospital network would allow more precise estimates and stratification of the VE by underlying conditions, time since vaccination, vaccine types and brands.

PRESENTED BY:
Marc Rondy

Keywords: Influenza vaccine, Effectiveness, Case control studies, Hospitalisation
ESCAIDE REFERENCE NUMBER: 2012774

Severe influenza morbidity and mortality in Scotland in the 2010/11 and 2011/12 seasons ¬differential impact caused by influenza strain types?

Arlene Reynolds (Health Protection Scotland, United Kingdom), Beatrix von Wissmann (Health Protection Scotland, United Kingdom), Rory Gunson (West of Scotland Specialist Virology Centre, United Kingdom), Jim McMenamin (Health Protection Scotland, United Kingdom)

BACKGROUND:
Health Protection Scotland (HPS) established monitoring of severe acute respiratory illness (SARI) in laboratory confirmed influenza intensive care unit (ICU) cases during the 2009 pandemic. This monitoring has continued giving an indication of the impact of the severity of seasonal influenza, to inform public health policy and monitor intensive care pressures in hospitals.

METHODS:
Information on ICU cases/deaths were reported by health boards to HPS during the 2010/11 and 2011/12 seasons. Information provided included patient demographics, clinical presentation, risk factors, immunisation history, antivirals, virology and outcome (including cause of death). The characteristics of the SARI/deaths were compared between the two seasons.

RESULTS:
Although, the number of reports received during the 2011/12 season (n=17) was substantially lower than 2010/11 (n=177) the case fatality rate was similar in both seasons (29.4% and 35.6%, respectively). The mean age of the individuals affected in 2011/12 was substantially higher (62 years, range 4-84 years) compared to the previous year (46 years, range 0-95 years). This is likely due to the fact that the dominant strain circulating in 2011/12 was influenza A H3N2 (known to predominantly affect the elderly). In both years, the majority of individuals had co-morbidities (76% & 87% respectively). One notable difference was that no SARI/deaths in 2011/12 were reported in pregnant women (compared with 5 reports in 2010/11).

CONCLUSIONS:
The age characteristics of the SARI cases/deaths for each season reflect the differential impact of the dominant influenza strain for that season. In both years the majority of cases had co-morbidities similar to that seen in the pandemic. These results highlight the importance of routine severe influenza illness monitoring in informing national public health policy.

PRESENTED BY:
Arlene Reynolds

Keywords: Influenza, SARI, ITU, morbidity, mortality, pregnancy
ESCAIDE REFERENCE NUMBER: 2012818

Characteristics of patients consulting with influenza like illness during the 2011/12 season. A report from the RCGP RSC database

Hayley Durnall (RCGP, United Kingdom), Helen Postle (RCGP, United Kingdom), Douglas Fleming (RCGP, United Kingdom)

BACKGROUND:
The RCGP Weekly returns service (WRS) collects patient linked Read coded data from a network of GPs across England and Wales on a twice weekly basis. The RCGP WRS aims to represent 1.5% of the population, well distributed throughout England and Wales. Influenza like illness (ILI) diagnoses are entered into the patient record and collected for surveillance purposes. This study examines selected characteristics of patients consulting with ILI during the 2011/12 winter.

METHODS:
The 65+ age group had 54% less odds of consulting with ILI than the 0-4 age group (p<0.001); males had 27% less odds than females (p<0.001). Overall IMD score had a significant effect on ILI consultations; patients in decile 3 were found to have 33% increased odds of an ILI consultation relative to the most deprived group. Patients with COPD had 33% increased odds compared to patients without COPD (p<0.001).

RESULTS:
All patients registered on or before 1st September 2011 were examined. The age, gender, index of multiple deprivation (IMD) grouped low to high into declies, risk status, individual risk condition and location of all patients consulting with ILI were examined. Logistic regression was used to estimate the odds ratio of reports of ILI for each of the selected characteristics, after adjustment for seasonal influenza vaccination status.

CONCLUSIONS:
Analyses such as this are necessary for each separate influenza season. This study confirms that adjustment for these characteristics is essential when studying ILI. This study also highlights the importance of databases which can provide linked patient records, like that of the RCGP research and surveillance centre.

PRESENTED BY:
Hayley Durnall

Keywords: Influenza, database, analysis. logistic models
ESCAIDE REFERENCE NUMBER: 2012942

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

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BACKGROUND:
Surveillance of influenza, acute respiratory infections (ARI) and severe acute respiratory infection (SARI) in the Moldova is made according to criteria recommended by EuroFlu.

METHODS:
Geographical spread, intensity and trend of the epidemic process, impact on health services, the dominant type/subtype of virus.

RESULTS:
During the epidemic season weeks 40/2011 – 18/2012 there were sporadic cases of influenza, caused mainly by influenza A(H3N2), with a low intensity of the epidemic process and minimal impact on medical services. Totally, during this season were registered 227 (6370/0000) influenza cases, which show a reduction of 20.0 times in morbidity over the same period of the previous season. ARI morbidity ranged from 50.40/0000(week 52/2011) to 179.3 0/0000(week 11/2012), falling below the epidemic threshold (187.00/0000), peaking (201.90/0000) at week 12/2012. From week 13/2012 morbidity has been decreasing. This season were registered 139 964 (3929.60/0000) ARI cases, which represents a reduction of 1.2 times in morbidity compared with the previous season. SARI morbidity ranged from 10.80/0000(week 40/2011) to 48.30/0000(week 3/2012) subsequently decreases successively and continuously until the end of the season. During this time had been recorded 36,932 (1036.90/0000) cases of SARI, that represent an increasing of 1.7 times in morbidity in comparison to the previous season.

CONCLUSIONS:
Improvement of influenza, ARI and SARI surveillance system connected to the WHO, ECDC requirements has allowed us to monitor the epidemiological situation in these infections, appreciation of the epidemic process trend and the spread forecast with developing control and response measures. SARI morbidity served as an argument for extending the range of population on increased risk quotas for influenza immunization for the season 2012-2013 with vaccine recommended by WHO.

PRESENTED BY:
Radu Cojocaru

Keywords: Influenza ARI SARI Surveillance
ESCAIDE REFERENCE NUMBER: 2012953

Poster Abstracts – Poster Session B

Severe Influenza cases during the 2011-12 season in Greece

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BACKGROUND:
The severe influenza monitoring system (SIMS) involves direct reporting to HCDCP of all laboratory-confirmed influenza cases admitted to ICU and/or in-hospital deaths of influenza patients. Each case is followed up daily, with a structured questionnaire, until discharged.

RESULTS:
Circulation of influenza viruses started in Greece during week 4/2012, 4 weeks later than in season 2010-11. No geographical pattern was detected. Predominant strains were influenza type B and A(H_3N_2), with 54,2% and 45,6% of positive samples, respectively. 126 laboratory-confirmed influenza cases admitted to ICU were reported (53 fatalities). 114/126 (90,5%) of cases and 49/53 (92,4%) of recorded deaths were in high risk patients with underlying comorbidities, for which annual influenza immunization is recommended. In 2009-10 we recorded 294 ICU-admitted influenza cases (149 deaths), where 197/294 (66,5%) and 131/149 (88%) of deaths belonged to high risk groups. In 2010-11 season (A(H1N1)2009pdm exclusively circulating) 368 cases required ICU care (179 deaths), where 239/368 (64%) of the cases and 144/179 (80.4%) of the fatalities belonged to high risk groups.

METHODS:
Influenza season 2011-12 was atypical all over the northern hemisphere. A sentinel surveillance system tracking ILI visits in primary care settings, operates in Greece since 2003. Since the 2009 influenza pandemic surveillance of severe ICU-admitted cases was established. This study reports on these cases during season 2011-12 in Greece.

CONCLUSIONS:
A late, milder mixed-type A and B influenza season was observed in 2011-12 season compared to the previous 2 influenza seasons. Significantly less severe influenza cases were recorded compared to the last two years of A(H1N1)2009pdm domination. This year represents more a pre-pandemic influenza season, amounting however to a significant number of fatalities in elderly high risk patients.

PRESENTED BY:
Ourania Kalkouni

Keywords: Influenza, severe, ICU
ESCAIDE REFERENCE NUMBER: 20121006

Estimates of influenza vaccine effectiveness in Hungary, 2009-10 – 2011-12: as part of a multi-centre European case control study (I-MOVE)

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BACKGROUND:
The reformulation of influenza vaccine is considered yearly to ensure its closest possible match with circulating influenza strains. Influenza vaccine effectiveness (IVE) needs to be measured annually. We conducted case control studies to estimate IVE (2009-10 – 2011-12) in Hungary in the 18+ population as part of the European I-MOVE (Monitoring IVE) project.

METHODS:
General practitioners (GPs) contributing to sentinel influenza surveillance in Hungary interviewed and collected swabs from a systematic sample of patients presenting with influenza-like illness (ILI). Cases are ILI patients laboratory-confirmed by PCR as influenza. Controls are those who tested negative for influenza. The outcome of interest is medically attended, laboratory confirmed influenza. Influenza vaccination is defined as having received one dose influenza vaccine more than 14 days before onset of symptoms. IVE is estimated as 1-OR. Logistic regression is used to adjust for possible confounding factors.

RESULTS:
In Hungary in the 18+ population IVE estimates were as follows. In 2009-10 (55 cases and 306 controls) the adjusted pandemic IVE was 79.1% (95% confidence interval (CI) 12.8-95.0). In 2010-11 (119 cases and 608 controls) the adjusted seasonal IVE was 74.8% (95% CI 16.3-92.4). In 2011-12 (252 cases and 646 controls) the adjusted seasonal IVE was -51.4% (95% CI -162.6-12.7).

CONCLUSIONS:
In 2009-10 the pandemic vaccine was effective in preventing laboratory confirmed pH1N1 illness in Hungary. In 2010-11 the trivalent influenza vaccination was effective in preventing laboratory confirmed influenza. Our 2011-12 data were compatible with low effectiveness of the trivalent influenza vaccine to prevent laboratory-confirmed influenza in the 18+ population Hungary. Hungarian data were included in the I-MOVE study to estimate IVE at European level.

PRESENTED BY:
Judit Krisztina Horvath

Keywords: Influenza, influenza vaccine, vaccine effectiveness, communicable disease control, case control studies
ESCAIDE REFERENCE NUMBER: 20121078

International Health

The first reported international microsporidial keratoconjunctivitis outbreak

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

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

RESULTS:
We identified 34 case players (attack rate: 47%) aged 9 to 16 years (median: 13) out of 73 players. Symptoms onset was between April 26 and May 22, 5 to 31 (median: 15) days after the rugby tournament. Three corneal scrapings were tested positive for Vittaforma corneae, one of the species of microsporidia by polymerase chain reaction. All players were exposed to soil and muddy water. We identified eye washing by bottled water (RR: 0.44, 95%CI: 0.25-0.76) and tap water (RR: 0.50, 95%CI: 0.27-0.92) as protective factors.

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

PRESENTED BY:
Forest Lam

Keywords: Keratoconjunctivitis, keratitis, conjunctivitis,outbreak, microsporidia, vittaforma
ESCAIDE REFERENCE NUMBER: 2012633

Capacities, Practices and Perceptions of evidence-based public health in Europe

Jonathan Latham (ECDC, United Kingdom), Andreas Jansen (ECDC, United Kingdom), Lukas Murajda (LGA Epidemiology, United Kingdom), Frode Forland (Royal Tropical Institute, Norway)

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

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

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

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

PRESENTED BY:
Jonathan Latham

Keywords: Europe Evidence, based Practice Public Health
ESCAIDE REFERENCE NUMBER: 2012641

Poster Abstracts – Poster Session B

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

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

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

RESULTS:
Of all selected GI in MSIS, 91% (8,122/8,978) were reported with known place of infection, of which 65% were notified as acquired abroad. Of these, 59% had information on both return date to Norway and date of symptoms onset, and time between travel and illness onset could thereby be assessed. Of them, 98% had a registered date of symptom onset after returning to Norway within the IP described in the literature.

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

PRESENTED BY:
Bernardo Guzman Herrador

Keywords: Surveillance Travel Shigellosis Salmonellosis Campylobacteriosis Giardiasis
ESCAIDE REFERENCE NUMBER: 2012711

Intervention Studies in Public Health

Pre-donation Screening of Volunteer Prisoner Blood Donors for Hepatitis B & C in Prisons of Central and Southern Punjab, Pakistan – An intervention to minimize the risk of infectious diseases transmission through blood transfusion

Aslam Pervaiz (Inspectorate of Prisons, Punjab, Lahore & PHOENIX Foundation, Pakistan), Noor Zaman Rafiq (PHOENIX Foundation, Pakistan)

BACKGROUND:
Prisoners as a high risk group are never recommended for blood donations. In Pakistan, prisoners are legally allowed to donate blood and get thirty days extra remission. Inspectorate of prisons allowed Alizaib Foundation for blood donation camps subject to the intervention that every volunteer prisoner blood donor will be screened against infectious diseases prior to blood donation. This study was conducted by Phoenix Foundation for Research & Development, to identify the potential benefits of this intervention.

METHODS:
Alizaib Foundation arranged 64 blood donation camps in 21 prisons of central and southern Punjab from January, 2007 to October, 2009. They collected 5cc blood sample before blood donation from each volunteer prisoner donor declared physically fit by medical officer of respective prison. Blood samples were tested for HCV&HBV by Elisa. Pre-donation screening data of each volunteer donor was maintained and analyzed by Epi-Info.

RESULTS:
A total of 5894 volunteer prisoner donors were screened and 1038 (17.6%) were rejected. All were male. The mean age was 28 years (range; 17-70 years). 96% volunteer donors were up to 40 years of age. Of 5894, 857 (14.5%) were HCV positive and 222 (3.8%) were HBV positive. HCV&HBV co-infection was present among 41(0.7%).

CONCLUSIONS:
Hepatitis B&C viruses were responsible for almost 18% prisoner blood donor rejection. Pre-donation screening of blood donors is an effective intervention to improve the safety and limit the cost of blood. Treatment of identified cases may contribute to public health. Post-donation screening for these infections lead to wastage of blood bags, problems of decontaminating and discarding infectious blood. In the international scenario this study findings necessitate the amendments in the relevant prison rules.

PRESENTED BY:
Aslam Pervaiz

Keywords: Pre-donation screening, Prisoner blood donors, Punjab, Pakistan
ESCAIDE REFERENCE NUMBER: 20121045

TB and other respiratory diseases (excluding influenza)

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

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

METHODS:
We conducted a cohort study to investigate hospitalisations for all newly-diagnosed TB patients in England notified to the Health Protection Agency between 01/01/2000 and 31/03/2008 (n=56,241). We defined a TB episode as a 24 or 12-month period from notification for Multiple Drug Resistant (MDR) and other TB respectively. Inpatient hospitalisation data (England 2000-2009), obtained from the national Hospital-Episode Statistics, were probabilistically linked to patients using identifiers, including date of birth and postcode. A TB-related hospitalisation was defined as occurring within the TB episode, with TB recorded among the first three diagnoses. Risk factors for hospitalisation including demographics, site of disease and drug resistance were analysed using multivariable Poisson regression.

RESULTS:
14,683 (26%) TB patients were hospitalised at least once during their episode. Median overnight stay was 12 days (interquartile range 6 to 23). The highest risk of hospitalisation was for those: aged over 65 (2907/8,512, 34%) (RR 2.19 (95% CI 2.00-2.40)); male (8410/30,749, 27%) (RR 1.03 (95% CI 1.01-1.07)); born in Eastern Europe (58/163, 36%) (RR 1.52 (95% CI 1.17-1.96)); living in North-East England 395/1,251, 32%) (RR 1.52 (95% CI 1.37-1.68)); with TB meningitis (385/753, 51%) (RR 2.29 (95%CI 2.09-2.50)) and with multiple drug resistance (69/114, 61%) (RR 3.70 (95%CI 3.08-4.45)).

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

PRESENTED BY:
Victoria Hall

Keywords: Tuberculosis Hospitalisation
ESCAIDE REFERENCE NUMBER: 2012463

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

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BACKGROUND:
About one million children less than15yrs develop tuberculosis (TB) annually worldwide, accounting for about 11% of all TB cases. 75% of these childhood cases occur annually in 22 high-burden countries, with Nigeria ranking 10th. According to National guidelines, diagnosis of TB in children is the responsibility of clinicians. However, availability & distribution of the clinicians is limited to secondary and tertiary health facilities, whereas approximately 80% of TB treatment centers are located within the primary health centers

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

RESULTS:
Within the period reviewed TB case notification (new smear positive and all forms) were 44863 and 94114 in 2009, 45416 and 90447 in 2010, 47463 and 93050 in 2011 respectively. Childhood TB cases accounted for 3% of all new smear positive cases notified in 2009, and maintained at 2.5% for 2010 and 2011. The proportion of childhood cases among all forms of TB was 6% by the end of 2011. Overall, the notification of TB in children among new smear positive for these period and among all forms of TB in 2011 remained low which is not unrelated to low access to clinicians/ pediatricians; capacity for diagnosis by the latter and ineffective system for contact screening.

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

PRESENTED BY:
Nkemdilim Chukwueme

Keywords: Paediatric TB, contact screening
ESCAIDE REFERENCE NUMBER: 2012673

Poster Abstracts – Poster Session B

Novel Methodological approaches for disease investigation surveillance and control

Transmission of tuberculosis from Health Care Workers to patients and co-workers. A systematic literature review.

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BACKGROUND:
Health care workers (HCWs) are at risk of becoming infected with Tuberculosis (TB), and potentially of becoming infectious themselves when they are ill.

METHODS:
To assess the magnitude of nosocomial TB transmission from HCWs to patients or co-workers, we searched 3 electronic databases -PubMed-MEDLINE, Embase, Web of Knowledge – up to May 2012 to evaluate primary studies on incidents in which a health care worker was the index case, and exposed hospital/outpatients' clinic patients and co-workers were screened.

RESULTS:
31 studies out of 1773 citations were finally included. 26 studies reported data on a single source case (individual studies) and the remaining 5 on 2-22 potential source cases (cumulative studies). In individual studies, 14,136 patients or co-workers were screened and active TB was diagnosed respectively in 3/4913 (0.06%) infants, 18/3972 (0.45%) children, and 1/3048 (0.03%) adult patients. Among 9886 screened subjects described in cumulative studies, active TB was found in 2/2030 children (0.10%), 1/3043 adults (0.03%) and 3/4612 HCWs (0.07%). Latent TB infection was diagnosed in 126/4921 (2.56%) infants, 53/5499 (0.96%) children. Among adult patients and HCWs screened, 106/3190 (3.32%) and 126/4951 (2.55%), respectively, converted.

CONCLUSIONS:
These data show that a risk of TB transmission from HCWs exists, although this risk is limited and appears to be lower than that reported for different sources/settings (e,g, household or schools). The findings illustrate the importance of maintaining regularly scheduled and appropriate testing and preventive treatment for TB infection in HCWs and the need to educate HCWs to report promptly any sign or symptom suggestive of active TB.

PRESENTED BY:
Monica Sane Schepisi

Keywords: Tuberculosis latent tuberculosis health personnel infectious disease transmission, professional-to-patient
ESCAIDE REFERENCE NUMBER: 2012831

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

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

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

RESULTS:
Of 84 participants, 56 (67%) reported at least one ARI episode. Self-swabbing was highly accepted by the participants. Most participants reported that self-swabbing was easy to perform. The amount of b-actin DNA per swab was higher in the self – than in the staff-collected swabs ($p=0.008$). b-actin concentration was higher in the nasal self-swabs collected at home on a subsequent day than in those collected on day 1 ($p<0.0001$). A respiratory viral pathogen was detected in ~31% (23/75) of staff – and in ~35% (26/75) of self-collected swabs ($p=0.36$). With both approaches, the most frequently identified pathogens were human rhinoviruses A/B/C (9/75 swabs, 12%) and human coronavirus OC43 (4/75 swabs, 5%). There was nearly perfect agreement between self – and staff-collected swabs in terms of pathogen detection (agreement=93%, kappa=0.85, $p<0.0001$).

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

PRESENTED BY:
Manas Akmaov

Keywords: Acute respiratory infections, sensitivity and specificity
ESCAIDE REFERENCE NUMBER: 2012589

Development of an online Library of Incident and outbreak investigations: A new tool to support field investigations and the evidence-base, England, UK, 2012

Petra Matulkova (Health Protection Agency South West England, United Kingdom), Isabel Oliver (Health Protection Agency, United Kingdom), Esam Gharish (Health Protection Agency South West England, United Kingdom), Mark Reacher (Health Protection Agency East of England, United Kingdom), Sam Organ (Health Protection Agency South West England, United Kingdom), Maya Gobin (Health Protection Agency, South West Region, United Kingdom)

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

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

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

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

PRESENTED BY:
Petra Matulkova

Keywords: Library Outbreak / Incident Online Report Evidence, base
ESCAIDE REFERENCE NUMBER: 2012639

Perceived barriers, knowledge and attitude in relation to access to institutional delivery among rural community members – Tanzania, 2011

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BACKGROUND:
Maternal mortality is a great challenge in Tanzania. The Tanzania Demographic and Health Survey 2004/05 and 2009/10 estimated Maternal Mortality Ratio as 578 and 434 per 100,000 live births, respectively. These estimates are unacceptably high, which necessitate efforts to address the perceived barriers to safe motherhood. We collected information on perceived barriers, knowledge and attitudes related to institutional delivery among community members in Shinyanga rural district.

METHODS:
We combined quantitative and qualitative methods of data collection. In a community-based cross-sectional survey, a structured questionnaire was used to interview women. Focus Group Discussions involved 40 Traditional Birth Attendants and 20 men. Epi Info version 3.5.1 was used for quantitative data entry and analysis. Qualitative data were analyzed through reviewing notes and transcripts and identifying common themes.

RESULTS:
From 600 households, 595 women responded to the survey (99.2% response rate). Of these, 467 (78.5%) were married, and 562 (94.5%) had attended antenatal care clinic at least once. Of the 116 respondents who delivered at home, 48 (41.4%) gave "easy labour" as the reason and 42 respondents (36.2%) feared high costs from health facilities which, they perceived, offered poor services. Women who had completed primary school were more likely to be knowledgeable about pregnancy-related danger signs (OR: 1.76, 95%CI 1.23-2.53, $p=0.001$). Husbands were reported to be harsh and uncooperative with their wives in matters related to antenatal care and delivery.

CONCLUSIONS:
Educational level and husbands' cooperation were major factors in accessing institutional delivery. Primary education should be a priority for females. Men should be empowered with knowledge on importance of institutional delivery. Community education should emphasize the fact that maternal health and delivery services are offered at no cost to women.

PRESENTED BY:
Azma Simba

Keywords: Antenatal care, maternal mortality, Tanzania, institutional delivery
ESCAIDE REFERENCE NUMBER: 2012715

DAY 2

Poster Abstracts – Poster Session B

Short illustrated multi-lingual educational booklets: Learning key epidemiological concepts the fun way

Esther Kissling (Epiconcept, France), Marta Valenciano (EpiConcept, France), Marc Rondy (EpiConcept, France), Curtis Broderick (EpiConcept, France), Alain Moren (EpiConcept, France)

BACKGROUND:
Training in epidemiology is conducted worldwide for public health professionals from a variety of backgrounds and with different levels of knowledge. Epidemiological concepts can be difficult and it is helpful to have concise, easy to read and user-friendly reference material.

METHODS:
We created two educational booklets on basic principles of epidemiology, one on "measures of disease occurrence and effect" and one on "epidemiological study design". The booklets encompass 20 and 24 pages respectively and are interspersed with cartoons featuring amusing re-occurring characters. Levels of knowledge in epidemiology vary across characters. Difficult learning points are emphasised both in text and in cartoons. Study questions with solutions are available for one of the booklets. Booklets are currently available in French and English free of charge.

RESULTS:
The booklets were used in two trainings: in the Indian Ocean region (21 participants), and in a ECDC course for the Mediterranean countries (22 participants). They were very popular and more copies were requested for colleagues of training participants. Participants gave a very positive evaluation of the cartoons and have since used them as a reference upon returning to work. A moustachioed Frenchman with glasses was a particularly favourite character. Translations into other languages were requested.

CONCLUSIONS:
Educational cartoon booklets are a useful supplement to epidemiology training. They provide a fun summary of the training and a quick reference tool to reinforce potentially difficult key concepts. It may be useful to include these booklets at no cost in further epidemiology trainings and potentially translate them into further languages. Future booklets are planned on stratification, alternative study design and introduction to biostatistics.

PRESENTED BY:
Esther Kissling

Keywords: Education; Epidemiology; Teaching; Books, Illustrated
ESCAIDE REFERENCE NUMBER: 2012762

Establishing a national Field Epidemiology Service in England

Janet McCulloch (Health Protection Agency (South West), United Kingdom), Catherine Quigley (Health Protection Agency, North West Region, United Kingdom), Paul Cosford (Health Protection Agency , United Kingdom), Isabel Oliver (Health Protection Agency, United Kingdom)

BACKGROUND:
A review of epidemiology in the Health Protection Agency (HPA) recommended the strengthening of the function across the Agency, including establishing: Clear leadership roles A national, geographically dispersed field epidemiology service operating to uniformly high standards Professional esprit do corps amongst epidemiologists, Field epidemiology training programme

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

RESULTS:
We are implementing a new nationally managed and geographically dispersed field epidemiology service as part of Public Health England, whose key functions are: Analysis and interpretation of surveillance information to identify changes in epidemiology Field investigations and response to outbreak and incidents requiring public health action Rapid research and development to assess and develop the evidence base to inform public health action Development and monitoring standards Training and development The following have been established: A draft service specification including standards A network of epidemiology staff across the agency A searchable library of outbreak/incident reports and a common approach to use of applications/tools A web-based tool to map capacity and skills

CONCLUSIONS:
While this is work in progress, and is being undertaken at a time of major organisational change, it is an exciting opportunity for the development of a well coordinated, efficient and effective service. Evaluation of the service will help us to ensure the service is meeting its ambitious goals.

PRESENTED BY:
Janet McCulloch

Keywords: Epidemiology Public Health Professional competence Quality Improvement
ESCAIDE REFERENCE NUMBER: 2012830

Use of log-binomial regression in the cohort studies

Katri Jalava (National Institute for Health and Welfare, Finland), Jyrki Möttönen (University of Helsinki, Finland), Jukka Ollgren (National Institute for Health and Welfare, Finland)

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

METHODS:
For the log-binomial model, egg mayonnaise RR 6.6 (2.2-19.7), garlic salad RR 6.1 (1.6-19.9). and rice salad RR 6.5 (2.2-19.0) were significant in the barbeque study, tiramisu RR 24.5 (11.1-89.3) was the only significant variable in the tiramisu study. The logistic regression identified coleslaw OR 3.3 (1.2-9.5) and tiramisu OR 66.3 (23.0-235.2) for barbeque and tiramisu studies, respectively.

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

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

PRESENTED BY:
Katri Jalava

Keywords: Cohort studies, linear models, regression analysis, risk
ESCAIDE REFERENCE NUMBER: 2012884

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

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

METHODS:
In the 2011-2012 season, 568 samples were collected from outpatients with influenza-like illness (ILI) and analysed. The hemagglutinin (HA) gene of 42 A(H3N2) viruses was analysed both byMaximum-Likelihood method and Tamura¬3-parameter model using MEGA package, and by a Bayesian framework using Markov-Chain Monte Carlo method in BEAST program.

RESULTS:
The 2011-2012 epidemic wave was sustained almost exclusively by influenza A(H3N2) viruses, (87.2% of total detection), predominating over influenza B viruses by a 7-fold margin. The consultation rates for ILI in the age group ›65 years were 1.5 to 6-fold higher than those registered during the previous eight epidemics. The phylogenetic analysis showed A(H3N2) viruses belonging to A/Victoria/208/2009 genetic clade, characterized by substitutions in HA antigenic sites with respect to 2011-2012 vaccine strain. About 1/3 of sequences fell into group 6 (A/Iowa/19/2010-like) and2/3 into group 3 – subdivided into 3A (A/Stockholm/18/2011-like), 3B (A/England/259/2011-like) and 3C (A/HongKong /3969/2011-like). The time scale reconstruction of the phylogeny showed several independent introductions of A(H3N2) groups between summer and winter of 2011. However, the common origin of all circulating A(H3N2) strains dates back to the 2009 pandemic period (November 2009).

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

PRESENTED BY:
Elena Pariani

Keywords: Influenza A virus, epidemiology, genetic drift, time-scaled phylogeny, viral evolution.
ESCAIDE REFERENCE NUMBER: 2012887

DAY 2

Poster Abstracts – Poster Session B

Determination of the vpidemic thresholds of Influenza by using the Sentinel Influenza Laboratory Surveillance Data

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BACKGROUND:
In Turkey, a sentinel influenza surveillance system has been implemented since 2004. A threshold for determining the start of influenza epidemic has not been established. Such a threshold is important for preparedness, early detection and monitoring the outbreaks, and evaluation of the effectiveness of control measures.

METHODS:
We used data for influenza A and B diagnosed between Week 1, 2010 and Week 20, 2012, and to establish the baseline and the epidemic thresholds. We determined the aberration values in weekly case counts using the one-sided positive CUSUM algorithm. We chose the 15th percentiles as the cutoff values; values above this threshold were taken out. In the periodic regression model, we identified the linear trend and periodic components using ANOVA, with 95% confidence interval.

RESULTS:
In a retrospective analysis of the sentinel surveillance data, we determined that active influenza epidemics occurred during Week 52 of 2010 and Week 48 of 2011 (adjusted R^2=0.67). This finding was compatible with that using the CUSUM algorithm, which identified C1C2C3 signals on 02 January 2011 (Week 52) and 27 November 2011 (Week 47). We predicted that a seasonal increase will occur at Week 52 of the 2012-2013 influenza season. The baseline levels and influenza thresholds were determined till Week 24, 2013 (adjusted R^2=0.90).

CONCLUSIONS:
We used the periodic regression method to successfully establish a threshold for detecting influenza epidemic, and for identifying and monitoring extraordinary seasonal influenza activities. We recommend that this model be incorporated in the influenza surveillance system in Turkey.

PRESENTED BY:
Ali Goktepe

Keywords: Influenza, outbreak, early detection, threshold
ESCAIDE REFERENCE NUMBER: 2012892

Bacterial whole genome sequence data for epidemiological analysis

Rebecca. A. Gladstone (University of Southampton, United Kingdom), Johanna. M. Jefferies (University of Southampton and University Hospital Southampton Foundation NHS Trust, United Kingdom), Saul. N. Faust (University of Southampton, University Hospital Southampton Foundation NHS Trust, Turkey), Stephen Bentley (Wellcome Trust Sanger Institute, United Kingdom), Stuart. C. Clarke (University of Southampton, University Hospital Southampton Foundation NHS Trust and HPA, United Kingdom)

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

METHODS:
Pneumococci were isolated from the nasopharynx of children ≤4 years old in a hospital outpatients department during winters 2006/7-2008/9. 528 pneumococcal isolates were whole genome sequenced using the Illumina HiSeq 2000 platform. Automated pipelines, software and scripts from the Sanger Institute were used to analyse the sequences. Pneumococcal serotype, MLST and Pneumolysin toxin (Ply) allele were determined from the whole genome sequence data.

RESULTS:
MLST performed using whole genome data reproduced conventionally assigned STs in 100% of cases. There were no incidences of in-silico serotype PCR false positives.In-silicoanalysis corrected 23 PCR-serotype false positives and 4 PCR-serotype false negatives. Twenty different Ply protein alleles including 9 novel protein alleles were detected, eight previously recognised Ply protein alleles were not observed in this population.

CONCLUSIONS:
Conventional typing results were successfully reproduced from whole genome sequences. Determining serotype and Ply type from sequence data has the capacity to increased specificity and sensitivity to traditional PCR genotypic methods. Whole genome sequence data are rich data sources offering genetic depth which can be utilised to perform multiple investigations from single data sets. Next generation sequencing data and bioinformatics have the potential to replace some traditional genotypic methods and investigate genetic diversity in relation to clinical phenomena.

PRESENTED BY:
Rebecca. A. Gladstone

Keywords: High, Throughput Nucleotide Sequencing Streptococcus pneumoniae Pneumococcal Vaccines Asymptomatic Infections
ESCAIDE REFERENCE NUMBER: 2012994

Outbreaks

A local outbreak of infections with EHEC-O157:H7 associated with the consumption of meat products, June 2012, Limburg, Belgium.

Braeye Toon (Institute of Public Health, Belgium), Sarah Denayer (Scientific Institute of Public Health, Brussels, Belgium, Scientific service Foodborne Pathogens, Belgium), Anmarie Forier (Department of Infectious Disease Control, Limburg, Belgium), Jurgen Verluyten (Federal Agency for Safety of the Food Chain., Belgium), Klara De Rauw (Belgian Reference Laboratory for VTEC/STEC, Universitair Ziekenhuis Brussel, Belgium), Katelijne Dierick (Scientific Institute of Public Health, Brussels, Belgium, Scientific service Foodborne Pathogens, Belgium), Nadine Botteldoorn (Scientific Institute of Public Health, Brussels, Belgium, Scientific service Foodborne Pathogens, Belgium), Sophie Quoilin (Scientific Institute of Public Health, Belgium), Pascale Cosse (Federal Agency for Safety of the Food Chain, Belgium), Denis Pierard (Belgian Reference Laboratory for VTEC/STEC, Universitair Ziekenhuis Brussel, Belgium)

BACKGROUND:
On 5th June 2012, the department infectious disease control Limburg and the Federal Agency for Safety of the Food Chain (FASFC) were informed of several simultaneous, and therefore unusual, EHEC-0157:H7-cases.

METHODS:
Simultaneously a case-control study and a trace-back investigation were conducted. A case was defined as anyone with a confirmed EHEC O157:H7-infection and all reported bloody diarrhoea – or HUS-cases with an epidemiological link. Controls for the case-control study were selected in the direct neighbourhood of the cases and matched for age, gender and family composition. Meat products were traced back using specific reference codes (Sanitel numbers).

RESULTS:
On 4/07/2012; the outbreak involved 24 cases, of which 18 were laboratory-confirmed. Fifteen patients were hospitalized. Four patients developed HUS, two children and two middle-aged women. In the case-control study 11 cases were compared to 65 controls. Consumption of the raw meat product, “steak tartare” was significantly higher in cases OR 48.12 (95% CI; 5.62-416.01). Furthermore cases were more likely to buy their meat-products in certain butcheries OR 11.67 (95% CI; 1.41–96.49). Molecular typing confirmed the link between cases and contaminated meat. The meat could be traced back to the slaughterhouse and more specifically to minimum two different carcasses slaughtered on the same day.

CONCLUSIONS:
An outbreak of bloody diarrhoea and hemolytic-uremic syndrome (HUS) caused by Escherichia Coli O157:H7 occurred in North-East Limburg. Both the epidemiological survey and the microbiological analysis led to contaminated beef meat as origin of the outbreak. The meat could be traced back to the slaughterhouse where multiple carcasses could be identified, contaminated with an EHECO157:H7 identical to the one found in the stool of the cases.

PRESENTED BY:
Toon Braeye

Keywords: Escherichia coli O157, foodborne diseases, disease outbreak, meat products
ESCAIDE REFERENCE NUMBER: 2012637

An outbreak investigation of visceral leishmaniasis among residents of Dharan town,eastern Nepal, evidence for urban transmission of Leishmania donovani

Surendra Uranw (BP Koirala Institute of Health Sciences, Dharan, Nepal), Epco Hasker (Institute of Tropical Medicine, Antwerp, Belgium), Lalita Roy (BP Koirala Institute of Health Sciences, Dharan, Nepal), Filip Meheus (Institute of Tropical Medicine, Antwerp, Belgium), Murari Lal Das (BP Koirala Institute of Health Sciences, Dharan, Nepal), Narayan Raj Bhattarai (BP Koirala Institute of Health Sciences, Dharan, Nepal), Suman Rijal (BP Koirala Institute of Health Sciences, Dharan, Nepal), Marleen Boelaert (Institute of Tropical Medicine, Antwerp, Belgium)

BACKGROUND:
Visceral leishmaniasis (VL) is a predominantly rural disease, common in the low lands of eastern Nepal. Since 1997 VL cases have also been reported among residents of the city of Dharan. Our main research objective was to find out whether there had been local transmission of VL inside the city.

METHODS:
We conducted an outbreak investigation including a case-control study; cases were all urban residents treated for VL between 2000 and 2008 at BPKIHS hospital in the city. For each case, we selected four random controls, with no history of previous VL; frequency-matched for age. Cases and controls were interviewed on the main exposures of interest; a binominal multilevel model was used to analyze the data. We also collected entomological data from all neighborhoods of the city.

RESULTS:
We enrolled 115 patients and 448 controls. Cases were strongly clustered, 70% residing in 3 out of 19 neighborhoods. We found a strong association with socio-economic status, the poorest being most at risk. Housing was a risk factor independent from socio-economic status, most at risk were those living in thatched houses without windows. ‘Sleeping upstairs’ and ‘sleeping on a bed’ were strongly protective, OR of 0.08 and 0.25 respectively; proximity to a case was a strong risk factor (OR 3.79). Sand flies were captured in all neighborhoods; presence of L. donovani could be demonstrated by PCR.

CONCLUSIONS:
The evidence found in this study is consistent with transmission of anthroponotic VL within the city. The vector P. argentipes and the parasite L. donovani have both been identified inside the town. These findings are highly relevant for policy makers; appropriate surveillance and disease control measures must be adopted.

PRESENTED BY:
Surendra Uranw

Keywords: Kala-azar, visceral leishmaniasis, risk factor, outbreak, disease transmission, sand fly infection, Nepal
ESCAIDE REFERENCE NUMBER: 2012652

DAY 2

Poster Abstracts – Poster Session B

Incorporating uncertainty into logistic regression models to explore the relative role of sensitivity and specificity of case definitions in a cohort study.

Nicholas Young (HPA, United Kingdom)

BACKGROUND:
The use of a robust clinical case definition is central to any epidemiological study, requiring a balance between sensitivity and specificity to produce statistically valid results. The aim of this study is to use statistical models incorporating uncertainty to explore the relative importance of sensitivity and specificity in defining cases in a cohort study of food-borne illness.

METHODS:
Using published data from an outbreak of Campylobacter this study used a statistical program to incorporate values of sensitivity and specificity into logistic regression algorithms, allowing estimation of the degree of uncertainty in exposure outcome associations. The effect of changing sensitivity and specificity on uncertainty, as estimated by the p-value for associations, was calculated.

RESULTS:
In the original study a clinical case definition of either diarrhoea or abdominal pain and fever in those that ate at a particular venue after a specific date was used. Consumption of chicken salad was associated with an increased risk of illness (Relative Risk 2.3(95%CI 1.3-4.1; p=0.002). Assuming 100% specificity of the case definition used in the outbreak study this modelling study is able to show that uncertainty for the association between chicken salad and illness would increase such that the p-value would be ›0.01, ›0.05 and ›0.1 for a new case definition specificity of 90%, 86% and 84% respectively. The findings of the outbreak study are much more robust to changes in sensitivity, such that the p-value is ›0.01, ›0.05 and ›0.1 only when values of 52%, 48% and 47% are reached.

CONCLUSIONS:
This study uses statistical modelling to demonstrate the importance of specificity over sensitivity of the case definition in reducing uncertainty in a cohort study following a campylobacter outbreak.

PRESENTED BY:
Nicholas Young

Keywords: Sensitivity and Specificity Logistic Models Outbreaks Cohort studies
ESCAIDE REFERENCE NUMBER: 2012677

International outbreak investigation of Salmonella Heidelberg associated with in-flight catering, July 2011: The importance of international communication networks

Javiera Rebolledo (ECDC/HPSC, Ireland), Patricia Garvey (HPSC, Ireland), Martin Cormican (NSSLRL, Ireland), Corien Swaan(National Institute for Public Health and the Environment, The Netherlands), Barbara Schimmer (National Institute for Public Health and the Environment, The Netherlands), Karin Nygård (Norwegian Institute of Public Health, Norway), Annick Lenglet (ECDC, Sweden), Paul McKeown (HPSC, Ireland)

BACKGROUND:
The source of infection of travel-related diseases may be difficult to identify and assess accurately. Infection may be acquired at travel destinations but also on-board flights. In July 2011, an outbreak of Salmonella Heidelberg was identified among an Irish travel group with symptoms onset two days after returning from Tanzania. Additional international cases on-board the same flight were subsequently identified. We investigated the outbreak to determine if the infection occurred on-board the flight and to identify potential vehicles of infection.

METHODS:
Case finding was performed through international communication networks and national surveillance systems. Pulsed-Field Gel Electrophoresis (PFGE) profiles were also shared through these networks for comparison. To collect demographic, clinical and food history information, we used a common questionnaire with images of on-board meals. We defined cases as confirmed (same PFGE pattern), probable (Salmonella species confirmed) and possible (epidemiologically-linked). We conducted a retrospective cohort study among passengers nominated by identified cases and computed Attack Rates and Relative Risk with 95% Confidence Intervals (CIs).

RESULTS:
Eighteen confirmed, one probable and six possible cases were identified from Ireland, Netherlands, Norway, US and Canada. No food consumed before the flight was associated with illness. Those who consumed the milk-tart or egg-dish served on-board were 2.82 (95%CI: 1.03;4.53) and 2.05 (95%CI: 1.00;4.07) times more likely to become ill, respectively, than those who did not.

CONCLUSIONS:
Our results indicate the milk-tart and/or egg-dish served on-board as the likely vehicles of infection. Rapid and wide dispersal of passengers after flights makes identification and investigation of flight-related outbreaks challenging. Timely, committed international collaboration and the usefulness of experts' communication networks/channels are of paramount importance in such investigations, facilitating information sharing and identification of outbreak-related cases.

PRESENTED BY:
Javiera Rebolledo

Keywords: Salmonella, food-poisoning, in-flight catering, aircraft, travel
ESCAIDE REFERENCE NUMBER: 2012703

Dengue Fever (DF), a High Morality Outbreak Investigated in Samanabad Town Lahore,Pakistan – October-November, 2011

Shoaib Hassan (Health,Pakistan)

BACKGROUND:
DF, is emerging infectious mosquito-borne viral illness with high mortality due to complications while rapid transmission makes it leading public health concern. In August-November, 2011, Lahore, Pakistan faced DF epidemic with high morbidity and mortality. To reveal DF outbreak's responsible factors and prevent future epidemics, we conducted a study in Samanabad town, Lahore, Oct-Nov, 2011.

METHODS:
Of 37 deaths in the town, we enrolled 31 as cases to conduct case-control study. Case defined as a death attributed to DF during August-November, 2011 in Samanabad. To interview deceased's (cases) family members and controls, identical structured questionnaire was used. Age and sex matched controls were selected from the neighborhood with ratio of 1:3. Risk factor analysis was performed in EpiInfo software version7®.

RESULTS:
Most cases were male (67%) and median age 40 years (range 15-80 years). Case fatality rate was 3.45% with average length of hospital stay 2.5 days. Consecutive cases' peaks were from weeks 37-42. Factors association for standing water (breeding sites) found in flower pots, bird feeders, and disposed cans had OR 3.16 (95% CI 1.25-7.98, p‹0.05), OR 2.5 (95% CI 1.05-6.18, p‹0.05) and OR 3.6 (95% CI 1.4-9.14, p‹0.05) respectively. Using mosquito nets and repellants had protective association OR 0.15 (95% CI 0.04-0.5 p‹0.05) and OR 0.2 (95% CI 0.08-0.52, p‹0.05) respectively.

CONCLUSIONS:
Presence of mosquitoes breeding sites around house and lack of preventive measures were major associations found. With DF awareness campaigns already in place, to strengthen eradication of mosquito breeding sites, vector surveillance activities with entomologists as part of environmental approach to outbreak response was implemented and continued until outbreak's end. Moreover DF prevention and control program establishment is under implementation to tackle this emerging issue.

PRESENTED BY:
Shoaib Hassan

Keywords: Mosquito-borne, Breeding, Flower Pots, Birds feeders
ESCAIDE REFERENCE NUMBER: 2012760

Outbreak of Clostridium perfringens associated with beef mince

Thomas Inns (Health Protection Agency, United Kingdom), Russell Gorton (Health Protection Agency, United Kingdom), Peter Acheson(Health Protection Agency, United Kingdom)

BACKGROUND:
On 7 June 2012, the Health Protection Agency (HPA) received reports of gastrointestinal illness at a residential care home in the Teesside area. Initial microbiology and descriptive epidemiology indicated that illness was caused by Clostridium perfringens. An analytic study was undertaken to investigate suspected food sources.

METHODS:
A retrospective cohort study was undertaken. Residents were interviewed to obtain food histories and kitchen staff interviewed to obtain food preparation details. Cases were defined as residents who reported gastrointestinal illness between 6 and 10 June. Data were entered using EpiData 3.1 and analysed using Stata v11.2.

RESULTS:
In total, 43 residents were included in the cohort. Gastrointestinal illness was reported by 15 (35%), of whom 5 were confirmed as having C. perfringens infection. Peak onset of illness was 7 June. Common symptoms were diarrhoea (100%), abdominal pain (20%) and vomiting (20%). Mean symptom duration was 2.8 days (range 1-7). In the univariate analysis mince juices (Risk Ratio (RR) =10.63, 95% Confidence Interval (CI) = 1.53-73.86, Exact p=0.001), mushy peas (RR=10.93, 95% CI= 1.57-76.13, Exact p=0.001) and mashed potato (RR=5.4, 95% CI= 1.37-21.26, Exact p=0.008) consumed on 6 June were significantly associated with illness. Stratification showed that once exposure to meat juices was adjusted for, mushy peas and mashed potato were no longer significantly associated with illness.

CONCLUSIONS:
This study provided strong evidence that illness was associated with eating mince juices initially cooked on 4 June and served in the form of mince & vegetable pie and/or gravy on 6 June. In combination with microbiological and environmental findings, these study results were used to provide an evidence base for public health actions.

PRESENTED BY:
Thomas Inns

Keywords: Clostridium perfringens Disease Outbreaks Cohort Studies
ESCAIDE REFERENCE NUMBER: 2012766

DAY 2

Poster Abstracts – Poster Session B

Nationwide outbreak of Salmonella Poona associated with infant formula, Spain, 2010-2011.

Silvia Herrera León (Institut of Health Carlos III. National Center for Microbiology., Spain), Laura Herrera-Leon (1) ISCIII. National Center for Epidemiology. (2) ISCIII. National Centero for Microbiology., Spain), Isabel Martinez-Pino (ISCIII. National Center for Epidemiology., Spain), Carmen Varela (ISCIIII. National Center for Epidemiology, Spain)

BACKGROUND:
In December 2010, the National Reference Laboratory (NRL) reported a cluster of an outbreak strain (OS) of Salmonella Poona mainly in children under one year old. Microbiological and epidemiological investigations were initiated to identify the source of the outbreak, implement control measures and prevent further spread.

METHODS:
Nationwide, microbiological laboratories isolating Salmonella strains (from children under 1 year old, OMB group or serogroup G depending of serotyping capabilities) were asked to send them to the NRL. In addition, food samples were also analyzed. Characterization was performed sequentially by sero- and antibio-typing and pulsed-field gel electrophoresis (PFGE). A case-control study was conducted comparing each case with two matched control recruited in the same hospital, with same age, without gastrointestinal symptoms and without exclusive breastfeeding. A case was defined individual under 1 year old with laboratory-confirmed S. Poona pulse-type 1 infection.

RESULTS:
From January 2010 to July 2011, 289 out of 408 isolates corresponded to confirmed cases and 33 to infant milk samples. Slight variations in the PFGE and antimicrobial resistance patterns were found among the OS. Descriptive studies pointed out that consumption of infant formula could be the source. Results of the case-control study confirmed a strong association between consumption of milk brand A and brand B [OR: 101 (95% CI: 18.4 -∞)] and disease. The paired analysis of the data using conditional logistic regression showed no other exposure associated with disease.

CONCLUSIONS:
Microbiological and epidemiological investigations identified infant milk formula as the outbreak vehicle. To prevent further spread, milk formula was withdrawn from the market. During long duration outbreaks, epidemiological support is essential to consider strains differing in molecular epidemiological markers as belonging to the OS.

PRESENTED BY:
Silvia Herrera Leon

Keywords: Salmonella, diseases outbreaks, infant formula.
ESCAIDE REFERENCE NUMBER: 20121001

Tracking down the source of an ongoing outbreak of Legionnaire's disease, Fafe, Portugal2011/12: Close, but not there yet.

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BACKGROUND:
An outbreak of Legionaire's disease has been ongoing in the municipality of Fafe in the north of Portugal since the first case developed symptoms on 26/11/2011. We initiated a case control study as part of an outbreak investigation to identify the source and prevent further cases.

METHODS:
We defined a case as a Fafe resident with atypical pneumonia and a positive urinary antigen test, serology, or culture. We frequency-matched cases on age, sex, and parish with controls (at least 2 per case). In April-June 2012, we interviewed participants regarding their itinerary in the two weeks preceding the interview. We defined exposure as passing through a 200m radius zone around 46 potential sources. We calculated odds ratios (OR) and population attributable fraction (PAF).

RESULTS:
Between October 2011 and June 2012, 22 cases were notified (median age: 60 years, 21% females, 2 deaths), with a peak (n=15) in week 3-6 of 2012 and the 2 last cases in June. Cases clustered in Fafe town (50%). The 17 cases and 48 controls did not significantly differ in terms of exposure to potential sources. However, of 15 sources with an OR› 2.0, the PAF for the 9 sources in the centre of Fafe (range: 43%-76%) were higher than those of the 6 sources in the periphery (range: 7.9%-12.6%).

CONCLUSIONS:
Potential sources of Legionella infection in Fafe town centre would explain more cases than those in the periphery and should be considered for further environmental investigation and control measures. However, close proximity between these sources prevented the identification of a single one.

PRESENTED BY:
H.C.C. de Jonge

Keywords: Legionnaires', Disease Infectious Disease Outbreak Case-Control Studies
ESCAIDE REFERENCE NUMBER: 20121013

Hepatitis A outbreak in Lanchkhuti, Georgia June-September 2011

Archil Navdarashvili (National Center for Disease Control and Public Health, Georgia), Khatuna Zakhashvili (National Center for Disease Control and Public Health, Georgia), Rusudan Clikadze (National Center for Disease Control and Public Health, Georgia), Nato Menagarishvili (Lanchkhuti Public Health Center, Georgia)

BACKGROUND:
On Jun 21st 2011 Georgia's National Centers for Disease Control (NCDC) learned of 10 patients with hepatitis symptoms occurring since June 16th in Lanchkhuti, Georgia. We investigated to verify an outbreak, detect the possible source and implement control measures.

METHODS:
We conducted a case-control study. Suspect hepatitis A (HA) case-patients were identified from surveillance reports. Controls were recruited from neighboring households of case-patients with at least one child under 14 years-old, and no history of HA. We used a standardized questionnaire to assess three potential exposures: centrally piped water, individual well water, and food (prepared inside or outside home). We analyzed the first 30 cases separately to assess water and food exposures. We collected blood samples from new patients detected after June 21; HA was confirmed by ELISA IgM (NCDC).

RESULTS:
We interviewed 141 persons (54 cases, 87 controls). All case-patients met probable case definition (two were detected during control household interviews), eight had lab-confirmed HA. Fifteen case-patients (28%) were 6-14 years old, the remaining were 15+ years of age; 26 (48%) were females. Drinking water from centralized system was associated with disease for the first 30 reported cases (OR=3.2, 95%CI (1.1-9.6). Among subsequent cases, contact with persons probably infected with HA was the only risk factor (OR=11.2,95% CI (2.6-47.7)). Central water supply was interrupted for reservoir repair in the period of probable contamination.

CONCLUSIONS:
HA outbreak was most likely due to contamination of centralized water system during recent repair. We advised to boil water before drinking and close street drinking water sources. Person-to-person transmission occurred for three months following the initial 30 cases. No water samples from time of initial exposure were available for analysis.

PRESENTED BY:
Archil Navdarashvili

Keywords: Hepatitis, outbreak, water supply, Georgia
ESCAIDE REFERENCE NUMBER: 20121022

Outbreak of Meningococcal Meningitis – Harenabuluk District, Southeastern Ethiopia,

Gole Ejeta Yembo (Ethiopian Health and Nutrition Research Institute, Ethiopia), Fikre Bulti (Oromia Regional Health Bureau, Ethiopia), Daddi Jima Wayessa (Ethiopian Health and Nutrition Research Institute, Ethiopia)

BACKGROUND:
Ethiopia is one of the Sub-Saharan meningitis belt countries experienced the recent meningococcal meningitis outbreak in 2009. In March 2011, Harenabuluk District began detecting increasing numbers of meningococcal meningitis cases in Makenagobele locality; which is not considered as traditional meningitis belt areas of Ethiopia. We investigated the risk factors for meningitis infection in this locality.

METHODS:
We conducted an unmatched case -control study. A case was an individual who resided in Mekenagobele from 17 March-2 February 2011 and was treated for meningococcal meningitis. The controls were the neighbor of each case who did not suffer from meningitis. A structured questionnaire was used to collect information from cases and controls. Using univariable and multivariable unconditional logistic regression, we compared exposures for meningitis infection.

RESULTS:
We investigated 49 cases and 49 controls. The univariate analysis identified 9 risk factors. In multivariable model, attendance at Koran teaching place (odd ratio [OR] = 6.1, 95% confidence interval [CI] =2.5-15.2), having no ventilation (OR= 6.7, 95% CI: 2.7-16.6), living in one house with more than four peoples (OR=3.9, 95% CI: 1.6-11), having kitchen in the living room (OR= 5.3, 95% CI: 2-13) were associated.

CONCLUSIONS:
These findings are in agreement with the major risk factors responsible for meningococcal meningitis outbreak repeatedly occurs outside of African meningitis belt. In this condition, the epidemiology of meningococcal disease varies geographically and in time and the risk of acquiring the disease varies regionally, as well as with living conditions and behavior. Therefore, community health education is recommended.

PRESENTED BY:
Gole Ejeta Yembo

Keywords: Meningitis Meningococcal South eastern Ethiopia 2011
ESCAIDE REFERENCE NUMBER: 20121023

Poster Abstracts – Poster Session B

Large outbreak of gastroenteritis in Italy, April 2012, caused by an unusual agent: enteroinvasive Escherichia coli (EIEC)

Martina escher (Istituto Superiore Di Sanita, Italy), Gaia Scavia (Istituto Superiore Di Sanita, Italy), Stefano Morabito (Istituto Superiore Di Sanita, Italy), Rosangela Tozzoli (Istituto Superiore Di Sanita, Italy), Antonella Maugliani (Istituto Superiore Di Sanita, Italy), Susanna Cantoni (Azienda Sanitaria Locale (ASL) di Milano, Italy), Simonetta Fracchia (Azienda Sanitaria Locale (ASL) di Milano, Italy), Ave Bettati (Azienda Sanitaria Locale (ASL) di Milano, Italy), Roberta Casa (Azienda Sanitaria Locale (ASL) di Milano, Italy), Giovanni Pietro Gesu (Ospedale Niguarda Ca' Granda, Italy), Erminio Torresani (Ospedale Maggiore Policlinico, Italy), Alfredo Caprioli (Istituto Superiore di Sanita (ISS), Italy)

BACKGROUND:
On 14 April 2012, many employees of the Fire-fighters Corp (FFC) of Milan were referred to emergency rooms with severe diarrhoea. The episode appeared limited to the FFC, with food served in the FFC canteen as the likely source. Canteen's activity was suspended and an investigation undertaken.

METHODS:
FFC employees presenting symptoms after 9 April were asked to contact the health service and submit stool samples, together with the 6 kitchen-workers. All were interviewed about symptoms and food exposures. Case definition included subjects reporting diarrhoea after exposure to canteen's foods between 9 and 14 April. A case-control study was conducted enrolling healthy exposed employees, as controls. The kitchen was inspected. Stool, environmental and food samples were screened for enteric pathogens using a PCR-based commercial kit.

RESULTS:
One Hundred and seven cases were identified, including 3 kitchen-workers. Case-control study, based on 20 cases that had attended the canteen only one day and 43 controls, showed that cooked vegetables served in different days were significantly associated with the disease. Kitchen inspection showed many areas of concern. Stools were collected from 62 subjects, and 19 were positive for the Shigella gene ipaH. Cultures failed to isolate Shigella, but ipaH-positive enteroinvasive E.coli strains O96:H19 were isolated from 6 cases. Kitchen samples were all negative.

CONCLUSIONS:
EIEC O96:H19 was the causative agent of this outbreak and cooked vegetables its vehicle. EIEC are human pathogens, uncommon in industrialized countries: it is conceivable that kitchen-workers were the primary EIEC source and that vegetables' contamination occurred during preparation, amplified by incorrect storage procedures. EIEC can cause serious outbreaks also in Europe, and their presence should not be overlooked in laboratory testing.

PRESENTED BY:
Martina Escher

Keywords: Food, borne Outbreak Enteroinvasive Escherichia coli Italy
ESCAIDE REFERENCE NUMBER: 20121039

Public Health Response to an outbreak of Legionnaires' disease (LD) in Edinburgh,Scotland, UK

Simone Thorn (NHS Lothian, Public Health Department, United Kingdom), Richard Othieno (NHS Lothian, Public Health Department, United Kingdom), Fatim Lakha (NHS Lothian, United Kingdom), Alison McCallum (NHS Lothian, Public Health Department, United Kingdom), Duncan McCormick (NHS Lothian, United Kingdom), Dona Milne (NHS Lothian, United Kingdom), Martin Donaghy (Health Protection Scotland, United Kingdom)

BACKGROUND:
On 31 May one case of Legionnaires' was reported. Further notification led to four confirmed and four suspected cases by 3rd June. An incident management team (IMT) was convened, cooling towers in the areas where cases lived or had visited were shot dosed, and clinicians and public alerted. The Scottish Government established their resilience room on 5 June. A helpline was in place on 6 June and leaflets distributed from 7 June.

METHODS:
Initial investigation included comprehensive assessment of cases including in depth diaries and dates of onset of illness, enhanced surveillance, environmental investigation, demographic and wind analysis, Immediate action was taken to sample and disinfect potential sources, implement active case finding, alert primary care, reassure the public and inform public health agencies across the UK.

RESULTS:
There have been 54 confirmed and 46 suspected cases. An additional 1444 urine samples and 557 sputum samples have tested negative. Case mapping suggests all were resident or had links to SW Edinburgh. Microbiology samples implicate Legionella pneumophila serogroup 1. Epidemiological and meteorological evidence suggest a common outdoor source over South-West Edinburgh over the duration 17 May to 6 June. Clustering of onset dates indicate a point source which has now stopped. Those affected were 32 -85 years, 73% male, likely to smoke and have underlying illnesses. There were three deaths, 71 patients hospitalised with 19 admitted to critical care.

CONCLUSIONS:
This outbreak is the largest in Scotland. It comprised a well demarcated cluster of cases in a densely populated area. Rapid multiagency action and activation of contingency plans appears to have mitigated the effects of the exposure. Ongoing work will assess the burden of disease and impact on the community.

PRESENTED BY:
Richard Othieno

Keywords: Legionella, outbreak, cooling towers, Edinburgh
ESCAIDE REFERENCE NUMBER: 20121086

Public Health issues in mass gathering events

Knowledge of H1N1 and respiratory symptoms among returning Hajj pilgrims, Kadunastate, North western Nigeria

Aisha Ahmed Abubakar (Ahmadu Bello University, Nigeria), Kabir Sabitu (Ahmadu Bello University Zaria, Nigeria), Patrick M Nguku (CDC Nigeria, Nigeria)

BACKGROUND:
Mass gatherings present health risks to travellers. Outbreaks of meningitis, cholera and influenza have been reported. Annual Hajj pilgrimage to Mecca in Saudi-Arabia is a fundamental religious rite in Islam that is observed by Muslims throughout the world. It's currently the largest annual pilgrim in the world and is the fifth pillar of Islam. Nigeria is one of the countries with an estimated 60 000-95 000 pilgrims annually attending the event. The aim of the study was to assess knowledge of H1N1 and respiratory symptoms amongst pilgrims.

METHODS:
We conducted a descriptive cross-sectional study. We interviewed 561 returning pilgrims in Kaduna state. Pilgrims were interviewed on knowledge of H1N1 and respiratory symptoms they had on return to Nigeria.

RESULTS:
Mean age of pilgrims was 41.3 years (±10.94) age range 19-80 years, 284 (50.6%) were males. 308 (56%) were aware of H1N1, the main source of information was the pre hajj lecture in 216 (85%) other source of information was mass media in 25(10%). Out of 308, 73 (24%) were aware H1N1 is spread by air droplets, coughing or contact with a case. 132 (43%) knew how to correctly protect oneself from becoming infected. On return 300 (53.5%) had respiratory symptoms. Symptoms include cough 110(19.6%), sore throat 60 (10.7%) and catarrh 130 (23.2%).

CONCLUSIONS:
The prevalence of respiratory symptoms in returning pilgrims was high. Hajj lectures present a good opportunity for health education messages for pilgrims as part of their travel advisory.

PRESENTED BY:
Aisha Ahmed Abubakar

Keywords: Mass gatherings, pilgrimage, H1N1, respiratory diseases
ESCAIDE REFERENCE NUMBER: 2012748

Did public health travel advice successfully reach EURO2012 fans -a social network survey

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BACKGROUND:
During EURO2012 approximately 1 million people travelled to Poland and Ukraine. Mass gatherings of this scale provide a potential environment for rapid spread of infectious diseases. International organizations such as WHO, ECDC as well as respective Ministries of Health in hosting countries, prepared travel health advice drawing attention to importance of measles vaccination. The aim of our study was to evaluate whether these messages reached those travelling to EURO2012.

METHODS:
We set up a web-based survey consisting of 10 questions and posted it on UEFA EURO2012 Facebook profile, 3 days after the final match. The survey was further disseminated through Google+, WHO immunization week blog/Facebook and EU_Health twitter. We asked in what way travel health advice was received and from where and weather the importance of measles vaccination was heard . The survey was kept 'live' for a period of 10 days.

RESULTS:
A total of 304 people responded. We restricted analysis to 114 people who travelled to EURO2012 (median age 27.6, range 11-56, 79% male). Forty-five (39,5%) reported receiving any public health information, more than half actively searched for it (GP/Doctors being the most sought after advise channel). Information regarding the importance of measles vaccination reached 27% of all respondents who traveled to the championship.

CONCLUSIONS:
In the context of EURO2012 social networking sites, particularly Facebook, serve as innovative platforms enabling easy and rapid access to target populations at relatively low costs. Advice regarding measles vaccination was not retained by 73% of EURO2012 fans who responded to the survey, indicating the need to develop new strategies to communicate public health messages. The effectiveness of communication strategies should be constantly validated and adjusted accordingly.

PRESENTED BY:
Janusz Janiec

Keywords: EURO 2012 mass gatherings travel related advise measles vaccination
ESCAIDE REFERENCE NUMBER: 2012976

Poster Abstracts – Poster Session B

Vector Borne Diseases

Lyme borreliosis in Latvia: epidemiological analysis of cases reported in 2007-2011

Irina Lucenko (Centre for Disease Prevention and Control, Latvia), Antra Bormane (Centre for Disease Prevention and Control, Latvia), Jurijs Perevoscikovs (Centre for Disease Prevention and Control, Latvia), Ludmila Viksna (Riga Stradins University, Latvia), Girts Brigis (Riga Stradins University, Latvia), Angelika Krumina (Riga Stradins University, Latvia)

BACKGROUND:
Lyme borreliosis (LB) dominates between tick–borne diseases in Latvia since 2001. The annual incidence rate during past 5 years ranged from 21.5 to 38.8 per 100 000. Two tick species transmit LB in Latvia – Ixodes ricinus, present in all territory of Latvia, less in its eastern part, and Ixodes persulcatus, dominating in country's eastern part.

METHODS:
Reports of the epidemiological investigation for notified individual cases of LB were analysed for 2007-2011. Calculation of incidence rates by territories, age and gender groups, calculation of the relative risk and odds ratio were performed, as well as seasonality, places of tick attachment to human bodies, duration of tick attachment and tick removal practices were analysed. MS Excel and SPSS software was used for statistical analysis.

RESULTS:
Totally, 3530 cases of LB were reported during the study period. Incidence rates have varied by territories, age groups and gender. Male/female ratio was 0.54, mean age 47.5 years. Erythema migrans cases comprise 87.8% of all cases. Disease onset for most of patients (56.4%) was between July and September. 69.7% of patients reported tick bite. There are differences in anatomical places of tick attachment between children and adults, as well between Latvian regions. In 88.2% of patients, the duration of tick attachment was less than 24 hours. Differences were found in tick removal practises by age and employment groups.

CONCLUSIONS:
The incidence rate of LB was significantly higher in females than in males, the majority of cases were among persons of medium age and elderly. LB has high public health importance in Latvia; therefore it is necessary to sustain physicians and public awareness at high level, with special attention on prevention and post-exposure measures.

PRESENTED BY:
Irina Lucenko

Keywords: Lyme borreliosis Latvia Ixodes tick epidemiology public health
ESCAIDE REFERENCE NUMBER: 2012765

Assessment of laboratory capacities for preparedness and response to Crimean-Congohaemorrhagic fever in Europe

Maria Dolores Fernandez-Garcia (ECDC-Instituto de Salud Carlos III, Spain), Leticia Franco (o, Spain), Anabel Negredo (Instituto de Salud Carlos III, Spain), Oliver Donoso Mantke (Robert Koch Institute, Germany), Antonio Tenorio (Instituto de Salud Carlos III, Spain), Herve Zeller (EDCD (ECDC), Sweden), ENIVD members (European Network for Diagnostics of Imported Viral Diseases-ECDC, Sweden)

BACKGROUND:
Crimean-Congo haemorrhagic fever (CCHF) is a highly contagious disease caused by a biosafety level (BSL)-4 virus which may have a high fatality rate. CCHF has (re-)emerged the last decade in South-Eastern Europe and there is a risk for further geographic distribution in Western Europe. Here we aimed to assess laboratory preparedness and response (P&R) capacities for CCHF in Europe.

METHODS:
A structured questionnaire was sent to European expert and reference laboratories in February 2012. Information was requested on case definition, P&R plans, training, diagnostic tests used and biosafety issues.

RESULTS:
Overall, 26/37 countries responded, including seven of the 11 countries with endemic regions. Majority (81%) use a generic case definition and a P&R plan for viral hemorrhagic fevers, instead of specific ones for CCHF. Regarding human resources, 21/26 countries had trained laboratory personnel for sample management, but further training was deemed desirable by 17 of them (65%). All countries that reported having diagnostic capacities (20/26) based it on a large diversity of molecular and serological diagnostic methods. Among countries doing viral isolation (10/20), five countries, including three endemic, declared not working under recommended BSL4. Inactivation of CCHF suspected specimens was done in BSL3 (50%), followed by BSL4 or BSL2 (25% each). Only 2 out of 6 countries doing referral of samples had material transfer agreements for class 4 pathogens.

CONCLUSIONS:
The survey revealed a need in Europe for a standardized P&R plan and case definition specific for CCHF. Because biosafety practices, diagnostic tests and personnel training differ widely across countries, standardized protocols, methods and programs should be encouraged. Although overall diagnostic capacities are suitable, strengthening biosafety measures is recommended particularly in endemic regions.

PRESENTED BY:
Maria Dolores Fernandez-Garcia

Keywords: Crimean-Congo hemorrhagic fever, preparedness, response, biosafety
ESCAIDE REFERENCE NUMBER: 2012824

Monitoring of Ixodes ricinus activity and its infection rates with Borrelia burgdorferi sl inBavaria

Christiane Klier (National Reference Centre for Borrelia, Bavarian Health and Food Safety Authority, Germany), Johannes Brenauer (National Reference Centre for Borrelia, Bavarian Health and Food Safety Authority, Germany), Malte Teusser (National Reference Centre for Borrelia, Bavarian Health and Food Safety Authority, Germany), Andreas Sing (National Reference Centre for Borrelia, Bavarian Health and Food Safety Authority, Germany), Volker Fingerle (National Reference Centre for Borrelia, Bavarian Health and Food Safety Authority, Germany)

BACKGROUND:
Ixodes ricinus (IR) is the most abundant tick species causing vectorborne infectious diseases such as TBE and Lyme borreliosis (LB) in Germany. This study focused on collecting data affecting questing tick activity (TA) such as abiotic (temperature, humidity) and biotic (landuse) factors and to assess regional variations of Borrelia burgdorferi sl (Bbsl) prevalence in Bavaria.

METHODS:
Questing IR ticks were collected by standardized flagging at 22 sites of various landuse in Bavaria. Abiotic and biotic variables were recorded. IR were screened for the prevalence of Bbsl.

RESULTS:
In 2010 and 2011 7756 IR ticks (49 larvae, 4655 nymphs, 3052 adults) were collected. TA occurred at temperatures from 6°C to 33°C and humidity of 29% to 92%. In 2011 mean tick activity (MTA) was significantly higher (8 ticks/100sqm) than in 2010 (4 ticks/100sqm). Depending on landuse, regional and local MTA ranged from 0.07 ticks/100sqm in Bavarian Forest National Park (NPBF) (minimal anthropogenic influence) to 6 ticks/100sqm [95%CI:4-8%] in the English Garden (recreational) and 13 ticks/100sqm [95%CI:17–37%] in the Bavarian Forest (agricultural), respectively. Bbsl prevalence was higher in 2011 (12%[95%CI:11–13%]) than in 2011 (14%[95%CI:11-15%]). Bbsl prevalence ranged from 0% (NPBF) to 22% [95%CI:18 –25%] (English Garden). All humanpathogenic Bbsl genospecies (B. afzelli (39%), B. burgdorferi (26%), B. garinii (14%), B. bavariensis (7%), B. spielmanii (4%)) as well as B. valaisiana (10%) were detected exhibiting regional and local variations.

CONCLUSIONS:
This study revealed a remarkable broad tolerance of questing IR ticks towards temperature and humidity. Landuse (anthropogenic effect) rather than abiotic factors seems to be driving force affecting TA. These data on TA and Bbsl prevalence will serve as baseline for future longitudinal surveillance on TA and tickborne diseases.

PRESENTED BY:
Christiane Klier

Keywords: Lyme borreliosis Ixodes ricinus Borrelia burgdorferi Bavaria surveillance
ESCAIDE REFERENCE NUMBER: 20121052

Burden of disease

Infectious diseases in the 65+ population, Norway, 1993-2011: need for a shift in public health priorities?

Anneke Steens (Norwegian Institute of Public Health, Norway), Hanne Merete Eriksen (Norwegian Institute of Public Health, Norway), Hans Blystad (Norwegian Institute of Public Health, Norway)

BACKGROUND:
Due to the aging population, the burden for the health care system might increase and require changed public health priorities. As infections occur more frequent and are often more severe at older age, we facilitate defining priorities by describing the incidence and trends of infectious diseases (ID) among the 65+ population in Norway.

METHODS:
We included all eligible cases of the 58 IDs notifiable to the national notification system between 1993 (time since established case definitions) and 2011. We calculated current incidences of IDs by averaging annual incidences over the last 5 years (2007-2011), to get stable estimates for ranking. Trends were determined by the change in incidence from 1993 onwards. We used incidence rate ratios (IRR) to compare results of those aged 65+ with those aged 20-64 years.

RESULTS:
Pneumococcal invasive disease was the most common ID among 65+ (incidence 58/100,000), followed by pertussis (54/100,000) and campylobacteriosis (30/100,000). For most ID the incidence did not change overtime, though, the incidence of MRSA infections increased from 1/100,000 to 14/100,000 from 1995 (first year of notification) to 2011. Overall, less cases were notified among 65+ compared to 20-64 year olds (IRR=0.73). The IRR of each of the invasive bacterial diseases and antibiotic resistant infections were above 1.5 (i.e. more common in 65+ than in 20-64 year olds), while the IRR of each food and water-borne disease, blood-borne disease / STI and (non-invasive) vaccine preventable disease were below 1, with the exception of tetanus.

CONCLUSIONS:
Our results indicate that a greater impact on the incidence of infectious diseases in 65+ would be ensured by focusing public health efforts on preventing invasive bacterial disease and antibiotic-resistant infections.

PRESENTED BY:
Anneke Steens

Keywords: Public Health Surveillance Population Surveillance Disease notification Communicable disease control Community, Acquired infections
ESCAIDE REFERENCE NUMBER: 2012725

Poster Abstracts – Poster Session B

Systematic review of disability weights: How do Europeans value conditions related to infectious diseases?

Juanita Haagsma (Erasmus MC, The Netherlands), Suzanne Polinder (Erasmus MC, The Netherlands), Alessandro Cassini (ECDC, Sweden), Edoardo Colzani (EDCD, Sweden), Arie Havelaar (National Institute for Public Health and the Environment, The Netherlands)

BACKGROUND:
The disability adjusted life year (DALY) is widely used to assess the public health impact of different health problems. The disability weight is an essential factor for establishing DALY. Disability weights reflect the impact of a disease and have a value that ranges from 0 to 1. This value is based on preferences obtained from a panel of judges. For the Burden of Communicable Disease (BCoDE) study a toolkit was developed for calculation of DALYs of selected pathogens, using the Global Burden of Disease (GBD) disability weights. However, disability weights for many health outcomes are not available from the GBD set. Moreover, GBD disability weights might not fully reflect European preferences. Objective: To systematically review all studies that developed disability weights and to critically assess the methodological design choices (health state description, panel composition and valuation method). Furthermore, disability weights of eight specific diseases were compared.

METHODS:
Disability weights studies in international peer-reviewed journals were identified. Electronic database search included Pubmed and EMBASE. Studies were collated by design and methods, and evaluation of results.

RESULTS:
Twenty-two studies met the inclusion criteria of our review. Nine studies have been performed in Europe. There is considerable variation in methods, though most studies used a panel of medical experts that provided the values. Comparison of disability weights showed that values differ significantly across studies. For many health outcomes associated with infectious disease, disability weights are not available from any of the existing studies.

CONCLUSIONS:
In terms of comparability of the resulting YLD, the global use of the same set of disability weights has advantages, though methodological constraints, intercultural differences and practical limitations should be taken into account.

PRESENTED BY:
Juanita Haagsma

Keywords: Public health, communicable disease, sequelae, value of life, burden of disease
ESCAIDE REFERENCE NUMBER: 2012757

Epidemiology of rotavirus diarrhea in children under 5 years in urban Burkina Faso

Isidore Bonkoungou (National Public Health Laboratory, Burkina Faso), Aimé Adjami (WHO/AFRO-Multi Disease Surveillance Centre (MSDC), Burkina Faso), Evariste Mutabaruka (WHO/AFRO-Multi Disease Surveillance Centre (MSDC), Burkina Faso)

BACKGROUND:
Rotavirus is the major cause of diarrhea in children under 5 years, known to be responsible for high morbidity and mortality in this age group. Only limited information on rotavirus infections is available from Burkina Faso. This study investigated the epidemiology of rotavirus infections in children under 5 years in the capital city Ouagadougou before a planned nation-wide introduction of rotavirus vaccines.

METHODS:
Fecal specimens from children under 5 years presenting with severe acute diarrhea at one hospital in Ouagadougou were taken between January 2009 and January 2010. The collected specimens were first tested for rotavirus antigen using, immunochromato graphic test followed by G and P genotyping of the rotavirus positive samples by RT-PCR.

RESULTS:
In total, 283 fecal specimens were collected. Rotavirus antigen was detected in 30% (85/283) of the patients. Ninety-five percent of the cases were children under 2 years. Rotavirus-associated diarrhea occurred mostly during the cold dry period from December to February. Comparison of symptoms between patients with and without rotavirus antigen detection showed that fever (75% vs. 50%; P< 0,001), vomiting (70% vs. 27%; P< 0,001) and dehydration (42% vs. 18%; P< 0,001) were more common in rotavirus infections. The most prevalent genotypes were G1P[8] (33%), G9P[8] (29%), G2P[6] (14%) and mixed G/P (12%).

CONCLUSIONS:
This study shows that rotavirus causes severe diarrhea in children under 2 years in Burkina Faso. Dehydration, which can easily be life-threatening in this age group, was found to be more common in rotavirus-associated diarrhea. Rotavirus genotypes known to cause severe disease have been detected in this study. All these finding underscore the importance of the planned rotavirus vaccine introduction.

PRESENTED BY:
Isidore Bonkoungou

Keywords: Diarrhea, rotavirus, children, RT-PCR, Burkina Faso
ESCAIDE REFERENCE NUMBER: 20121059

Comparing the impact on population health of two simultaneous outbreaks of emerging infectious diseases in the Netherlands, 2009, using disability adjusted life years.

Russell John Brooke (University Medical Center Utrecht, The Netherlands), Alies van Lier (National Institute for Public Health and the Environment, Bilthoven, The Netherlands,), Gé Donker (Netherlands Institute of Health Services Research, Utrecht, The Netherlands), Wim van der Hoek (National Institute for Public Health and the Environment, Bilthoven, the Netherlands), Mirjam Kretzschmar (National Institute for Public Health and the Environment, Bilthoven, The Netherlands))

BACKGROUND:
In 2009 the Netherlands experienced a large outbreak of Q fever and the novel 2009 pandemic influenza-A(H1N1). While many studies have estimated the impact on population health of the influenza pandemic, it is not clear what the impact of a similar but more localized outbreak was in comparison. We used disability-adjusted life years(DALY) as a measure for estimating the burden of Q fever and influenza in 2009 in the Netherlands.

METHODS:
Age and sex stratified data for Q fever and influenza was obtained from the Dutch National Institute for Public Health and Environment(RIVM) and Netherlands Institute for Health Services Research(NIVEL) respectively. Outcome trees were constructed including chronic Q fever and post infectious fatigue syndrome as sequelae for Q fever and sepsis, otitis media as sequelae for influenza. Number of life years lived with disability and life years lost computed by health outcome, stratified by age and sex.

RESULTS:
The model estimates 11,658 symptomatic Q fever cases and total burden of 5665 DALY's. Influenza estimates 137,028 cases with a total burden of 20,368 DALY's. Q feverhas 486 DALY's per 1000 symptomatic cases while influenza had only 118 DALY's per 1000 cases.

CONCLUSIONS:
The pandemic influenza outbreak generated a higher disease burden than the Q fever outbreak due to the higher number of cases. However, the DALY per case, which can be interpreted as a measure of severity of illness, was [fourfold] higher for Q fever than for pandemic influenza. While for influenza most of the burden was caused by mortality, for Q fever the burden is dominated by long term sequelae, which implies that it will have an impact on population health for many years to come.

PRESENTED BY:
Russell John Brooke

Keywords: Q fever, influenza a virus, h1n1 subtype,Burden of Illness, Pandemic, Epidemic
ESCAIDE REFERENCE NUMBER: 20121070

Assessment of the characteristics of neonatal tetanus reported to the surveillance systemin Akwa Ibom State, Nigeria between 2008-2011

William Nwachukwu (Nigeria Field Epidemiology and Laboratory Training Programme, Nigeria), Enya Bassey (WHO office, Akwa Ibom State office, Nigeria), Gi Ebuk (akwa ibom ministry of health, akwa ibom state, Nigeria), Patrick Nguku (Nigeria Field Epidemiology and Laboratory Training Programme, Nigeria), Margret N Aghaji (University of Nigeria Teaching Hospital, Enugu, Nigeria)

BACKGROUND:
Neonatal tetanus (NNT) is a public health problem targeted for elimination. NNT has high mortality and morbidity in our environment. The strategies for the elimination are high coverage with tetanus toxoid among pregnant women and in high-risk-areas among all women of child-bearing age as well as improved access to clean delivery services. We conducted the study to determine clinical pattern, the promptness of surveillance and predisposing factors for NNT.

METHODS:
Secondary data of suspected NNT cases from 2008-2011 reported and verified by the surveillance system were analysed We adopted case verifying investigation forms. Data was analysed with Epi-Info software. P-value=0.05 was determined statistically significant 95% confidence interval.

RESULTS:
Total of 70 cases were reported , 58.6% were females, female-male ratio 1.4:1 Case fatality rate(CFR)=44.4%, median age at onset of symptoms=7days and mean days between symptoms and death =1.77 days. Major symptoms include stopped crying/sucking in the first 48hours=72.9% (CI 60.9% -82.8%), neck stiffness=78.6%(CI 67.1-87.5%), convulsion 62.9% (CI 50.5%-74.1%) , other complications=37.1%(CI 25,9%-49.5%). Mean days between reporting and verification of cases is=1.63, SD =1.4 with=52.9% of cases reported by NNT focal persons. Factors predisposing to NNT include; poor antenatal clinic (ANC) 61.4%, p=0.03, Cutting cords with unsterilized blade 68.6%, , P=0.38, low doses of TT=75.7%, p=value=0.05,(CI 56.4%-79.1%), unskilled attendant at birth, p=0.097, unhygienic methods of treating cords 82.9% p=0.66, death is associated with poor ANC, p=0.023, no treatment option p=0.0002.

CONCLUSIONS:
Poor and unhygienic treatment of the cord, poor ANC, low immunization, contribute to the NNT. Active case search, health education on the need to improving immunization status of women and skilled manpower at birth are cardinal to NNT elimination.

PRESENTED BY:
William Nwachukwu

Keywords: Neonatal Tetanus, Surveillance, Akwa-Ibom State, Nigeria
ESCAIDE REFERENCE NUMBER: 20121079

DAY 2

Poster Abstracts – Poster Session C

POSTER SESSION C 13.15 – 14.45 Fri 26

Surveillance

Plan for surveillance and control of the effects of heat waves. Has the impact of extreme temperatures on mortality in the city of Madrid decreased?

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BACKGROUND:
Numerous studies in Europe have shown an increase in the number of deaths attributed to excessive temperature during the summer of 2003. In Madrid, there was an estimated excess mortality of 12%. As a result, since 2004, in several countries including Spain, plans were implemented for surveillance and control of the effects of heat waves (PVCEOC) to minimize the impact of high temperatures on health. The objective was to assess whether implementation of PVCEOC has reduced the impact of mortality attributable to extreme heat in the city of Madrid

METHODS:
Ecological design study of time series for the period 1990-2009. Daily mortality (ICD X: A00-R99) was provided by the National Institute of Statistics. The daily maximum temperature from the Madrid Retiro observatory provided by the Meteorological Agency, was used. Previous studies identified a threshold temperature for Mortality of 36.5 º C. The excess mortality attributed to extreme heat was quantified with two methods. First, univariate ARIMA models were used to determine the expected daily mortality and excess mortality was calculated as the difference between observed and expected mortality. Also, a multivariate ARIMA model with the maximum daily temperature and external variable was used to determine the impact of temperatures above 36.5 º C on the total daily mortality.

RESULTS:
A decrease in excess mortality attributable to heat before and after implementation of PVCEOC in Madrid, was not detected. Nor was there a significant decrease in the impact of high temperatures on mortality after 2003.

CONCLUSIONS:
The results of this study suggest that it cannot be said that the PVCEOC implementation has resulted in a decrease in mortality attributable to high temperatures in Madrid.

PRESENTED BY:
Dante Roger Culqui Lévano

Keywords: Extreme temperature, extreme heat, death, surveillance, death
ESCAIDE REFERENCE NUMBER: 2012598

Developing nosocomial surveillance reports as needed by stakeholders

Oliver Kacelnik (Norwegian Institute of Public Health, Norway), Katrine Borgen (FHI, Norway), Hanne Merete Eriksen (Norwegian Institute of Public Health, Norway)

BACKGROUND:
Since 2006 all hospitals in Norway (54) participate in surveillance of Surgical Site Infections (SSI).The Norwegian Institute of Public Health analyses the data and produces surveillance reports for each hospital. To increase the use of this surveillance data among stakeholders, we overhauled the content and format of these reports in a way that would better address their needs.

METHODS:
In collaboration with the National Infection-Prevention Network and the SSI Surveillance Expert Group we categorized potential stakeholders (i.e. surgeons, infection control personnel, microbiologists and administrators). During the annual surveillance meeting participants rated potential report options on scale (1-5). In-depth group-discussions followed to identify specific needs per stakeholder-category. A new report template was generated. After one round of reports we surveyed users to assess satisfaction with the new-style reports.

RESULTS:
Seventy health-professionals representing 40 hospitals participated in the initial rating exercise, 90% preferred simple tables and bar charts readable in colour and black and white. Radial plots, bubble plots and morbidity curves were rejected. Key factors identified as necessary in tables and figures by the group discussion included geography, time, modifiable risk-factors and type of surgery. Surgeons were interested in their own operations against all individual hospitals, administrators their own results versus national averages. The user-survey (36/54 hospitals) revealed 71% were satisfied with the changes while 8.5% required more information.

CONCLUSIONS:
This process resulted in surveillance reports that meet most of the needs of the stakeholders involved. Discussions highlighted that the original reports had a lower level of detail than that needed by stakeholders and specific needs (according to profession) were identified. Designing surveillance reports in collaboration with target audiences may increase the use of information for action.

PRESENTED BY:
Oliver Kacelnik

Keywords: Nosocomial Infection Public Health Sureillance Postoperative Wound Infection
ESCAIDE REFERENCE NUMBER: 2012655

Current laboratory testing algorithms may lead to missed cases of enteropathogenic Escherichia coli in Bavaria, Germany

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BACKGROUND:
Current guidelines for German laboratories recommend limiting analyses for enteropathogenic Escherichia coli (EPEC, intimin-positive) to children. In 2011, during the outbreak of the intimin-negative enterohaemorrhagic E. coli (EHEC)-strain, the weekly number of non-EHEC E. coli cases reported in Bavaria increased from 18 (average 2006-2010) to 40, with 91% classified as EPEC. We investigated if increased intimin testing through PCR and/or extended testing could explain this observed increase.

METHODS:
We compared EHEC cases reported through routine surveillance weeks 1-20, 21-29 (outbreak period) and 30-42, 2011 regarding median age and proportion where PCR and intimin was stated. We excluded serogroup O104 EHEC cases and those with unknown serogroup or shigatoxin-type. We compared the age and reported use of PCR in non-EHEC cases from the same periods.

RESULTS:
The median age of EHEC cases (26.5 years) reported during the outbreak was higher than before (14.5 years, p=0.111) and after (5 years, p=0.003). There was no difference in reported use of PCR among EHEC cases, but intimin was stated in 11% of case reports before the outbreak compared to 32% during (p=0.001) and 32% after (p=0.003). on-EHEC cases reported during the outbreak were also older (median: 19 years) than before (2 years, p<0.001) and after (2 years, p<0.001). PCR in non-EHEC E. coli case reports was reported more often during (46%, p<0.001) and after (56%, p<0.001) the outbreak, compared to before (26%).

CONCLUSION:
The outbreak probably led to an expansion of intimin investigations with PCR and age-groups investigated for EHEC, resulting in identification of more EPEC cases. Routine surveillance likely underestimates the incidence of EPEC, especially among adults. Broader testing could increase the sensitivity and representativeness of the surveillance.

PRESENTED BY:
Hélène Englund

Keywords: Escherichia coli; Enterohemorrhagic Escherichia coli; Enteropathogenic Escherichia coli; population surveillance; patient acceptance of health care; incidence
ESCAIDE REFERENCE NUMBER: 2012657

Severe pediatric enterovirus infection in Hong Kong, 2010 to 2012

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BACKGROUND:
Enteroviruses infections are common in children with presentations ranged from mild flu to life-threatening conditions. Medical practitioners have been required to report severe pediatric enterovirus infection with complication since July 2010. We reviewed the epidemiology of the cases recorded.

METHODS:
We routinely collected epidemiological, clinical and laboratory information from every reported case through interviewing of patients, next-of-kin, attending physicians and reviewing hospital charts and laboratory records. We traced their contacts to see if there was any associated outbreak. A clinical case was defined as children >1 month and <=12 years old, who presented with clinical conditions including meningitis, encephalitis and myocarditis, with clinical specimen positive for enterovirus(other than poliovirus) by culture or PCR.

RESULTS:
A total of 31 cases were reported from July 2010 to June 2012, 74% occurring from June to September. Twenty cases(65%) were younger than 1 year, 8 cases(26%) between 1-5 and 3 cases(10%) between 5-12. Male to female ratio was 1.6:1. Thirteen(42%) cases were locally acquired infection. Predominant symptoms included fever(87%), neurological symptoms(35%) and vesicles over limbs(26%). Common complications included meningitis(61%), encephalitis(19%) and myocarditis(6%). Common strains included Coxsackie A virus(23%), enterovirus71(23%) and Coxsackie B virus(25%). Coxsackie B infection was predominated in <1 year group (40%). All cases enjoyed good past health except one with congenital heart disease. All required hospitalization with a median of stay of 8 days(1 to 40 days). The case fatality ratio was 8%. Five cases' households were associated with hand-foot-mouth disease outbreaks.

CONCLUSIONS:
Besides enterovirus71, Coxsackie B and A also posed significant risk of causing severe enterovirus complications on children especially infants in Hong Kong. Clinicians should consider enterovirus infections in children presenting with compatible symptoms especially during summer seasons.

PRESENTED BY:
Emma Yiu Yan LUK

Keywords: Enterovirus, infection, pediatrics, complications
ESCAIDE REFERENCE NUMBER: 2012664

Poster Abstracts – Poster Session C

Evaluation of surveillance of sexually transmitted infections (STIs) in South West England: Opportunity for a better local use of high quality data, UK, 2012

Petra Matulkova (Health Protection Agency South West England, United Kingdom), Isabel Oliver (Health Protection Agency, United Kingdom), Gwenda Hughes (HIV & STI Department, Health Protection Agency - Colindale, London, United Kingdom), Emma Savage (HIV & STI Department, Health Protection Agency Colindale, United Kingdom), Deborah Stark (Office for Sexual Health South West, National Health Service Torbay, United Kingdom), Jonathon Brook (Office for Sexual Health South West, National Health Service Torbay, United Kingdom)

BACKGROUND:
From 2002 to 2011 there was a 49% increase in new diagnoses of STIs in England. In 2009 an electronic Genitourinary Medicine Clinic Activity Dataset (GUMCAD) was introduced to all GUM clinics to monitor trends in new STI diagnoses and determine groups at particular risk. In South West England we evaluated GUMCAD from 2009 to 2011 in terms of completeness and usefulness to Sexual Health (SH) commissioners and clinicians, to inform STI control and prevention.

METHODS:
We estimated completeness of key demographic variables as percentage of entries other than "unknown" or "missing", by year, and by clinic and their size (caseload). We online surveyed leading SH commissioners at all 14 Primary Care Trusts (PCTs) and SH leading clinicians at 16 satellite clinics. We requested feedback about use of GUMCAD and rating of surveillance outputs.

RESULTS:
Gender, age, area of residence and country of birth had good completion (≥92%). Completeness of sexual orientation and ethnicity increased from 2009 to 2011 from 61% to 92% and 69% to 75% respectively. However two of three clinics with the highest caseload reported ethnicity completed in <5%. Eight PCTs (57%) and six clinics (38%) responded to the survey. 88% of responding PCTs use GUMCAD for local needs assessment and all responding clinicians for understanding local STI burden. 88% of PCTs and 50% of clinicians would like to have more local interpretation of the outputs.

CONCLUSIONS:
GUMCAD provides quality and complete data and has proven to be useful for both SH commissioners and clinicians. However data completeness needs to improve at some busy clinics. A more local interpretation of the surveillance outputs to continue informing public action in STI control and prevention is needed.

PRESENTED BY:
Petra Matulkova

Keywords: Sexually, transmitted infections Surveillance Evaluation Stakeholders
ESCAIDE REFERENCE NUMBER: 2012678

The importance of the participant's viewpoint when designing surveillance

Agota Puskas (Swedish Institute for Communicable Disease Control, Sweden), Annasara Carnahan (Smittskyddsinstituet, Sweden), Hanna Merk (SMI, Sweden), Sharon Kühlmann-Berenzon (Swedish Institute for Communicable Disease Control, Sweden), Amelie Plymoth (Karolinska Institutet, Sweden)

BACKGROUND:
We often rely on the general public as informants when conducting surveillance of the impact of infectious diseases on society. Three such surveillance systems, based on participants themselves reporting when they fall ill, were implemented in Sweden during the influenza season 2011-2012: (1) Influensakoll, which relied on media attention for recruitment and on weekly email reports; (2) Sjukrapport, which recruited from a random sample of the population and depended on participant-initiated reports; and (3) SWEDE-I, which mimicked Sjukrapport with added self-sampling for viruses. Approximately 2,500 individuals participated in each system. To improve the surveillance, we carried out a qualitative study of the participants' experience of the respective system.

METHODS:
Twenty randomly selected participants from each system were invited to semi-structured telephone interviews. The general themes were: reason for participating, experience of self-reporting and self-sampling, opinion on the information supplied, and recommendations for improvements.

RESULTS:
Twenty-nine interviews preliminarily indicate that in general participants joined because it was a good cause originating from a reputable organization, and found reporting and self-sampling easy. Reminders to report, weekly e-mails (Influensakoll), and a refrigerator magnet (Sjukrapport) were considered useful. Negative aspects were: the weekly newsletters not being read in detail (Influensakoll); confusion as what to report (Sjukrapport); and disappointment with virus results not including all infectious disease agents (SWEDE-I).

CONCLUSIONS:
The results show the importance of considering the viewpoint and experience of the participant when designing a surveillance system that relies on the general public. Many of the issues highlighted, positives and negatives, are crucial for participants' motivation and the quality of the data collected, and thus for the success of these and other surveillance systems and prospective studies relying on the public.

PRESENTED BY:
Agota Puskas

Keywords: Population Surveillance Qualitative Research Communicable Diseases Interviews as Topic
ESCAIDE REFERENCE NUMBER: 2012693

Assessment of Integrated Disease Surveillance and Response Strategy implementation in Kaduna state, North western Nigeria-2010

Aisha Ahmed Abubakar (Ahmadu Bello University, Nigeria), Mohammed Nasir Sambo (Ahmadu Bello University Zaria, Nigeria), Kabir Sabitu(Ahmadu Bello University Zaria, Nigeria), Suleman Hadejia Idris (Ahmadu Bello University Zaria, Nigeria), Sadiq Saidu (Ahmadu Bello University Zaria, Nigeria), Patrick M Nguku (CDC Nigeria)

BACKGROUND:
Widespread epidemics of yellow fever and cerebrospinal meningitis across the African sub region in the 1990s was largely attributed to poor surveillance systems which were neither able to detect communicable diseases on time nor mount effective response. Effective communicable disease control relies on effective response systems which are dependent upon effective disease surveillance. Integrated Disease Surveillance and Response strategy was adopted by the AFRO members of the WHO to improve surveillance activities. This study was conducted to assess IDSR implementation in Kaduna state.

METHODS:
A cross sectional descriptive study was carried out in Kaduna state and in selected Local Government Areas (LGA) and health facilities using interviewer administered questionnaires of an adaptation of the World Health Organization Protocol for the Assessment of National Communicable Disease Surveillance and Response systems.

RESULTS:
Out of 21 health facilities 8(38%) did not have any case definition for the priority diseases. There is no Epidemic Management Committee at state level. Data analysis was available in 4 (19%) of health facilities. A reporting system was available in 12 (57%) of health facilities. Thirteen percent of health facilities reported receiving feedback from the LGAs. There was no feedback from the state to the LGAs nor was there feedback from the national to the state level.

CONCLUSIONS:
The implementation of IDSR in Kaduna state is poor. Feedback should be sent from higher levels to lower levels. Standard case definitions should be made available and used in all health facilities. An Epidemic Management Committee should be set up at state level to make IDSR fully functional at all levels from the health facility to LGA to state level in Kaduna state.

PRESENTED BY:
Aisha Ahmed Abubakar

Keywords: Surveillance, IDSR, epidemics, assessment
ESCAIDE REFERENCE NUMBER: 2012746

Successful investigation of a fatal Legionnaires' disease case and the implementation of control measures potentially averted an outbreak

Joana Soares Ferreira (Northern Regional Health Administration, Portugal), Francisco Borges (Northern Regional Health Administration, Portugal), Fernando Santos (Northern Regional Health Administration, Portugal), Anabela Pedro (Northern Regional Health Administration, Portugal)

BACKGROUND:
In Portugal, notification of Legionnaires' disease (LD) is mandatory since January 1999. The health authorities investigate any notified case and implement the needed prevention and control measures.

METHODS:
In June of 2011 a confirmed case of LD was reported to the local health authority in a municipality in the North of Portugal. Epidemiological and environmental enquiries were performed and adequate control measures were implemented.

RESULTS:
An 85-year-old woman institutionalized in a nursing home, with no known underlying medical risk factors, developed LD. She was hospitalized and died 14 days after symptom onset. She stayed in the institution during the incubation period, with only two short exits: one to visit her daughter's house and another to vote in an election. The environmental investigation, including sampling of water systems for Legionella analysis, identified a Legionella pneumophila count of 543 CFU/l in water samples from the shower of the case's room. Counts of 1147 and 65 CFU/l in water samples from the shower of another room and from the wash hair unit of the hair salon located inside the institution, respectively, were also identified. These results showed that the water system was the most likely source of infection. Drainage, cleaning and biocide treatment were conducted to eliminate Legionella from that system and their effect was monitored by analyzing water samples collected, one week and five months after the first microbiological results, from various sites in the nursing home. No sample showed contamination with Legionella and no cases have been detected since then.

CONCLUSIONS:
The timely investigation of one LD case and the implementation of appropriate control measures potentially averted the occurrence of a Legionella outbreak.

PRESENTED BY:
Joana Soares Ferreira

Keywords: Legionnaires' Disease, Legionnaires' Disease Outbreaks, Disease Notification, Death
ESCAIDE REFERENCE NUMBER: 201277

Poster Abstracts – Poster Session C

The use of diagnostic databases for arbovirus monitoring and surveillance; a feasibility study with a focus on dengue virus.

Natalie Cleton (Eramus MC - National Institute for Public Health and the Environment, The Netherlands), Chantal Reusken (National Center for Infectious Disease Control, The Netherlands), Jean-Luc Murk (Erasmus Medical Center, The Netherlands), Menno de Jong (Amsterdam Medical Center, The Netherlands), Annemiek van Eijk (Erasmus Medical Center, The Netherlands), Marion Koopmans (National Center for Infectious Disease Control, The Netherlands)

BACKGROUND:
For arboviruses, limited monitoring and surveillance (MOSS) is performed in a large part of the developing world. Travellers are potential sentinels for real-time monitoring of arbovirus exposure at travel destinations. However, the value of data on travel-related arbovirus disease for MOSS would strongly depend on the quality of the diagnostic requests concerning these travellers. The aim of this study is to evaluate the feasibility of using the information in diagnostic databases to monitor trends in arbovirus exposure in Dutch travellers, using dengue virus (DENV) as a model.

METHODS:
All diagnostic requests for DENV were imported from the laboratory information systems of the three main arbovirus diagnostic laboratories in the Netherlands in the period 2000-2011 into an Excel database, along with a minimal dataset (sex, age, travel destination, vaccination history, symptoms). Data formats were reviewed and harmonized, and statistically analyzed for comparability of patient population, and trends of DENV IgM and IgG positive patients using multiple cut-offs in 'R'. Trends in DENV reports per country according to the WHO DENV report system were used to verify outcomes.

RESULTS:
The completeness of the minimal datasets vaccination history, travel history and clinical were low, stressing the need for re-evaluation of data logging methods. Significant differences in patient categories and completeness of data were observed between centres. However, trends in diagnostic results were generally compatible. Additionally, a general correlation could be observed between WHO DENV surveillance data and the number of DENV positive results to the top four travel destinations of Dutch travellers.

CONCLUSIONS:
When taking these factors into account, data can potentially be used for trend monitoring as part of a DENV MOSS.

PRESENTED BY:
Natalie Cleton

Keywords: Arbovirus, dengue, monitoring and surveillance, serodiagnostics
ESCAIDE REFERENCE NUMBER: 2012779

Better Feedback – Higher Compliance. How to improve reporting compliance for communicable diseases: results of a focus group consultation in Germany.

Andreas Gilsdorf (Robert Koch Institut, Germany), Göran Kirchner (Robert Koch Institut, Germany), Justus Benzler (Robert Koch Institut, Germany)

BACKGROUND:
Since 2001, Germany has a partially electronic reporting system for communicable diseases (RSCD). Cases are reported by medical practitioners, hospitals and laboratories via fax, mail or telephone to the local health authorities (LHA), where they are assessed and then electronically transmitted via the regional to the national level. After the pandemic 2009 and the EHEC outbreak 2011, an assessment is underway, to advice whether the German system can be improved by introducing an electronic reporting, in order to reduce delays and enhance data quality. Part of this process is the consultation of different groups of reporting people to better understand their expected benefit regarding a RSCD.

METHODS:
Four focus groups were conducted, with 12-15 persons each, contributing experience from hospitals, private practitioners, laboratories and LHA. Participants were asked to express their expectations towards a modern reporting system and to identify factors that could influence motivation to participate.

RESULTS:
For participants a timely feedback is essential, preferably at the time of reporting. They additionally want an e-mail subscription service or app, providing customized epidemiological news, including charts and maps. For reporting of special public health events, such as outbreaks, an early warning function should be available. Communication among LHA should be integrated in such a system. Syndromic surveillance was considered important, but should be based on data that has anyway been collected as part of routine medical procedures/anamnesis.

CONCLUSIONS:
Compliance with legal obligations to report communicable diseases is limited, if the benefit for the reporting person is not obvious. For contributors to a reporting system a timely feedback is very important. The suggested functionalities will be considered in the revision of the German RSCD.

PRESENTED BY:
Andreas Gilsdorf

Keywords: Disease Notification, Motivation, Communicable Diseases, Feedback, Compliance
ESCAIDE REFERENCE NUMBER: 2012800

Comparison of five influenza surveillance systems during the 2009 pandemic and their correlation with media attention

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BACKGROUND:
In addition to the routine surveillance of influenza-like illness (ILI) consultation rates reported by sentinel general practices (GPs), four other surveillance systems were used during the 2009/2010 influenza pandemic. We compared these five surveillance systems and their association with media attention to assess which ILI/influenza surveillance systems could be useful additions to the sentinel GP network.

METHODS:
The trends in number of newspaper articles and television broadcasts over the period 11 May 2009 through 3 January 2010 were compared with the trends in ILI consultation rates reported by sentinel GPs, influenza-related web searches through Google Flu Trends, self-reported ILI through the web-based Great Influenza Survey, laboratory influenza virus detections, and notified hospital admissions for severe pandemic influenza in the Netherlands. Correlation coefficients with and without time lags were determined. Finally, correlations were determined between ILI consultation rates of the sentinel GPs and data from the four other surveillance systems.

RESULTS:
The four additional ILI/influenza surveillance systems showed similar trends and had strong correlations with the ILI consultation rates reported by sentinel GPs. The number of influenza virus detections was the only system that registered an early peak. Increases in the number of newspaper articles and television broadcasts did not precede increases in ILI/influenza rates in the five surveillance systems.

CONCLUSIONS:
The sentinel GP network should remain the basis of influenza surveillance, because it integrates epidemiological and virological information and showed to be pandemic proof in 2009. Web-based, self-reported ILI can be a useful addition, especially if virological self-sampling would be added and a baseline threshold would be calculated.

PRESENTED BY:
Marit de Lange

Keywords: Influenza, Human Pandemics Surveillance Newspapers Television
ESCAIDE REFERENCE NUMBER: 2012816

A practical Stata tool for time series analysis

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BACKGROUND:
ECDC long term strategies for surveillance include analysis of trends of communicable disease of public health importance for EU and EEA Member States to guide public health action. The European Surveillance System (TESSy) holds data on 49 communicable diseases reported by 30 countries. To simplify trend analysis using TESSy data, ECDC launched a project to create a Stata tool facilitating TSA and providing rapid data exploration without the need for complex programming.

METHODS:
We developed protocols for TESSy TSA, including analysis plans specifying hypotheses to be tested,variable types and formats. We organised TSA steps as successive tabs in a STATA dialogue box, created with STATA scripts. The tool was tested with five diseases (VTEC, campylobacteriosis, salmonellosis, tuberculosis and influenza)and used during a ECDC TSA training.

RESULTS:
The TSA tool enables data aggregation, data checking, data description, analysis of trends and seasonality, residual analysis, simple modelling and long-term forecasting. The tool incorporates generalised linear model regression, creates graphs and a log of the outputs. Variables created during analysis remain in the dataset for further analyses. An in-depth manual of the TSA tool helps with use and interpretation of outputs. Feedback from the workshop showed the TSA tool enables a quick exploratory TSA even by non-Stata users who could focus on interpretation of results.

CONCLUSIONS:
The TSA tool saves time when performing rapid exploratory TSA of epidemiological data, avoiding the need for complex programming which is still needed for sophisticated TSA. Further testing and training will be performed to enhance simplicity before appropriate dissemination of the tool for a wider use.

PRESENTED BY:
Gilles Desvé

Keywords: Epidemiology, Data analysis, Surveillance, Statistical Models, Software tools
ESCAIDE REFERENCE NUMBER: 2012904

Poster Abstracts – Poster Session C

Environmental Surveillance of Polioviruses in Greece as a supplementary tool in the AFP surveillance : A preliminary report

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BACKGROUND:
WHO included Environmental Poliovirus Surveillance (ENV) in the strategic plan of Global Polio Eradication Initiative to be used in Poliovirus surveillance, supplementing Acute Flaccid Paralysis (AFP) surveillance in polio-free countries. Detecting enteroviruses in environmental sewage specimens contaminated by human faeces can trace poliovirus circulation. Under optimal conditions, the sensitivity of ENV can be better than that of the standard AFP surveillance. ENV offers an anonymous, non-invasive approach for monitoring poliovirus (PV) circulation in populations at risk.

METHODS:
ENV of sewage specimens for polioviruses/enteroviruses was adopted as a supplementary tool in the AFP surveillance in selected areas of Greece, where high risk populations reside (immigrants, refugees, Romas). From January to June 2012, a total of 42 specimens from sewage disposal systems were collected by Grab Sample method and tested for polioviruses/enteroviruses by the Hellenic National Polio Reference Laboratory with the use of "two-phase" concentration method (17 from Thessaly, 12 from Evros, 8 from Dodecanese islands, 4 from Central Macedonia and 1 from Attica). Enteroviral RNA was detected by RT-PCR. For the isolation of polioviruses and NPEVs, the RD and L20B cell lines were utilized. Enteroviral isolates were typed by the seroneutralization method and/or the VP1-2A region sequencing followed by phylogenetic analysis.

RESULTS:
Until June 2012, 26/42(62%) specimens were processed and examined. No wild or vaccine-derived polio viruses were isolated. However, these procedures detected NPEVs in 2/17(11.7%) specimens tested in Thessaly, 3/7(42.8%) in Evros and 1/2(50%) in Dodecanese islands. Isolated NPEV serotypes were CoxsakieB,Echo6,Echo7,Echo11,Echo13.

CONCLUSIONS:
Environmental Surveillance can provide an alternative approach for monitoring PV and NPEV circulation in high risk areas and can be used as an early warning system, supplementing AFP surveillance.

PRESENTED BY:
Alexandra Vernardaki

Keywords: Environmental surveillance Poliovirus Non, Polio Enteroviruses Sewage
ESCAIDE REFERENCE NUMBER: 2012930

Towards the measles elimination goal: an evaluation of the Italian enhanced measles surveillance system

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BACKGROUND:
An efficient surveillance system is a key requirement to achieve WHO goal of eliminating measles in Europe by 2015. In Italy, measles cases are reported to the national mandatory notification system (SIMI); in addition, an enhanced measles surveillance system (SSM) was introduced in 2007. No case definition is used in SIMI; the European case definition is used in SSM. An evaluation of SSM was performed to assess sensitivity, timeliness and completeness.

METHODS:
The evaluation was performed on 2009 data, a non-epidemic year. Cases reported to SSM and to SIMI were matched. Data quality was evaluated by measuring completeness of information on a minimum set of six variables. Timeliness was based on calculating the interval between date of onset of symptoms and date of reporting to the national level. The number of measles hospitalizations in SSM were compared to those registered in the national discharge database (SDO).

RESULTS:
In 2009, 315 suspected measles cases were reported to SSM and 757 to SIMI; of these, 250 cases matched. Eight of 21 regions did not report cases to SSM. Most cases missing in SSM were from two regions. Seventy-eight SSM cases were hospitalized while 365 hospitalizations were recorded in SDO. The median reporting delay was 10 days. Information on the minimum set of variables was present for 75% of cases.

CONCLUSIONS:
The assessment revealed a substantial degree of under-reporting to SSM. The discrepancy in the number of cases may be partially due to lack of a case definition in SIMI. Awareness of the SSM by physicians needs to be improved. A web-based electronic system for reporting cases to SSM will soon be implemented.

PRESENTED BY:
Vanessa Cozza

Keywords: Surveillance system measles Italy
ESCAIDE REFERENCE NUMBER: 2012937

Estimating Sexually Transmitted Gastrointestinal Illness in Toronto.

Sylvia Ota (Toronto Public Health, Canada), Anne Arthur (Toronto Public Health, Toronto, Canada), Effie Gournis (Toronto Public Health, Canada)

BACKGROUND:
Sexual contact can be a significant risk for gastrointestinal illness (GI), especially among men who have sex with men. Recent changes in the epidemiology of some enteric illnesses in Toronto have underscored the need to understand the extent of sexual transmission. This study uses public health data to understand (a) the proportion of clients known to have a sexually transmitted GI, and (b) the added information available from other communicable disease reports.

METHODS:
Notifications of reportable communicable diseases are received, investigated, and recorded in the mandatory communicable disease information system (iPHIS) used in Ontario, Canada. GI reports for Toronto residents were considered if they: (a) occurred between January 1 2006 and December 31 2010, (b) had evidence of a GI that was known to be transmitted sexually, and (c) were 18+ years old at time of illness. Outbreak-associated and travel-related cases were excluded. Cases were grouped into five mutually exclusive categories, which correspond hierarchically to the likelihood of sexual transmission. Data were analyzed using SAS v9.2 and PASW Statistics 18.

RESULTS:
Overall, 4.1% of clients reported sexual contact. Gender differences were observed, with 6.7% of men and 0.3% of women reporting sexual contact ($p<0.01$). When the other categories of data were considered, an additional 15.4% of male cases and 4.8% of female cases are estimated to also be sexually transmitted. Of those who reported sexual contact, 59% also met the criteria for one of the other categories corresponding to sexual transmission.

CONCLUSIONS:
Public health records that go beyond a case's report of sexual contact for a GI can be useful to better estimate the frequency of sexually transmitted GI.

PRESENTED BY:
Anne Arthur

Keywords: Sexually Transmitted Disease, Gastrointestinal Diseases, Urban Health, Epidemiology
ESCAIDE REFERENCE NUMBER: 2012995

Evaluation of the national Shigella Surveillance in England to improve outbreak detection and management

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BACKGROUND:
In September 2011, we investigated a nationwide outbreak of Shigella flexneri of serotype 3a among men who have sex with men (MSM). Between September and December 2011, we enhanced surveillance for S. flexneri nationally to follow up S. flexneri reports and ascertain risk factors, including MSM activity. Since retrospective analysis of laboratory data indicated that the outbreak had started in 2009, we evaluated the routine and enhanced system to assess their ability of outbreak detection and develop recommendations to strengthen outbreak identification and response.

METHODS:
Using the national laboratory reporting database (LabBase) and the national reference laboratory database for Gastro¬intestinal pathogens (GastroDataWarehouse – GDW), we evaluated the timeliness of laboratory reporting and estimated the sensitivity of each database. We estimated completeness of sexual behaviour information in enhanced reports submitted between September to December 2011.

RESULTS:
Between 2009 and 2011, the median duration between specimen collection and laboratory reporting to the Health Protection Agency was 13 (range 2-477) days. Between May 2011 and May 2012, the sensitivity of LabBase and GDW was 89% and 92%, respectively. Information on sexual contact was provided for 27 (75%) of the confirmed UK-acquired adult male cases and 19 of 21 who reported sexual intercourse a week prior to onset were MSM.

CONCLUSIONS:
Laboratory reporting of S. flexneri was timely and sensitive. Enhanced surveillance proved successful at collecting information on sexual orientation. A review of the arrangements for analysis and dissemination of surveillance information is therefore recommended to ensure early detection and response in the future. We also recommend the inclusion of travel history and sexual health risk factors as part of routine surveillance arrangements.

PRESENTED BY:
Maria Borg

Keywords: Shigella Evaluation Surveillance MSM
ESCAIDE REFERENCE NUMBER: 20121027

Poster Abstracts – Poster Session C

Public Health, microbiology and molecular epidemiology

Impact of the introduction of varicella vaccine on varicella-related hospitalizations in Spain.

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BACKGROUND:
Spain introduced varicella vaccine in 2005 with one dose at 10-15 years old (scheme A) to prevent severe cases. Four out of 19 regions also vaccinated 15 months toddlers with one dose (scheme B) to interrupt transmission. Scheme B also was recommended by private pediatricians. We assessed the impact of vaccination on varicella-related hospitalizations.

METHODS:
We analyzed hospitalizations recorded in the hospital discharges dataset during 1998-2010 at national level and in two regions using different schemes, Catalonia (15% of hospitalizations, scheme A) and Madrid (15%, scheme B). We stratified analyses for the pre (1998-2004) and post (2006-2010) vaccination periods. We estimated incidence rates (IR) by age groups and age-adjusted incidence rate ratios (IRR) using negative binomial regression.

RESULTS:
We included 8,856 varicella-hospitalized cases in the first period and 6,128 in the second. National varicella-related hospitalization IR decreased significantly in 4 age-groups: from 28.5/100,000 (95%CI=26.4-30.5) to 22/100,000 (95%CI=19.4-24.6) in 1-4 years, from 7.3/100,000 (95%CI=6.5-8.0) to 5.5/100,000 (95%CI=4.9-6.1) in 5-9 years, from 2/100,000 (95%CI=1.7-2.2) to 1.3/100,000 (95%CI=1.4-1.5) in 25-29 years, from 3.6/100,000 (95%CI=3.3-3.9) to 2.2/100,000 (95%CI=1.9-2.4) in 30-39 years (post-vaccination age-adjusted IRR:0.91, 95%CI=0.86-0.96). In Catalonia, IR decreased only in 30-39 years from 3.7/100,000 (95%CI=3.4-4) to 2.4/100,000 (95%CI=1.7-3) (IRR:0.86, 95%CI=0.77-0.96). In Madrid, IR decreased in 1-4 years from 37.6/100,000 (95%CI=31.6-43.6) to 14.9/100,000 (95%CI=2.7-27) and from 4.2/100,000 (95%CI=3.5-4.8) to 1.7/100,000 (95%CI=0.7-2.7) in 30-39 years (IRR:0.65, 95%CI=0.54-0.79).

CONCLUSIONS:
Results of analysis suggest that vaccinating toddlers against varicella decreases overall varicella-related hospitalizations while vaccinating only adolescents had no impact. What observed at national level may reflect also the impact of vaccination recommended by the private sector. Further studies should examine the impact of vaccination on the incidence by age group and vaccination coverage.

PRESENTED BY:
María José Sagrado

Keywords: Varicella, varicella vaccine, hospitalizations
ESCAIDE REFERENCE NUMBER: 20121053

Regional Campylobacter outbreak investigation: combining epidemiology and microbiology

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BACKGROUND:
The Municipal Health Service (MHS) was informed by a local laboratory about an increase of Campylobacter cases. The MHS started an investigation in order to asses the regional incidence and the possibility of a food related source, using both epidemiological and microbiological information.

METHODS:
The MHS contacted regional laboratories about the number of Campylobacter isolates since 2011 and the National Institute of Public Health and the Environment to get the historical national trends. The MHS interviewed recent cases about their food habits. Eleven Campylobacter strains isolated from stools of the patients were subtyped to determine clonal relationship, using Amplification Fragment Length Polymorphism (AFLP).

RESULTS:
An epicurve of the isolates of two regional laboratories indicated that there was a slightly higher than expected number of cases in March 2012. National historical data showed a incidence peak around January. Seven patients were interviewed and 4 out of 7 patients lived in the same city. There was no common specific food item identified. Isolates of 11 patients (including the 7 interviewed patients) were identified as Campylobacter jejuni. Three of these 11 isolates were highly genetically related compared to the highly diverse group of other C. jejuni strains in the database. Two of these patients bought their meat in the same supermarket. The Food and Consumer Product Safety Authority was informed. The number of new cases was monitored, but the number of cases did not increase further.

CONCLUSIONS:
The assessment showed that there was an unexpected slight increase in campylobacteriosis cases. Subtyping of available isolates using AFLP showed 3 genetically related cases, suggesting an outbreak. Nevertheless, the findings showed no clear common epidemiological links between the patients.

PRESENTED BY:
Ewout Fanoy

Keywords: Campylobacter jejuni Amplification Fragment Length Polymorphism AFLP
ESCAIDE REFERENCE NUMBER: 2012581

EU-LabCAT

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BACKGROUND:
Given the necessity to integrate microbiological and epidemiological capacity for enhanced infectious disease detection and control, ECDC, through a Health Protection Agency-won tender, aimed to develop a tool to assess sufficient microbiological capability and capacity by function and pathogen. This contributes to a key ECDC public health microbiology (PHM) priority – to implement a system for monitoring laboratory capabilities for European surveillance of infectious diseases and epidemic preparedness.

METHODS:
The project defined: (a) generic elements of laboratory capacity; (b) specific elements of capability per disease; and (c) criteria for prioritisation of the 47 diseases and two special health issues listed under Commission Decision 2119/98.

RESULTS:
An Excel-based tool was developed with drop-down menus to facilitate response to carefully weighted questions. The generic indicators probe capacity and capability in five main areas: Organisation and Planning; Laboratory-based Surveillance; Surveillance and Epidemic Preparedness; Quality Systems and Laboratory Biosafety; and Networks. For five diseases – Influenza, TB, Legionnella, VTEC, MRSA – specific criteria were defined under common headings: Diagnostic Testing; Characterisation and Typing; Quality; Networks and Surveillance; Cross-sector Collaboration. The prioritisation tool targeted: Intervention Potential; Burden of Disease; Threats to Public Health; Political Dimension, weighted by importance and immediacy of impact. An overview of Member States' (MS) response is quantitatively displayed on a 'dashboard'.

CONCLUSIONS:
With MS experts (National Microbiology Focal Points, Coordinating Competent Bodies, and Advisory Forum members), ECDC are developing a monitoring and appraisal system to enable MS to self-assess reference laboratory performance. An "interactive demo" and explanatory flow chart from data collection to public health action will allow integration of expertise from the ESCAIDE epidemiology and PHM community into this novel and responsive tool.

PRESENTED BY:
Colin Stewart Brown

Keywords: Microbiology, Epidemiology, Capacity Building, Emergency Preparedness
ESCAIDE REFERENCE NUMBER: 2012645

The etiology of community-acquired pneumonia in the Netherlands

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BACKGROUND:
Community-acquired pneumonia (CAP) is a common clinical disorder. In clinical practice, the diagnosis of CAP is usually established on clinical grounds, and only limited microbiological tests are performed. To gain more insight in the etiology of CAP in the Netherlands we performed a prospective observational study in the period from November 2007 to January 2010, using an extensive combination of microbiological techniques.

METHODS:
Patients with CAP, aged ›18 years attending the emergency department of a general hospital in Southern Netherlands, were invited to participate in the study. Blood, sputum, urine, and combined nose – and throat-swab samples were tested for common respiratory pathogens, including an extensive PCR panel and paired serology. Furthermore, clinical chemical blood levels were assessed, and data on clinical parameters, demographics, and potential risk factors were collected.

RESULTS:
A total of 339 patients aged 18-96 years (median age 65 years) were included in the study. Despite the wide range of microbiological tests no pathogen could be detected for 40% (n=137) of these patients. Bacterial pathogens were detected for 62% (n=125) of the remaining 202 patients, and viral pathogens for 20% (n=40). For 18% (n=37) of them both bacterial and viral pathogens were detected. Streptococcus pneumoniae was the most frequently detected pathogen (22%; n=74), followed by Coxiella burnetii (14%; n=48), and rhinovirus (9%; n=29). C. burnetii patients were relatively young and without important co-morbidity compared to patients with CAP caused by S. pneumoniae or other pathogens.

CONCLUSIONS:
Since our study coincided in time and place with a large Q fever outbreak, the results cannot be extrapolated to the rest of the Netherlands. Nevertheless, this study enables us to compare patients with CAPcaused by C. burnetii to patients with CAPcaused by other respiratory pathogens.

PRESENTED BY:
Rianne van Gageldonk

Keywords: Pneumonia, etiology, Coxiella burnetti, Streptococcus pneumoniae
ESCAIDE REFERENCE NUMBER: 2012646

Poster Abstracts – Poster Session C

Molecular evolution of human Norovirus: predicting the emergence of epidemic strains

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BACKGROUND:
Human Noroviruses (NoV) are a major cause of acute gastroenteritis worldwide. Previously, two sites (A and B) within the P2 domain of the surface capsid protein (VP1) were shown to define strain-specific antibody-antigen interactions (in vitro), and mutations within these sites were correlated with the emergence of epidemic Genogroup II-4 (GII-4) strains. Here, we used modelling to predict protein surface areas derived from different amino acid substitutions at Sites A and B as predictors for changes that correlated with the emergence and/or switch of epidemic strains.

METHODS:
Pyrosequencing was applied for screening of Sites A and B, using a panel of 1062 GII-4 NoV clinical specimens from England (2000-2011) and 250 GII-4 NoV sequences from Genbank. Protein modelling was applied to predict the effects of amino acid changes at these sites. Findings were compared to epidemiological data which reflect the number of NoV-positive laboratory reports in England & Wales.

RESULTS:
Analysis of amino acids at Site A revealed that the majority (82.6%) belonged to one of three defined surface motif types (SMT-1, -2 and -3).Three years (2002, 2006 and 2009) were associated with higher-than-average NoV activity in the UK and the analysis showed that this correlated with the emergence of the different major surface area motif types (SMTs) for Site A. In contrast, the diversity at Site B could not be used to define SMTs.

CONCLUSIONS:
Here, we propose a model of antigenic evolution within two hotspots of the surface protein VP1. This could be applied asa powerful tool to monitor alterations of antigenic properties in order to foresee and prepare for new epidemic waves.

PRESENTED BY:
Katherina Zakikhany

Keywords: Norovirus, molecular evolution, pyrosequencing, epidemic strains
ESCAIDE REFERENCE NUMBER: 2012661

Epidemiology and Microbiology: Comrades in the Preservation of Measles Elimination Status in Canada

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BACKGROUND:
Although endemic measles has been eliminated from Canada since 1998, imported cases continue to occur. Most cases produce little secondary spread; however some lead to large outbreaks. The combination of microbiological and epidemiological surveillance is imperative to demonstrating the maintenance of measles elimination status. A large outbreak of measles occurred in the Canadian province of Quebec in 2011 that threatened this status.

METHODS:
National enhanced surveillance involves weekly confirmed-case reporting from all provinces and territories. However, microbiological information, including genotyping, required by the Pan American Health Organization to confirm the cessation of local transmission is not captured in the reports. Genotyping, using World Health Organization standardized methods,is performed at the National Microbiology Laboratory on all appropriate specimens submitted by provincial laboratories and was manually linked to epidemiological data to provide comprehensive surveillance information during the outbreak.

RESULTS:
In 2011, 751 confirmed cases were reported to the Public Health Agency of Canada. Genotypes were determined for 147 cases and four genotypes were identified: B3, D4, D8 and D9. The most frequently identified genotype, D4 was associated with a large outbreak that included 686 cases and lasted 27 weeks. The last case reported to be associated with local transmission occurred during the week of November 20, 2011.

CONCLUSIONS:
A sensitive surveillance system is essential for a measles elimination program. This outbreak was a perfect illustration of the need for integration of laboratory and epidemiological information, as the current manually entered weekly national surveillance was inadequate in its ability to provide a complete picture of the outbreak. By augmenting regular enhanced surveillance with microbiological information, Canada was able to demonstrate that sustained chains of endemic measles transmission no longer exist.

PRESENTED BY:
Nashira Khalil

Keywords: Epidemiology Measles Surveillance Microbiology Infectious Disease Outbreaks
ESCAIDE REFERENCE NUMBER: 2012685

Emergence of Escherichia coli encoding Shiga toxin 2f in human STEC infections

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BACKGROUND:
Shiga toxin-producing E. coli (STEC) is an important pathogen worldwide, associated with human gastro-intestinal illness. Shiga toxins can be divided into two groups: Shiga toxin 1 (stx1) and Shiga toxin 2 (stx2). Within both groups, several variants can be distinguished. Variant stx2f is one of the latest described in the literature with pigeons as reservoir. Until now, the stx2f variant was rarely associated with human infections.

METHODS:
All human STEC infections are notifiable in the Netherlands. The basic information gathered includes age, gender, symptoms and date of illness onset. Additionally, laboratories are requested to submit an isolate to the RIVM for serotyping and PCR testing of virulence genes. STEC O157 infections are registered since 1999, STEC non-O157 and testing for stx2f have been added since 2008.

RESULTS:
Between 2008 and 2011, isolates of 362 cases were typed as STEC non-O157 of which 87 (24%) encoded stx2f. Most strains containing stx2f belonged to the serogroups O63:H6 (54%), O113:H6 (14%), O125:H6 (14%) and O132:H34 (5%). Compared to STEC O157 infections, cases with an Stx2f positive isolate reported less frequently stomach ache, blood in stool, haemolytic uremic syndrome and hospitalization. They also had less often blood in stool compared to cases with other STEC non-O157 infections. Almost all infections with Stx2f (89%) occurred between July and December, compared to 73% for O157 and 60% for other non-O157 cases.

CONCLUSIONS:
Human infections with STEC encoding Stx2f are more common than anticipated and constitute a quarter of all reported STEC non-O157 infections in the Netherlands. However, disease following infection appears to be relatively mild compared to other STEC infections with a more pronounced seasonal occurrence.

PRESENTED BY:
Ingrid Friesema

Keywords: Shiga Toxin, Producing Escherichia coli Emerging Infectious Diseases Public Health Population Surveillance Netherlands
ESCAIDE REFERENCE NUMBER: 2012694

Risk factors for endemic human campylobacteriosis of chicken, ruminant, pet,environmental and exotic origin: a combined case-control and genotype-based source attribution analysis

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BACKGROUND:
Campylobacter colonizes the intestine of most warm-blooded animals, resulting in environmental contamination. Case-control studies trace back the origins of human infections to the exposure, which may not point to the original reservoirs because of cross-contamination. Human infections can be attributed to specific reservoirs using multilocus sequence typing (MLST).

METHODS:
We investigated risk factors for human campylobacteriosis caused by sequence types (STs) attributed to different reservoirs using a combined case-control and source attribution analysis. 737 endemic human Campylobacter jejuni/coli cases typed with MLST were included in a case-control study comprising 3119 frequency-matched controls. The asymmetric island model, a population-genetics algorithm for modelling Campylobacter evolution and transmission, attributed these cases to 4 animal reservoirs (chicken, cattle, sheep, pig) and to the environment (water, sand, wild-birds). Moreover, we investigated the contribution of pets (dogs/cats) and exotic STs (carried by travellers) to endemic campylobacteriosis.

RESULTS:
Most cases (~87%) were attributed to chicken and cattle. Consuming chicken was a risk factor for chicken-attributed STs, whereas consuming beef and pork were protective. Animal contact, barbecuing in non-urban areas, tripe consumption, and never/seldom chicken consumption were risk factors for ruminant-attributed STs. Consuming game and swimming in domestic swimming pools in springtime were risk factors for environment-attributed STs. Chicken – and ruminant-attributed infections were partially explained by food-borne transmission; animal contact and environmental pathways were also important. Dog ownership was a risk factor for pet-attributed STs. Person-to-person contacts in post-holiday periods were risk factors for infection with exotic STs.

CONCLUSIONS:
Risk factors for campylobacteriosis depend upon the attributed reservoirs. Combining epidemiological and source attribution data improved campylobacteriosis risk identification and characterization, generated hypotheses, and showed that genotype-based source attribution makes sense epidemiologically.

PRESENTED BY:
Lapo Mughini Gras

Keywords: Campylobacter, source attribution, case-control, MLST
ESCAIDE REFERENCE NUMBER: 2012708

Poster Abstracts – Poster Session C

The international diagnostic accuracy study for the serological detection of West Nilevirus infection performed in 2011 reveals the need to improve diagnostic tests.

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BACKGROUND:
Over the last decades, West Nile virus (WNV) sporadic cases and outbreaks increased in humans and animals, even in Europe. Therefore it is important to evaluate laboratory diagnostic capabilities. The serological diagnosis of WNV infection can be confirmed by enzyme-linked immunosorbent assay (ELISA), immunofluorescence (IF) or neutralisation (NT) tests. The aim of the study was to assess the quality of the WNV serological diagnosis.

METHODS:
The European Network for the Diagnostics of Imported Viral Diseases (ENIVD) organised in 2011 an external quality assurance (EQA) study for the serological diagnosis of WNV infection. A serum panel of 13 samples (included sera reactive against WNV, other flaviviruses and negative controls) was sent to 48 laboratories involved in WNV diagnostics all over the world.

RESULTS:
Forty-seven out of 48 laboratories from 32 countries (20 European and 12 non-European) participated in the study (98% response rate). ELISA diagnostic test was the most performed, in 33 out of 47 laboratories (70%). Overall, the analytical sensitivity and specificity of the diagnostic tests for IgG detection were 84% and 58% respectively. On the contrary, sensitivity and specificity of the diagnostic tests for IgM detection were 52% and 93% respectively.

CONCLUSIONS:
This EQA study demonstrates that the performances of diagnostic tests for the serological diagnosis of WNV varies with respect to IgG or IgM detection. The low specificity of the tests for the IgG detection demonstrates a high level of cross-reactivity with other flaviviruses. Whereas the low sensitivity for the IgM detection, indicates a low capability in detecting IgM antibodies and thus a risk of overlooking WNV acute infections. Therefore, there is a need to improve WNV serological diagnostic tests.

PRESENTED BY:
Andrea Sanchini

Keywords: WNV, External Quality Assurance, analytical sensitivity, analytical specificity.
ESCAIDE REFERENCE NUMBER: 2012768

Emergence of Klebsiella pneumoniae producing OXA-48-like carbapenemases in Spain

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BACKGROUND:
Klebsiella pneumoniaeisolates producing the carbapenem-hydrolyzing oxacillinase OXA-48 (OXA48-KPN) have been increasingly reported throughout the Mediterranean area. We aimed to investigate the dissemination of OXA48-KPNin Spain and characterize the epidemiological and molecular basis of the dissemination.

METHODS:
We selected 21of 151 OXA48-KPN isolates representing referrals from 10 hospitals located in six geographical areas between January-2011 and May-2012. Clonal groups were established by pulsed-field gel electrophoresis (PFGE) and multilocus sequence typing (MLST). Resistance genes were characterized by sequencing. Plasmids carrying blaOXA¬48-like were studied by PFGE.

RESULTS:
Isolates had different resistance patterns to carbapenems with minimal inhibitory concentrations (MICs) below and above breakpoints. All isolates but one additionally harboured the extended-spectrum β-lactamase CTX-M-15 gene. PFGE typing revealed six clusters that were identified as MLST types 11, 16, 392, 405, 437, and 663. The more prevalent C1 and C2 PFGE clusters contained 12 and 4 isolates from 6 and 2 hospitals, respectively; they belonged to ST types 405 and 663 (C1) and 16 (C2).In all ST types but one, the blaOXA-48-like gene was located in a plasmid that was self-conjugative and did not carry blaCTX-M-15 gene.

CONCLUSIONS:
We provide evidence that 1) there is an intra – and inter-hospital dissemination of genes by conjugative plasmid transfer as well as the spread of a multidrug-resistant OXA48-KPN clone; 2) Sub-breakpoint MICs range of some OXA48 producers could lead to an underdetection of isolates producing these enzymes,creating a risk for unrecognized spread; 3) Combination of OXA48 with other resistance mechanisms like CTX-M-15 leads to broader resistance and leaves fewer therapeutic options. Adequate screening and detection methods are therefore required to prevent and control OXA48-KPN spread.

PRESENTED BY:
Maria Dolores Fernandez-Garcia

Keywords: OXA-48, Klebsiella pneumoniae, carbapenems, multiresistance
ESCAIDE REFERENCE NUMBER: 2012813

Molecular characterisation of Streptococcus pyogenes isolates from England causing severe infections, during 2008-2009.

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BACKGROUND:
Following a marked increase in invasive group A streptococcal infections (iGAS) in England during late 2008, an iGAS national enhanced surveillance was established by the HPA in January 2009. A total of 1441 GAS isolate were submitted to the National and WHO Streptococcus and Diphtheria Reference Unit (SDRU). A random sample of isolate referrals were characterised in order to evaluate any differences between invasive and non-invasive isolates and to detect emerging clones during this period.

METHODS:
A random sample of 190 isolates were analysed by T and M/emm typing, MLST, superantigen gene (sag) profiling and sic gene sequence variation (on emm/M1 isolates).

RESULTS:
Amongst the 190 cases, 46.9% were children ‹15y of age and 20% were aged ›65. The predominant emm/M types were emm1 (21%) and emm3 with 78% of emm1 isolates with the sag profile speA,B,F,G,smeZ and 38% of emm3 with sag profile speA,B,F,G,K,ssa. MLST further discriminatedemm3 into 7 ST types (60% belonged to ST15); emm1 were of ST28 and thirteen sic alleles documented. The prevalent allele was 1.02 (sag profile A,B,F,G,Smez). The case fatality rates were highest among those with infections caused by emm 1 (29%), emm 3 (19%).

CONCLUSIONS:
The increase in H1N1 influenza virus during December 2008 may have contributed to transmission of GAS by making persons prone to infection. Amongst the samples selected, an almost equal number of deaths were seen amongst the prevalent emm types, mainly amongst children and the elderly. Molecular typing showed specific virulent clusters amongst emm/M1 and 3 strains. The results obtained and methods used should assist in the understanding of the epidemiology of iGAS infection and impact on disease control and vaccine development.

PRESENTED BY:
Aruni De Zoysa

Keywords: Molecular, characterisation, Epidemiology, Streptococcus pyogenes,
ESCAIDE REFERENCE NUMBER: 2012870

Emergence of human GBS (Streptococcus agalactiae) in livestock and wildlife

Ruth Zadoks (Moredun Research Institute, United Kingdom), Geoffry Foster (SAC, United Kingdom), Jorgen Katholm (Knowledge Centre for Agriculture, Denmark)

BACKGROUND:
Group B streptococcus (GBS) or Streptococcus agalactiae is a commensal and pathogen of humans. It may also cause disease in animals, particularly dairy cattle. Historically, human and cattle-associated GBS belonged to different subpopulations. In the late 1900s, GBS was almost eradicated from cattle in several European countries. GBS is now (re-)emerging in dairy cattle and wildlife. Using molecular epidemiology methods, we investigated the potential for human to animal transmission of GBS.

METHODS:
GBS isolates were collected from bovine milk through a nation-wide surveillance program in Denmark (n=200) and from sea mammals through the Scottish Strandings Scheme (n=10). Bacterial species identity was confirmed by PCR and sequence types (ST) and clonal complexes (CC) were assigned by multilocus sequence typing and eBURST analysis.

RESULTS:
Among GBS from bovine milk, ST1 (28%), ST23 (23%) and ST103 (20%) were most common. Isolates belonging to CC67 were not detected. Among isolates from sea mammals, ST23 (8 isolates from lungs of seals, 1 isolate from a sperm whale) and ST399 (1 isolate from a bottlenose dolphin) were detected.

CONCLUSIONS:
Historically, a bovine-associated subpopulation of GBS (CC67) was responsible for the majority of GBS mastitis in dairy cattle. In Denmark, subpopulations that were historically associated with humans, such as ST1 and ST23, and the little known ST103 now cause the majority of infections in cattle. ST23 is also the most common GBS found in sea mammals. These results suggest that GBS has the ability to adapt to new host populations and that there may be interspecies transfer of GBS between humans, livestock and wildlife. Further work on the molecular epidemiology of human and animal GBS is needed to understand routes of transmission and zoonotic risks.

PRESENTED BY:
Ruth Zadoks

Keywords: Zoonoses; Molecular Epidemiology; Streptococcus agalactiae; Livestock; Animals, wild
ESCAIDE REFERENCE NUMBER: 2012934

Poster Abstracts – Poster Session C

Molecular identification of Legionella spp isolates from environmental samples in Crete,Greece, during the period 2004-2011.

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BACKGROUND:
During a 7-year period (2004-2011) 68 species of Legionella were isolated from 124 hotels in Crete (Greece) as part of routine investigation following human cases on travellers or as part of the routine surveillance program. We report the epidemiology of Legionella species in Crete.

METHODS:
Isolation was performed from water samples (ISO 11731 (1998) and ISO 11731-2 (2004)). Isolates were identified by DFA, and Latex agglutination. A portion of the 16S rRNA, and the mip gene were amplified and sequenced. L. pneumophilaserogroup 1 isolates were processed by Sequence-based Typing (SBT). All isolates were tested by MALDI Biotyper technique.

RESULTS:
The isolates were identified as: L. pneumophila SG1 (7/68), SG2 (2/68), SG3 (7/68), SG5 (1/68), SG6 (15/68), SG8 (3/68), SG12 (2/12), SG13 (1/68), SG15 (1/68), L. anisa (11/68), L. rubrilucens (1/68), L. maceachernii (1/68), L. quinlivanii (1/68), L. oakridgensis (1/68) and L. taurinensis (14/68). Three separate sequence types were revealed with ST 3,4,1,1,14,9,11 (ST37) being the most prevalent; the rest two STs were new (ST 3,4,1,1,14,9,18and 3,4,1,1,46,9,11). Genes, mompS (of 2 isolates) and proA, mip of a single isolate were designated as putative new alleles. Of the isolates, L. rubrilucens, L. quinlivanii, L. taurinensis and L. maceachernii could not be securely identified by MALDI Biotyper.

CONCLUSIONS:
We report for the first time the identification of Legionella species in the island of Crete. The identification of three different STs of L. pneumophila SG1 and the overall variability of the genus species detected in this relatively small number of isolates imposes the need for further detailed epidemiological investigations, especially in holiday destinations, as part of precautionary public health measures. Biotyper proved a useful, quick and overall acurate technique for the identification of Legionella species.

PRESENTED BY:
Dimosthenis Chochlakis

Keywords: Legionella pneumophila Legionella species Typing SBT
ESCAIDE REFERENCE NUMBER: 20121058

Vaccine preventable diseases

Increase of mumps in young adults EU/EEA, 2007-2010

Ida Czumbel (ECDC, Sweden), Chantal Quinten (ECDC, Sweden), Phillip Zucs (ECDC, Sweden)

BACKGROUND:
Mumps is preventable by vaccination, but despite good vaccine availability and uptake, many cases are still occurring in Europe. The objective of this analysis was to investigate recent trends of mumps in Europe and to characterise the cases.

METHODS:
Mumps notification data for 2007-2010 from 28 consistently reporting EU and EEA Member States were obtained from the European Surveillance System (TESSY) database hosted at ECDC. Data were included regardless of case classification. Population denominator data for calculation of notification rates were obtained from Eurostat. Case-based data from 17 Member States served to analyse the age and gender distribution. Time trends were analysed by Poisson regression, calculating incidence rate ratios (IRR) and 95% confidence intervals (CI) for each incremental year.

RESULTS:
From 2007 to 2010, 28 EU/EEA Member States reported 38.948 cases of mumps. Notification rates were 4.1/100 000 in 2007, 2.7 in 2008, 3.1 in 2009 and 2.0 in 2010, representing a significantly decreasing trend (IRR=0.80, CI: 0.75-0.85). Increasing trends were found for Denmark (IRR=1.28, CI: 1.10-1.49) and the Netherlands (IRR=10.9, CI: 7.39-16.29). A total of 37193 cases reported by 17 countries were analysed for gender and age characteristics. Over the studied period, the EU highest notification rates were notified in age groups 15-19 (12.58/100000) and 20-24 (13.69/100000). An increasing trend was noted in age group 25-29 years (IRR=1.16, CI: 1.02-1.35), while a decreasing trend was noted among children aged 5-9 (IRR=0.88, CI: 0.86-0.91) and 10-14 years (IRR=0.78, CI: 0.69-0.90). Regarding gender, higher notification rates were reported in males (6.4/100000) versus females (3.0/100000); however no significant trends were reported for males or females.

CONCLUSIONS:
The notification rate of mumps at EU level is decreasing, despite an increasing trend in young adults, probably due to a combination of lower immunization levels for mumps and waning immunity.

PRESENTED BY:
Ida Czumbel

Keywords: Mumps, trend, notification rate, age group, gender
ESCAIDE REFERENCE NUMBER: 2012712

Recent increase of pertussis incidence after 15 years of low circulation in Spain

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BACKGROUND:
In Spain, the routine three DTP doses before 6-7 months started in 1975. A fourth dose at 15-18 months was introduced in 1996 and a fifth at 4-6 years in 2001. Acellular vaccine replaced the whole cell in 2005. DPT3 coverage reached›=90% since 1995. Pertussis incidence increased suddenly to 6.54/100,000 in 2011. We describe pertussis incidence since 1998 and identify the susceptible groups in the last period.

METHODS:
Pertussis cases notified to the National Surveillance Network during 1998-2011 were analyzed. We defined the periods 1998-2001, 2002-2005, 2006-2009 and 2010-2011, according to the epidemic waves. By age-group, we calculated pertussis incidence rates (IR) and period incidence rate ratios (IRR) with Poisson regression, taking 1998-2001 as reference.

RESULTS:
Overall pertussis IR increased from 1.26/100,000 in 1998-2001, to 4.56/100,000 in 2010-2011. In 2010-2011, specific age-group IR were 157/100,000 in ‹1 year (243.6/100,000 in ‹6 months), 20.5/100,000 in 1-4 years, 15.1/100,000 in 5-9 years, 10.2/100,000 in 10-14 years and 1.1/100,000 in ≥15 years. In ≥15 years, the IRR increase started in 2002-2005 from 1.59 (95%CI=1.3-1.95) to 10.1 (95%CI=8.49-12.03) in 2010-2011. In ‹3 months, the IRR increase started in 2006-2009: 1.83 (95%CI=1.6-2.09) and 4.53 (95%CI=3.98-5.16) in 2010-2011. In 2010-2011, the IRR increase affects all age-groups, ranging between 2.3 (95%CI: 2.04-2.56) in 10-14 years and 10.1 (95%CI=8.49-12.03) in ≥15 years.

CONCLUSIONS:
The recent increase affects pre-vaccinated infants, probably linked to an increase in adults. This is consistent with a progressive accumulation of susceptible due to waning immunity after years of low incidence. However other factors, including increase in diagnosis and reporting, may have contributed. Analysis of other sources of information, as hospitalizations and death, will help confirming these results.

PRESENTED BY:
Vinciane Sizaire

Keywords: Pertussis, vaccination, wanning immunity, incidence
ESCAIDE REFERENCE NUMBER: 2012719

Diphtheria and tetanus seroepidemiology among children and young adults in Tajikistan, 2010

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BACKGROUND:
Tajikistan experienced a major diphtheria outbreak during the 1990's (~10,000 reported cases, 800 deaths), which was controlled after nationwide immunization campaigns. During 2000-2010, only 52 diphtheria cases and 7 tetanus cases were reported, but the immunization coverage and the quality of surveillance is uncertain due to persistent economic difficulties. With this study, we aimed to determine the population immunity against diphtheria and tetanus in children and young adults in Tajikistan.

METHODS:
Serum specimens from a nationwide sample of persons aged 1-24 years, selected through stratified cluster sampling, were tested for anti-diphtheria antibodies (VERO cell neutralization assay, n=2325) and anti-tetanus IgG (ELISA, n=2319). Specimens with antibody levels ‹0.1 IU/ml were considered seronegative. A brief questionnaire including demographic information and potential risk factors was completed for each participant.

RESULTS:
Overall, 48.6% (95% CI, 45.7-51.5) of the surveyed population were seronegative for diphtheria of which 22.4% (95% CI, 20.1-24.8) had no detectable antibodies. 21.1% (95% CI, 18.8%-23.7%) were seronegative for tetanus. The highest percentage of seronegatives was observed among the 10-19 year-olds (~63% for diphtheria; ~32% for tetanus, respectively). Risk factor analysis for diphtheria identified birth setting and maternal education as significantly associated with seropositivity among children aged 1-14 years.

CONCLUSIONS:
The data show that population immunity for diphtheria is low and suboptimal for tetanus among children and young adults in Tajikistan. The findings highlight the need to improve routine immunization delivery in the country and support a proposal by the Tajikistan Ministry of Health for a nationwide one-time diphtheria-tetanus supplementary immunization campaign to rapidly close immunity gaps and prevent diphtheria outbreaks.

PRESENTED BY:
Katherina Zakikhany

Keywords: Diphtheria, Tetanus, Serosurvey, Tajikistan, VPD
ESCAIDE REFERENCE NUMBER: 2012732

Poster Abstracts – Poster Session C

An outbreak of rubella among adolescents in Romania, September 2011 – March 2012

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BACKGROUND:
Since September 2011, an increase of rubella cases was notified in Romania. Since the last rubella epidemic in 2003, the incidence increased to 20.6/100,000 in 2011 compared to the median 10.9/100,000 during 2005-2010. According to the childhood immunization schedule, two doses of the measles-mumps-rubella (MMR) vaccineare routinely administered at the age of 12-15 months and 6-7 years since 2005. Additionally, girls aged 13-14 years were vaccinated with monovalent rubella vaccine between 2003-2008. We aimed at describing the notified rubella cases in order to inform public health actions.

METHODS:
We described rubella cases notified to the national surveillance system between September 2011 and March 2012. Cases were identified and classified according to European Commission case definition. Data collected included age, sex and vaccination status. Vaccine effectiveness (VE) was calculated using the screening method, using the mean vaccination coverage in the MMR eligible population.

RESULTS:
The increase of rubella cases was first detected in the North-west region and spread South-west, becoming nationwide in February 2012. Overall 21457 cases were notified (incidence 100.5/100,000), 8726 (40.7%) among females (incidence 96.4/100,000). From the 5401 cases reported amongst age groups eligible for vaccination 275 (5%) were vaccinated. Of all cases, 16056 (74.8%) occured in non-vaccinated age-groups, with the highest incidence among 15-19 years (1218.7/100,000), followed by the 10-14 years (255.9/100,000). The VE among eligible age-groups was over 98%.

CONCLUSIONS:
Rubella cases occurred mainly in unvaccinated adolescents aged 15-19 years. To prevent further spread we recommended intervention immunization of all persons aged 10-19 years starting from September 2011; implementation of enhanced congenital rubella syndrome surveillance; and screening for anti-rubella antibodies of pregnant women epidemiologically linked to rubella cases.

PRESENTED BY:
Denisa Georgiana Janta

Keywords: Rubella, vaccination immunization adolescents
ESCAIDE REFERENCE NUMBER: 2012733

Mumps in Germany – still endemic and under reported: analysis of the German statutory health insurance data 2007-2010

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BACKGROUND:
In Germany, mumps is notifiable only in the 5 federal states of former East-Germany (mean annual incidence 2007-2010: 0.65/100,000). East-Germany had no mumps vaccination program in place until 1991, whereas West-Germany had recommended the vaccination since 1976. For two decades vaccination coverage has consistently been higher in the Eastern states. We therefore used statutory health services data to estimate nationwide mumps incidence and associated complications.

METHODS:
We analysed all ambulatory physicians' refund claims to the statutory health insurances of mumps-related International Classifications of Diseases codes (B26.0-9) between 2007 and 2010. For the Eastern states we additionally compared number of cases to notification data.

RESULTS:
Among the 21,754 mumps-cases, 9,901 (46%) were male. Orchitis was the most often coded complication (n=662; 6.7% of male cases). Annual mumps incidence per 100,000 dropped from 10.9 in 2007 to 7.8 in 2010; most affected age-groups were children 5-9 years (mean annual incidence 2007-2010: 19.2/100,000) and adolescents 15-19 years (15.5/100,000). Mean annual incidence was significantly higher in the Western than Eastern states, especially among 20-29 year-olds (13.1/100,000 vs. 8.7/100,000; p<0.001). Compared to the insurance data, the number of cases from routine surveillance in the Eastern states was 9.5-times lower (2007-2010: n=2,735 vs. n=288). The difference was more pronounced among adults (20-times) than among children/adolescents (4.4-times).

CONCLUSIONS:
Despite the decrease in incidence since 2007 and long-established vaccination programmes, mumps is still endemic in Germany. In the Western states, especially young adults are highly affected, possibly due to suboptimal vaccination coverage and waning immunity. Comparison of notification data with insurance data in the Eastern states indicates severe under reporting. Although insurance data is not collected for surveillance purposes, it can be used to approximate incidence.

PRESENTED BY:
Anja Takla

Keywords: Mumps, epidemiology, Germany, immunization schedule, surveillance, health services research
ESCAIDE REFERENCE NUMBER: 2012758

At what age do people get measles in Europe? Defining vaccination strategies towards elimination

Marta Busana (EDCD, Sweden), Lucia Pastore Celentano (EDCD, Sweden), Tarik Derrough (EDCD , Sweden), Andrew J Amato Gauci(EDCD, Sweden), PL Lopalco (ECDC, Sweden)

BACKGROUND:
This study aims to describe the age groups most affected by measles in Europe and their vaccination status in order to support policy makers in defining vaccination strategies.

METHODS:
The number of reported subjects with measles was determined using data collected at the European Centre for Disease Prevention and Control in 2010-2011. In all 29 countries submitting data a national mandatory notification system covering the general population was in place. A subject was defined vaccinated if they received at least one dose of measles vaccine. To test the association between being not vaccinated and age group a random effects logistic regression model for correlated data was fitted to account for spatial clustering as data come from national surveillance systems.

RESULTS:
A total of 61,364 cases of measles were reported in 2010-2011. Eighty-two percent of cases were not vaccinated. The highest proportion of cases was reported among children between 1-4 years (20.8%), infants <1 year had the highest incidence rate (59.1 cases per 100,000 population year). Compared to children between 1-4 years the odds of a case not being vaccinated were higher among children <1 not targeted by vaccination programs (OR:4.6;IC95%:2.9-7.2;p<0.001) and adults ≥45 years (OR:5.7;IC95%:2.5-13.1;p<0.001).

CONCLUSIONS:
National immunisation programs should be strengthened as a relevant proportion of cases is not vaccinated and belongs to the target age groups. High coverage should lead to herd immunity effect that would protect infants too young to receive the vaccine and susceptible adults. To reduce the burden of the disease among infants and adults policy makers should consider introducing the first dose of vaccine at between 9 and 12 months as well as targeting some adult with catch up immunisation programs.

PRESENTED BY:
Marta Busana

Keywords: Measles, Rubeola, Measles Vaccine, Measles-Mumps-Rubella Vaccine, Immunization, Vaccination, Elimination
ESCAIDE REFERENCE NUMBER: 2012822

Evaluating the link between global measles activity and measles importation into Ontario

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BACKGROUND:
In recent years, measles activity has increased throughout industrialized and developing countries. The province of Ontario has also experienced a significant increase in measles activity, stemming from imported disease. Understanding how Ontario is connected with global areas of endemic and epidemic measles activity through international travel could offer valuable insights into the risks of measles importation.

METHODS:
Using national and regional measles surveillance data from the World Health Organization (WHO), we visualized the global distribution, burden, and seasonality of measles in 2010. We then analyzed the worldwide flight itineraries of all international travellers entering Ontario in 2010 and compared the source countries of travellers with the corresponding incidence rate of measles activity. Finally, we compared the seasonality of measles activity in different world regions with the seasonal patterns of international travel to Ontario from those regions.

RESULTS:
Countries with extremely high incidence rates of measles generally had low volumes of international travel to Ontario and countries with extremely high volumes of international travel to Ontario generally had low incidence rates of measles. Notable exceptions were France, Ireland and the Philippines. Seasonal peaks in measles activity in the WHO European Region most closely aligned with seasonal peaks in international travel to Ontario.

CONCLUSIONS:
Integrating knowledge on the global distribution, burden and seasonality of measles and the corresponding magnitude and seasonal pattern of international travel can offer valuable insights into the risks of measles importation. From the perspective of Ontario, France, Ireland and the Philippines appear to be the most important potential source countries for imported measles virus. Further integrating knowledge of measles immunity within Ontario could help target areas for enhanced measles surveillance and vaccination.

PRESENTED BY:
Natasha Crowcroft

Keywords: Measles, Travel, Disease Outbreaks, Public Health
ESCAIDE REFERENCE NUMBER: 2012841

Poster Abstracts – Poster Session C

Knowledge, behaviours and attitudes regarding human papillomavirus (HPV) infection and its relationship to cervical cancer and prevention methods in females in South-West Greece

Eleni Jelastopulu (Department of Public Health, School of Medicine, University of Patras, Greece), Panagiotis Plotas (Department of Public Health, School of Medicine, University of Patras, Greece), George Michail (Department of Obstetrics and Gynaecology, University Hospital of Patras, Greece), Konstantinos Poulas (Department of Pharmaceutical Marketing, School of Pharmacy, University of Patras, Greece)

BACKGROUND:
Cervical cancer is one of the most frequent type of cancer in women with an estimated 54,000 new cases and 25,000 deaths in 2008 for the entire Europe. The risk of developing cervical cancer is mainly related to the Humanpapilloma virus (HPV) infection. The purpose of this study was to assess the knowledge, behaviours and attitudes regarding cervical cancer, Papanicolaou testing, HPV infection and vaccination among females in South-West Greece.

METHODS:
A cross-sectional study was conducted in January 2012 in women, who were invited to participate in the new established national screening programme for cervical cancer. A 15-items questionnaire about cervical cancer, HPV infection and vaccination was administered to all participating women to assess their attitudes and knowledge.

RESULTS:
A total of 277 women were interviewed, mean age 39 years old. All of them believe that cervical cancer is preventable; however, a high percentage (82%) is concerned about it. Knowledge of HPV, of its relation with cervical cancer and of the transmission mode is high (66.8%, 77.2% and 75.1%, respectively). However, only 21% are aware that vaccination can prevent HPV, whereas 70% stated Papanicolaou testing as HPV prevention. Furthermore, 93.9% are not vaccinated, although 76.8% stated that vaccination should be mandatory. About 70% of the study population screen every year for cervical cancer. Finally, 92% agreed that uptake of cervical screening is needed even when being vaccinated.

CONCLUSIONS:
Knowledge levels about HPV and its relation to cervical cancer seem to be good. However, a great majority is not aware that vaccination can prevent cervical cancer. The results indicate the need and importance of giving more adequate information and educational efforts for HPV vaccination.

PRESENTED BY:
Eleni Jelastopulu

Keywords: Cervical cancer, HPV, screening, Greece
ESCAIDE REFERENCE NUMBER: 2012862

Epidemiology of increased pertussis in Northern Ireland in 2012

Philip Veal (Public Health Agency, United Kingdom), Lewis Shilliday (Public Health Agency, United Kingdom), Monica Sloan (Public Health Agency, United Kingdom), Brian Smyth (Public Health Agency, United Kingdom), Richard Smithson (Public Health Agency, United Kingdom)

BACKGROUND:
An increase in pertussis infections reported to our department was noted during the first five months of 2012. The epidemiology of reported pertussis infections since 2007 was reviewed to elicit changes and target public health action.

METHODS:
All pertussis notifications from clinicians and laboratory confirmed cases reported by laboratories between 1990 and May 2012 were identified and analysed to describe the change in epidemiology over time. Data analysis included determining the trends in cases over time, demographic characteristics, vaccination profile of cases, laboratory testing methods, and outcome.

RESULTS:
More cases of pertussis were notified in the first five months of 2012 (n=114) than in the whole of the preceding five years. The incidence of laboratory confirmed cases increased from 0.8/100,000 in 2011 to 4.4/100,000 in the first five months of 2012 (550% increase). Confirmed cases in 2012 were mostly less than 3 months (44%) and older than 15 years (24%). Confirmed cases in those older than 15 increased nine and a half fold in the first five months of 2012 (n=19) compared to the whole of 2011 (n=2). Between 2007 and 2012, 24.8% of confirmed cases had been fully vaccinated. PCR testing of nasopharyngeal specimens for pertussis was increasingly common: 289 tests were submitted in the first five months of 2012 compared to 59 in the whole of 2012. The positivity rate of PCR tests decreased over this period (13.6% to 12.5%).

CONCLUSIONS:
Pertussis infections have increased markedly in Northern Ireland in 2012 with the greatest increase in those older than 15 years. Increased PCR testing for pertussis did not result in a higher positivity rate. The increase in cases may be due to increased case ascertainment.

PRESENTED BY:
Philip Veal

Keywords: Pertussis, whooping cough, epidemiology, Northern Ireland
ESCAIDE REFERENCE NUMBER: 2012899

Invasive Streptococcus pneumoniae in different age groups in Italy before and after PCV7 implementation: evolution of serotypes and antibiotic resistance

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BACKGROUND:
PCV7 has been available in Italy since 2001, however only in 2005 national recommendations for universal vaccination were issued and vaccination was subsequently implemented by the Regions with different modalities; in 2008 vaccine coverage was 55% on a national basis. Aim of this study was to describe changes in serotype distribution and antibiotic susceptibility of S. pneumoniae from IPD in the last decade.

METHODS:
S. pneumoniae isolates from IPD, collected through a national surveillance system, were serotyped and antibiotic susceptibility was determined by Etest (EUCAST breakpoints). Data were analyzed according to age groups (<5 years, 5-64 years, ≥65 years) and to 3 time periods: prior, during and after PCV7 implementation (2001-2003, 2006-2008 and 2009-2011).

RESULTS:
In the 3 periods considered 401, 592 and 323 invasive pneumococcal strains, representing approximately 30% of all reported IPD cases, were collected. The percentage of PCV7 serotypes (vaccine serotypes,VS) decreased over the years not only in children (from 60% to 26%) but also in the other age groups (from 50% to 7% and from 48% to 23% in the groups 5-64 years and ≥65 years, respectively). Penicillin resistance was rather low in children in 2001-2003 (6.8%), increased in 2006-2008 (24%) and decreased in 2009-2011 (15%). Erythromycin resistance slightly decreased over the 3 periods (from 47% to 43%). The same antibiotic resistance trends were observed in the other age groups.

CONCLUSIONS:
PCV7 use has largely impacted the epidemiology of S. pneumoniaein Italy, with a decrease in VS in all age groups. The impact of PCV 13, available in Italy since the end of 2010, requires future evaluations.

PRESENTED BY:
Annalisa Pantosi

Keywords: Streptococcus pneumoniae 7 valent pneumococcal vaccine serotypes antibiotic, resistance surveillance
ESCAIDE REFERENCE NUMBER: 2012938

Measles and Rubella elimination in a Federal country: acting provincially; thinking locally, regionally, nationally, internationally and globally

Gillian Lim (Public Health Ontario, Canada), Shelley Deeks (Public Health Ontario, Canada), Dawn WIlliams (Public Health Ontario, Canada),Jonathan Gubbay (Public Health Ontario, Canada), Tony Mazzulli (Public Health Ontario, Canada), Natasha Crowcroft (Public Health Ontario, Canada)

BACKGROUND:
The Pan American Health Organization (PAHO) is currently documenting measles, rubella and congenital rubella syndrome (CRS) elimination; other regions are planning to do the same. In 2011 Canada reported the most cases of measles in the region of the Americas. We reviewed documentation of measles, rubella and CRS in Ontario, Canada's largest province.

METHODS:
We reviewed suspect and confirmed cases reported between January 2006 and December 2011, against key PAHO elimination criteria on importation status, reporting rate, adequate investigation, and genotyping.

RESULTS:
Of 87 confirmed cases of measles, 68% were classified as not import-related; 82% were associated with 4 outbreaks. No chains of transmission lasted more than one year. Only one non-importation related case occurred since 2009. 31% of all cases had unknown immunization status; of the remaining 60 cases, 65% were unimmunized, 15% had one dose, 20% two doses. One imported case of CRS and twelve confirmed rubella cases were reported; 5 imported, 3 non-imported and 4 unknown. Immunization status was known for only 4 rubella cases (33%); 2 were unimmunized. Ontario did not meet the PAHO quality indicator of ≥80% cases with complete data. The combined rate of suspect cases investigated was 1.0/100,000/year, less than half the target of ≥2/100,000. All measles outbreaks were genotyped. The proportion of the population aged 1-40 years that is vaccinated is unknown.

CONCLUSIONS:
While no sustained endemic transmission of measles or rubella in Ontario is occurring, further effort is required to meet all PAHO elimination criteria including improved quality of measles and rubella surveillance, a vaccine registry and assessment of population immunity. Elimination is more complex to achieve in a federation, requiring political will at multiple levels.

PRESENTED BY:
Natasha Crowcroft

Keywords: Measles rubella congenital rubella syndrome elimination immunization
ESCAIDE REFERENCE NUMBER: 2012984

Poster Abstracts – Poster Session C

Clustering of multiple HPV types amongst women from three diverse risk populations in the Netherlands; population – or type – specific?

Madelief Mollers (VUmc/RIVM, The Netherlands), Hester de Melker (RIVM, The Netherlands), Marianne van der Sande (National Institute of Public Health and the Environment - RIVM, The Netherlands), Chris Meijer (VUmc, The Netherlands), Charlotte Lenselink (UMC St Radboud, The Netherlands), Ruud Bekkers (UMC St Radboud, The Netherlands), Rianne Vriend (RIVM, The Netherlands), Hans Bogaards (VUmc-RIVM, The Netherlands)

BACKGROUND:
In 2009, HPV-vaccination was introduced in the Netherlands targeting two types most commonly found in cervical cancer: HPV16 and -18. If the elimination of HPV16/18 could cause emergence of types that are not included in the vaccine, it could lead to a diminished impact of the HPV-vaccination. The aim of this study was to explore whether patterns of multiple HPV-infections in three studies with varying background risk are indicative of competition between HPV types.

METHODS:
We included women from three studies in the Netherlands; Nijmegen, CSI and STD clinic. All women provided a vaginal self-sample, which were tested by SPF10/LiPA on 25 type-specific HPV DNA infections. We used a Poisson distribution to test if multiple HPV infections occurred more often than expected by chance. Next, pairwise ORs were calculated for HPV16 and -18 with all other HPV types individually, and were compared to the pooled OR.

RESULTS:
Of the 3874 women, 26% were infected with multiple HPV types. The number of infections within a woman ranged from 0-4 in the Nijmegen study, 0-8 in CSI and 0-9 in the STD clinic. None of the studies conformed to a Poisson distribution. Moreover, pooled ORs were above 1 indicating that multiple infections occurred more often than expected by chance. Pairwise ORs of HPV16 and -18 with other HPV types were not significantly different from the pooled ORs.

CONCLUSIONS:
Although we found that multiple infections occurred more often together then expected by chance (ORs for pairwise interactions exceeded 1), this relationship did not seem to be type-specific. These findings suggest that type replacement is not likely to occur.

PRESENTED BY:
Madelief Mollers

Keywords: epidemiologic monitoring, HPV vaccination
ESCAIDE REFERENCE NUMBER: 2012988

A case-control study of risk factors for rotavirus infections in adults, Denmark, 2005-2009

Frederique Dorleans (Statens Serum Institute, Denmark), Gerhard Falkenhorst (Statens Serum Institut, Denmark), Blenda Böttiger (Statens Serum Institut, Denmark), Michael Howitz (Statens Serum Institut, Denmark), Sofie Midgley (Statens Serum Institut, Denmark), Jens Nielsen (Statens Serum Institut, Denmark), Steen Ethelberg (Statens Serum Institut, Denmark)

BACKGROUND:
Rotavirus infection causes substantial hospitalizations in industrialized countries in children and can be prevented with vaccines. Less is known about the epidemiology of rotavirus infections in adults. We aimed at describing illness characteristics and identifying risk factors for rotavirus infections among adults aged 18 years or older.

METHODS:
From February 2005 to June 2009, we prospectively compared cases (laboratory confirmed rotavirus infection) with controls from the Danish Civil Registry matched on age, gender and municipality of residence. We collected information on illness characteristics (cases) and potential exposures using postal questionnaire (all subjects). We calculated matched odds-ratios (mOR) and their 95% confidence intervals (CI) using conditional logistic regression.

RESULTS:
Illness exceeded 10 days for 31% of the 68 cases; 23% were hospitalized. Compared with their 246 controls, cases were more likely to report close contact with a person with gastrointestinal symptoms, including children ‹3 years of age (mOR=40; 95% CI=8.5–187, 26% of cases exposed) and adults ›18 years of age (mOR=12; 95% CI=3.5–43, 26% of cases exposed). However, exposure to a 3-17 years old child with gastrointestinal symptoms was not associated with illness (mOR=2.5; 95% CI=1–7). Underlying health condition (mOR=5.5; 95% CI=1.5–20, 15% of cases exposed) was a risk factor for infection.

CONCLUSIONS:
Contact with young children or adults with gastrointestinal symptoms is a risk factor for rotavirus infection among adults in Denmark. Rotavirus vaccination assessments should consider that rotavirus vaccination in children may indirectly reduce the burden of disease in adults.

PRESENTED BY:
Frederique Dorleans

Keywords: Rotavirus infection Adults Epidemiology Gastrointestinal symptoms Matched case, control study Denmark
ESCAIDE REFERENCE NUMBER: 20121038

Mumps outbreak in the Netherlands: Determinants of university students' intention on vaccine uptake

Hanneke Donkers (Radboud University Medical Centre, The Netherlands), Helma Ruijs (Radboud University Medical Centre, The Netherlands), Corien Swaan (National Institute for Public Health and the Environment, The Netherlands), Jeannine Hautvast (Radboud University Medical Centre, The Netherlands), Marlies Hulscher (Radboud University Medical Centre, The Netherlands)

BACKGROUND:
Since December 2009 a mumps outbreak has been going on among university students in the Netherlands, the majority of whom was vaccinated as a child. As a possible means to stop the outbreak a booster MMR vaccination for all students is being considered. This study aims to identify the willingness of students to accept this vaccination and the factors influencing their intention to do so.

METHODS:
Students at 6 out of 13 universities, from several faculties, completed a questionnaire. This questionnaire was based on the outcomes of 22 interviews with Dutch university students, literature and constructs of the Theory of Planned Behaviour. After performing descriptive statistics, Spearman's correlation coefficients were computed. Determinants correlating significantly with intention to vaccinate were included in logistic regression analyses.

RESULTS:
A total of 687 university students completed the questionnaire. 60.4% indicated that they were willing to accept a booster MMR.All factors influencing vaccination intention showed a significant Spearman's correlation coefficient (p‹0.01) with intention. Nine factors with r›0.3 were entered in a logistic regression analysis. Nagelkerke R2 indicates that the model accounts for 57.5% of the variance in uptake. Results indicate that the perception of seriousness of the disease is the most important predictor of vaccination intention. Prevention of illness and accepting vaccination as a means to stop the epidemic are also important predictors.

CONCLUSIONS:
A majority of students appear to be willing to accept vaccination. If a booster MMR vaccination is offered special attention should be paid to communication by addressing the seriousness of the disease. In addition, offering the vaccination free of charge, at the university and inviting students personally should be considered.

PRESENTED BY:
Hanneke Donkers

Keywords: Mumps, immunization, students, decision making, behavioral sciences
ESCAIDE REFERENCE NUMBER: 20121063

Zoonoses

Long-term health status of patients with lower respiratory tract infections is not influenced by Q fever

Sandra van Dam (GGD Hart voor Brabant, The Netherlands), Jeannine Hautvast (Radboud University Medical Centre, The Netherlands), Jeannette Peters (Department of Medical Psychology and Department of lung diseases, Radboud University Nijmegen Med, The Netherlands), Reinier Akkermans (Academic Collaborative Centre AMPHI, Department of Primary and Community Care, Radboud University, The Netherlands),Alphons Olde Loohuis (General practitioner in the village of Herpen in the province of Northern Brabant, The Netherlands), Koos van der Velden (Radboud University Nijmegen Medical Centre, The Netherlands)

BACKGROUND:
More than 4000 people were diagnosed with Q-fever in the Netherlands from 2007 till 2011. Studies show that patients with Q-fever may develop long-term impaired health status, including more fatigue and impaired quality of life (QoL) compared to healthy people. In this study we determined the 12-months' health status of patients with a lower respiratory tract infection (LRTI), and compared health status of patients who tested positive for Q-fever with patients who tested negative for Q fever.

METHODS:
The study was done in a prospective design. 14 GPpractices in the epicenter of the Q-fever outbreak region registered patients with LRTI in 2009. Health status was measured with the 'Nijmegen Clinical Screening Instrument' (NCSI) 12 months after onset of illness.

RESULTS:
82 patients of 167 returned the questionnaire (49%). One year after a LRTI 12-64% of the patients appeared to have severe impaired health status on different subdomains of the NCSI. Most severely affected subdomains of the Q fever positive group were general QoL (40%) and fatigue (40%). Most severely affected subdomains of the Q-fever negative group were fatigue (64%) and subjective symptoms (34%). Even after correction for confounding, health status of patients one year after initial LRTI did not significantly differ between Q fever positive and Q fever negative patients for all, except the subdomain subjective symptoms (p =0.035) of the NCSI. The Q-fever negative group scored worse than the Q-fever positive group.

CONCLUSIONS:
A large proportion of LRTI patients showed to have severe impaired health status one year after initial illness. Having LRTI due to Q-fever does not influence this outcome, only for 'subjective symptoms'.

PRESENTED BY:
Sandra van Dam

Keywords: Q fever, Health Status, Quality of Life, Respiratory Tract Infections
ESCAIDE REFERENCE NUMBER: 2012603

Poster Abstracts – Poster Session C

Goat farm re-implicated as source of urban Q fever outbreak in the absence of animal health indicators?

Georgia Ladbury (Dutch National Institute for Public Health and the Environment (RIVM), EPIET, The Netherlands), Jeroen van Leuken (Utrecht University, Dutch National Institute for Public Health and the Environment (RIVM), The Netherlands), Barbara Schimmer (National Institute for Public Health and the Environment, The Netherlands), Arno Swart (Dutch National Institute for Public Health and the Environment (RIVM), The Netherlands), Ben Bom (Dutch National Institute for Public Health and the Environment (RIVM), The Netherlands), Piet Vellema (Animal health Service, The Netherlands), Ronald ter Schegget (Municipal Health Service 'Brabant Zuidoost', Eindhoven, The Netherlands), Wim van der Hoek (National Institute for Public Health and the Environment, Bilthoven, The Netherlands)

BACKGROUND:
In spring 2008, a goat farm experiencing clinical Q fever abortions ("Farm A") was identified as the probable source of a human outbreak (95 notifications) in a nearby city. One year later, another human outbreak (320 notifications) occurred in the city, despite there being no prior veterinary notifications from local farms. Our study aimed to identify the most likely source of this outbreak.

METHODS:
We defined Q fever cases as residents of the Municipal Health Service area notified between weeks 11 and 36, 2009. We considered farms holding ≥10 small ruminants within 5km of the outbreak epicentre as "possible" sources, and from these used an exponential model to identify "likely" sources based on the locations of possible sources and case distribution. We calculated attack rates (ARs) for concentric 1km rings up to 5km around likely sources, comparing these to 5-10km reference rings to investigate distance-response relationships using Relative Risks (RR). We collected farm information from the national database.

RESULTS:
The model identified five likely sources, including Farm A, from 14 possible sources. Farm A was the largest (791 animals) and had the highest 0-1km ring AR (0.06 cases/100,000 population) with a strong distance-response relationship (RR=46.7 [95% CI: 11.8-184.5]). Three farms had ‹40 animals; the remaining farm had 175, with no cases in the 0-1km ring.

CONCLUSIONS:
Our results suggest the probable source of the 2009 outbreak was the same farm implicated in the smaller 2008 outbreak, despite the absence of clinical Q fever in the herd in 2009. Health professionals should consider farms with past history of Q fever as potential sources of human outbreaks.

PRESENTED BY:
Georgia Ladbury

Keywords: Q Fever, outbreaks, geographic information systems
ESCAIDE REFERENCE NUMBER: 2012647

Increase in cases of human Leptospirosis in Ajara Region, Georgia, 2010

Nona Ephadze (Public Health Center of Adjara Region/ SC/FELTP, Armenia), Marika Geleishvile (SC-FELTP, Armenia), Edmond Maes (SC/FELTP, Armenia), Thomas Rush (SC/FELTP, Armenia)

BACKGROUND:
In Georgia, fourfold increase in leptospirosis incidence was observed in 2010 compared to 2008-2009 (1.6 per 100,000 people versus 0.41, and 0.36 respectively). Incidence is highest in Ajara region (370,000 population). In 2010 Ajara reported fivefold difference in incidence (7.7 per 100,000) compared to national rates and case fatality of 16.6%. We reviewed surveillance data to find explanations.

METHODS:
We reviewed records from the period 2006-2010 and evaluated aspects of the surveillance system using CDC guidelines and WHO recommendations.

RESULTS:
Prior to 2002 no cases were registered in Ajara and prior to 2006, no laboratory testing was done. In 2006-2009, 28out of 35 reported cases (80 %) were reported as laboratory "confirmed" (by ELISA). In 2010, 30 of 45 cases (67%) were laboratory confirmed. In 5 cases fourfold increases in antibody titers was demonstrated. 10 of 30 cases were considered confirmed after testing single serum samples by IgM ELISA. More cases were in 30-39 and 70-79 year olds. 57% were in males and 73% worked in agriculture. Cases were registered in all Ajaran districts. Risk factors identified included agricultural work (63%); reported presence of rats in household areas (20%); swimming and fishing (10%). No case definition for leptospirosis is used in Georgia. Notification is based on positive serology in patients with fever of unknown origin.

CONCLUSIONS:
More people were tested for leptospirosis in 2010 than in previous 4 years combined. Increase in laboratory confirmation may explain increases in cases. Over-reporting is likely as not all cases are laboratory confirmed or tested using paired specimens. We recommend review of cases to determine symptoms, introduction of syndromic case definition and timely collection and testing of paired sera.

PRESENTED BY:
Nona Ephadze

Keywords: Leptospirosis, incidence, confirmation, ELISA, case definition
ESCAIDE REFERENCE NUMBER: 201271

Evaluation of risks factors for humans in response to the first finding of Echinococcusmultilocularis in the Swedish fox population.

Johan Lindh (Swedish Institute for Communicable Disease Control, Sweden), Marika Hjertqvist (Swedish Institute for Communicable Disease Control, Sweden), Siliva Botero (Swedish Institute for Communicable Disease Control, Sweden), Antonio Barragan (Swedish Institute for Communicable Disease Control, Sweden), Anders Wallensten (Smittskyddsinstitutet, Sweden)

BACKGROUND:
The fox tapeworm,Echinococcus multilocularis (EM),may cause the serious disease alveolar echinococcosisin humans. Although widely spread in many countries of the Northern Hemisphere, EM was not detected by the Swedish surveillance program until 2010. A risk assessment of humans was performed. As many Swedes engage in berry and mushroom picking and have the right to roam, even on private lands, these activities required special attention.

METHODS:
A literature study was conducted to find out what evidence there was concerning risk factors that applied to the Swedish setting using the search words "risk factor" paired with either "alveolar echinococcosis"or "EM". Risk factors were weighted with respect to Swedish conditions and only articles from peer-reviewed journals were included in the survey.

RESULTS:
Risk factors identified in the literature that applied to Sweden were: owning a dog or cat, eating raw strawberries, being a farmer and/or a hunter. Among these risk factors, owning a dog that was hunting wild animals and being a farmer and /or a hunter were considered the highest risks. No evidence indicated that picking and/or eating wild berries or mushrooms constituted a significant risk factor.

CONCLUSIONS:
Very few studies on risk factors for infection with EM could be identified. The validity and accuracy of the existing studies are likely limited due the long incubation period of the disease. However, since the prevalence of the parasite in foxes is likely to be very low in Sweden and in absence of evidence that berry and mushroom picking were risk factors, no specific recommendations were issued other than washing hands after being outdoors and avoiding direct contact with wild foxes and their droppings.

PRESENTED BY:
Johan Lindh

Keywords: Echinococcus multilocularis Risk assessment alveolar echinococcosis risk factors
ESCAIDE REFERENCE NUMBER: 2012785

Q fever seroprevalence and risk factors in sheep farmers and family members in the Netherlands

Marit de Lange (National Institute for Public Health and the Environment, The Netherlands), Barbara Schimmer (National Institute for Public Health and the Environment, The Netherlands), Piet Vellema (Animal Health Service Deventer, The Netherlands), Jeannine Hautvast (Radboud University Medical Centre, The Netherlands), Peter Schneeberger (Jeroen Bosch Hospital, The Netherlands), Yvonne van Duynhoven (National Institute for Public Health and the Environment, The Netherlands)

BACKGROUND:
From 2007-2009 a large human Q fever outbreak occurred in the Netherlands. This study focuses on the seroprevalence (both residents of the small dairy sheep farm sector and the larger non-dairy sheep farm sector) and risk factors for Q fever in the non-dairy sheep farm residents.

METHODS:
Owners of professional non-dairy and dairy sheep farms were asked to fill out a farm-directed questionnaire. All farm residents included in the study, filled out an individual questionnaire. Participants were tested for Coxiella burnetii antibodies (IgG and IgM phase I/II). Risk factors for the non-dairy sheep farm residents were identified by univariate, multivariate and multilevel analyses.

RESULTS:
In dairy sheep and non-dairy sheep farm residents, the Q fever seroprevalence was 66.7% and 51.3%, respectively. Cattle contact at present or past, a high goat density in the vicinity, sheep supply from two Northern provinces, more often cleaning the stables, a farm started before 1990, the presence of the breed Blessum and an age between 40 and 49 years were risk factors for infection. Protective factors were sheep giving birth in paddock and air entry stable through door.

CONCLUSIONS:
Coxiella burnetii infection was found to be an actual occupational hazard for sheep farm residents. In non-dairy sheep farm residents, most risk factors for Q fever point to current or past goat and cattle exposure. Molecular typing of human, cattle, goat and sheep Coxiella burnetii strains might further elucidate the role of those animals in the infection of the residents at non-dairy sheep farms.

PRESENTED BY:
Marit de Lange

Keywords: Q fever Coxiella burnetii Seroepidemiologic studies Risk factors Zoonoses Sheep
ESCAIDE REFERENCE NUMBER: 2012811

Poster Abstracts – Poster Session C

Retrospective analyses of the rabies vaccination efficacy in the Italian Alps

Vittorio Guberti (ISPRA, Italy), Lebana Bonfanti (IZS Venezie, Italy), Laura Gagliazzo (IZS Venezie, Italy), Federica Obber (IZS Venezie, Italy), Monica Lorenzetto (IZS Venezie, Italy), Stefano Marangon (IZS Venezie, Italy)

BACKGROUND:
Fox rabies re-emerged in northeastern Italy in October 2008. The infection spread westward, within the infected area of about 30.000 km2. To halt the spread and eradicate the infection, seven oral rabies vaccination (ORV) campaigns were implemented. Vaccine baits were distributed with helicopters; baits density was planned according to the estimated fox population density. Following each ORV campaign, active surveillance was implemented to evaluate the efficacy of vaccination. The aim of the study is to verify which variables affect the proportion of immune foxes and if the post vaccination surveillance could be modified to reduce the number of shot fox.

METHODS:
The automatic bait dispensers georeferenced each delivered bait and then maps of different bait densities have been produced. Vaccinated area was then divided in three sub-areas: “sufficient”, “optimal” and “overabundant” according to the difference between the planned and distributed baits. Shot foxes were tested for rabies antigen and antibodies. A logistic regression tested the influence of each one of the ORV campaign, the score of the provenience area and their interaction, on the fox immunity. Finally, to reduce the number of shot foxes, a bootstrap, random selection of 1000 subsets of samples extracted from the original data base, have been tested to verify the efficacy of vaccination.

RESULTS:
The average seroprevalence was 62,8% ranging from 43.2% (2011, 2nd campaign, sufficient number of baits) to 83,9% (2010, 4th campaign, overabundant). A significant association with ORV campaign ($p<0.001$) and baits score density ($p=0.043$) was highlighted. The overabundant areas have fox immunity increased of 8%. Bootstrap procedures showed that alternatives to the actual sampling intensity/strategy could be offered.

CONCLUSIONS:
The results of the study indicate a room for the improvement of both vaccination (bait densities) and post vaccination surveillance (reduced number of shot foxes) procedures.

PRESENTED BY:
Vittorio Guberti

Keywords: Rabies Italy Fox Vaccination Vaccination efficacy Vaccination bait density
ESCAIDE REFERENCE NUMBER: 2012933

Anthrax knowledge, attitude and practice among populations in rural Georgia, 2012

Archil Navdarashvili (National Center for Disease Control and Public Health, Georgia), Giorgi Maglakelidze (Central Public Health Reference Laboratory, Georgia)

BACKGROUND:
Georgia’s National Centers for Disease Control (NCDC) registered increases in human cutaneous anthrax cases twice the level of 2010 in 2011 and three times the level from January-June, 2011 by July, 2012. We investigated the knowledge of symptoms and risk factors among rural populations to help improve prevention and control.

METHODS:
In May and July 2012, we conducted a cross-sectional household survey, cluster design among villages in two regions with high rates of anthrax. Clusters of 14 households were selected among villages, proportional to population size, with the goal of estimating prevalence of 50%, precision of +/ – 5%.We designed questionnaire to assess knowledge of anthrax sources, transmission routes, clinical symptoms, and exposure to animals.

RESULTS:
We collected 936 questionnaires. Interviewees claimed knowledge of anthrax as a human disease (38%). Eighty percent of persons could correctly list sources of disease; 22% listed transmission routes; 45% knew symptoms, and 17% knew possible outcomes. The following factors were associated better knowledge concerning anthrax: persons over 30 years of age vs. younger persons (Prevalence Rate Ratio=1.8, 95% CI 1.2—2.6); non-Azerbaijan ethnic groups vs. ethnic Azerbaijanis (PRR=2.0, 95% CI 1.6—2.7) education over 12 years vs. less education (PRR=1.6, 95% CI 1.3—2.0); medical workers vs. others (PRR=1.5, 95% CI 1.1—2.0); animal raising vs. not (PRR=1.5, 95% CI 1.3—1.8); participation in animal care vs. not (PRR=1.4, 95% CI 1.2—1.7).

CONCLUSIONS:
Knowledge of anthrax in the study population is low. We recommended development and implementation of health education messages, based on data from this survey. Based on increasing level of anthrax, the messages should be particularly targeted within high risk geographic areas and population groups.

PRESENTED BY:
Archil Navdarashvili

Keywords: Cutaneous anthrax, cluster survey, KAP survey, Georgia
ESCAIDE REFERENCE NUMBER: 20121009

DAY 3

ESCAIDE Special Plenary Session:
Public Health Event of 2012

Public Health Event of 2012

ESCAIDE Special Plenary Session

Prioritising health events for ECDC epidemic intelligence activities at the European Union level for the London 2012 Olympics mass gathering.

Pete Kinross (ECDC, Sweden), Assimoula Economopoulou (ECDC, Sweden), Annick Lenglet (ECDC, Sweden), Lara Payne Hallström (ECDC, Sweden)

BACKGROUND:
Mass gathering events can present public health risks for visitors and the local population. Adjusting epidemic intelligence (EI) protocols that screen for such risks assists threat detection during these events. The European Centre for Disease Prevention and Control (ECDC) employed a qualitative methodology to prioritize health risks for ECDC's enhanced EI activities for the London 2012 Olympics (London2012).

METHODS:
A list of potential health threats was compiled from 49 notifiable diseases in the European Union (EU) and public health events monitored during the summers of 2005-2011 at ECDC and in the United Kingdom (UK). Epidemiological information, including geographical and seasonal distribution, was obtained for each threat and shared with expert groups at ECDC. Their assessment of each threat's relative likelihood of occurrence and public health impact was compiled using a Delphi approach. A qualitative risk matrix and inclusion and exclusion criteria were applied to results to produce a list of priorities for EI activities by ECDC between 25 July and 13 August 2012 for London2012.

RESULTS:
Seventy-six potential health threats were compiled; all are included in ECDC's standard EI activities. Expert review generated 27 priorities for EI, all infectious disease threats. Food and waterborne disease (FWD) threats accounted for eight priorities, airborne diseases accounted for five, zoonotic infections for four, healthcare associated infections for two and sexually transmitted infections for two. Vector borne diseases were not prioritised as autochthonous UK cases have not been reported to date.

CONCLUSIONS:
Major public health events at mass gatherings are infrequent; nonetheless ECDC's real time EI surveillance can be fine-tuned to aid sensitive identification of relevant events. Improvements to ECDC's EI prioritisation methodologies will result from ECDC EI screening for London2012.

PRESENTED BY:
Pete Kinross

Keywords: Mass Gatherings Surveillance Preparedness European Union
ESCAIDE REFERENCE NUMBER: 2012668

European football tournament (EURO2012) in Poland: A championship free of serious public health events. Results and assessment of the event-based surveillance.

Justyna Rogalska, (European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control, Stockholm, Sweden, Health Protection Surveillance Centre, Dublin, Ireland), Janusz Janiec, (National Institute of Public Health – National Institute of Hygiene, Warsaw, Poland), Mirosław P. Czarkowski, (National Institute of Public Health – National Institute of Hygiene, Warsaw, Poland), Ewa Staszewska, (National Institute of Public Health – National Institute of Hygiene, Warsaw, Poland), Lara Payne Hallstrom, (European Centre for Disease Prevention and Control, Stockholm, Sweden), Małgorzata Sadkowska-Todys, (National Institute of Public Health – National Institute of Hygiene, Warsaw, Poland)

BACKGROUND:
A potentially increased risk for infectious disease transmission and spread exists during mass gathering events and requires additional surveillance activities. For the European Football Championship (EURO2012), held in Poland and Ukraine between 8 June and 1 July 2012, an event-based surveillance system was implemented in Poland. We present its results and an assessment of its usefulness.

METHODS:
For the purpose of the described surveillance, an 'event' was defined as a situation that may constitute a threat or may indicate the possibility of a threat to public health, including eleven scenarios provided as example for reporting agencies. Local health departments used a simple free-text form to report any health event. No zero reporting was required. Daily we monitored all incoming reports and compared them with notifications from enhanced routine surveillance, food-borne outbreaks reports, notifications sent to the Polish International Health Regulations focal point and with information from domestic and international media sources.

RESULTS:
One event was notified through the event-based surveillance: a gastrointestinal tuberculosis episode in a non-Polish citizen already under treatment. Additionally, routine surveillance captured three public health events not connected to the tournament that could have had an impact on it: a measles outbreak in Roma community in the host city of Wroclaw, a gastrointestinal disease outbreak in police camp near Warsaw, a case of meningitis in a non-Polish national whose family visited Warsaw during EURO2012.

CONCLUSIONS:
The event-based surveillance did not identify any relevant health event not reported to routine systems. But it did allow monitoring of health threats on a daily basis ensuring that no relevant events would be missed. Introduction of event-based surveillance should always be considered when planning mass gathering surveillance.

PRESENTED BY:
Justyna Rogalska

Keywords: Public health surveillance, Poland, mass gathering
ESCAIDE REFERENCE NUMBER: 2012704

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