



# Five Nations Health Protection Conference

Tuesday 18 - Wednesday 19 May 2010



## Session Chairs

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### **Dr Meirion Evans**

Consultant Epidemiologist  
Public Health Wales, Health Protection  
Communicable Disease Surveillance Centre, Cardiff

### **Dr Charles Saunders**

Consultant in Public Health Medicine  
Fife NHS Board, Leven

### **Dr Martin Schweiger**

Consultant in Communicable Disease Control  
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### **Dr Neil Irvine**

Consultant in Health Protection,  
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### **Dr Paul McKeown**

Specialist in Public Health Medicine  
HSE - Health Protection Surveillance Centre, Dublin

### **Dr Dilys Morgan**

Consultant Epidemiologist  
Health Protection Agency, Centre for Infections,  
London

## Conference Organising Committee

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We would like to acknowledge the generous sponsorship received from our sponsors who have contributed to the administration costs of this conference.



## **Aims and Objectives**

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**The aim of the Conference is to provide a focus for Continuing Professional Development for Consultants in Communicable Disease Control, Consultants and Specialists in Public Health Medicine and their colleagues in the epidemiology, and control of infectious, non-infectious diseases and environmental hazards.**

### **The objectives are:**

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- 1 To refresh participants' knowledge of the recognition, investigation and control of important infections and other environmental hazards.
- 2 To inform participants about significant new and emerging problems in health protection and advances in methods of their investigation and control.
- 3 To stimulate discussion of the practical problems that may confront those responsible for carrying out investigations and implementing control procedures.
- 4 To foster the maintenance and development of professional networks among those working in control of infection and environmental hazards.
- 5 To contribute to the development of policies and standards.
- 6 To provide a focus for health protection issues across the Five Nations.



## CPD

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The Faculty of Public Health no longer accredits meetings for CPD purposes. Individuals should assess the content of external meetings in relation to their own personal development plan (PDP) and make a judgement about its value. Having attended a meeting, if it provides good quality learning, they should write a reflective note and claim CPD credits.

# Five Nations Health Protection Conference

Tuesday 18 May - Wednesday 19 May 2010

The Beardmore Hotel & Conference Centre, Glasgow

## Tuesday 18 May 2010

<b>09.00 - 10.00</b>	<b>Registration Desk Opens</b> Coffee available	
10.00 - 10.15	Welcome and Introduction	Provost Denis Agnew, West Dunbartonshire Council
10.15 - 11.00	<b>Keynote Address</b> <b>There cannot be a crisis next week, my schedule's already full</b>	Eleanor Bradford

## SESSION I

<b>11.00 - 12.30</b>	<b>Swine Flu – Pandemic or Panic?</b>	
	Session Organiser: Dr Meirion Evans Chair: Dr Meirion Evans	
11.00 – 11.15	First case of in-country transmission of 2009 pandemic influenza A(H1N1) in Ireland- issues in contact tracing	Máirin Boland
11.15 – 11.30	Largest outbreak to date of 2009 pandemic influenza A(H1N1) affecting England and Wales' prison system, December 2009	Kakoli Choudhury
11.30 – 11.45	Hospitalised patients with 2009 pandemic influenza A(H1N1) in Northern Ireland (NI), June 2009-February 2010	Otilia Sfetcu
11.45 – 12.00	How to efficiently provide antiviral drugs and testing kits to people who need them	Peter Sheridan
12.00 – 12.15	How to do it: a regional approach to 2009 pandemic influenza A(H1N1) vaccination	Tricia Cresswell
12.15 – 12.30	Panel Discussion	

12.30 - 13.30

Lunch

## SESSION II

**13.30 – 14.50**

### **Surveillance - Time to Discard the Parchment and Quill?**

Session Organiser: Dr John Cowden

Chair: Dr Charles Saunders

13.30 – 13.50

The development of a systematic surveillance system in a Health Protection Unit (HPU) Denise McCoy

13.50 – 14.10

Harnessing database automation to enhance surveillance of infectious diseases Iain Roddick

14.10 – 14.30

A 'break-glass' approach to surveillance in a public health emergency Daniel Thomas

14.30 – 14.50

Leveraging Public Health Wales' informatics assets to expedite MRSA reporting Matthew Thomas

14.50 – 15.20

Tea

**15.20 – 15.50**

### **Attended Poster Session**

## SESSION III

**15.50 – 16.50**

### **Environmental Hazards – Making the Environmental Connection**

Session Organiser: Dr Martin Schweiger

Chair: Dr Martin Schweiger

15.50 – 16.15

Adverse health effects of recreational bathing: a meta-analysis of randomised exposure trials in four European countries Ho-Kong Christopher Au-Yeung

16.15 – 16.40

Too little, too late - lessons learnt from a case of Legionnaires' disease May Moonan

16.40 – 16.50

Panel Discussion

**16.50 – 17.45**

### **Poster Session**

**Public Health Medicine Environmental Group Annual General Meeting**

## Evening events

**18.30 - 19.30**

### **Pre-Dinner Quiz and drinks**

Quiz Organiser: Dr Lorraine Lighton

Quiz Master: Dr John Cowden

**19.45 for 20.00**

**Conference Dinner at the Beardmore Hotel**



Wednesday 19 May 2010

08.00 - 09.00 Registration Desk Opens - Poster Session

SESSION IV

09.00 - 10.15

**Outbreaks and Incidents**

Session Organiser: Dr Neil Irvine

Chair: Dr Neil Irvine

09.00 - 09.15

An outbreak of tuberculosis in a sixth form college in Yorkshire and Humber region

Terry Matthews

09.15 - 09.30

An outbreak of *Bacillus anthracis* in drug users in NHS Greater Glasgow and Clyde

Alex Stirling

09.30 - 09.45

Investigating clustering cases of meningitis in Suffolk - usefulness of genotyping for risk assessment

Torbjorn Sundkvist

09.45 - 10.00

Infant and toddler swimming pool-associated outbreak of cryptosporidiosis - how should it be managed?

May Moonan

10.00 - 10.15

Does hospital admission increase opportunity to spread disease? Implications of contact networks in the community and hospital.

Mark Temple

SESSION V

10.15 - 11.15

**Tackling Zoonoses: Partnerships and Progress**

Session Organiser: Dr Margaret O'Sullivan

Chair: Dr Paul McKeown

10.15 - 10.30

On Safari - multiple potential zoonotic exposures and other human health threats associated with a local safari park

David Kirrage

10.30 - 10.45

Integrating laboratory and epidemiological data: elucidating the aetiology of VTEC in Scotland

Lesley Allison

10.45 - 11.00

VTEC in crèches in Ireland

Paul McKeown

11.00 - 11.15

A 2009 pandemic influenza A(H1N1) incident: collaboration at the human-animal interface

Margaret O'Sullivan

11.15 - 11.45

Coffee

## SESSION VI

**11.45 – 13.00**

### Hot Topics

Session Organiser: Dr Dilys Morgan

Chair: Dr Dilys Morgan

11.45 – 12.00

Most Farm-related *E. coli* O157 outbreaks in Scotland occur on private farms

Mary Locking

12.00 – 12.30

The on-going story of Q-fever in the Netherlands

Yvonne van Duynhoven

12.30 – 13.00

The world after Godstone.....

Bob Adak

**13.00 – 14.00**

**End Of Conference - Lunch**

# Presentation Abstracts

Tuesday 18 May 2010

SESSION I

## Swine Flu – Pandemic or Panic?

### First case of in-country transmission of 2009 pandemic influenza A(H1N1) in Ireland - issues in contact tracing

*M Boland<sup>1</sup>, T Grealley<sup>2</sup>, A O'Brien<sup>1</sup>, M Scully<sup>1</sup>, B O'Herlihy<sup>1</sup>, D Crowley<sup>1</sup>, J O'Donnell<sup>3</sup>, D O'Flanagan<sup>3</sup>*

<sup>1</sup> Dept of Public Health HSE East

<sup>2</sup> Dept of Public Health HSE Mid-West

<sup>3</sup> Health Protection Surveillance Centre (HPSC)

#### Aims

We describe the public health management of the first case of in-country transmission of pandemic 2009 in Ireland, and issues in contact tracing.

#### Methods

The sixth case in Ireland of pandemic 2009 was in a female presenting with fever and respiratory symptoms on May 31st 2009, less than seven days after flying from New York to Dublin. 20 household contacts and 27 airline travel contacts were identified. Four regional Public Health Departments managed fifteen contacts distributed around Ireland, offering post-exposure chemoprophylaxis and monitoring. The HPSC liaised with national health protection authorities for the five contacts in three different countries abroad.

#### Results

Thirteen of the contacts worked in a health care setting with patient contact. Seven contacts complained of symptoms on 1st/2nd June and were swabbed by the Public Health Department. Asymptomatic contacts did not have swabs taken.

The first case of person-to-person transmission in Ireland occurred in one contact three days after exposure to the index case. Guidance for contact tracing on flights over four hours duration at that time recommended identifying passengers in the two rows in front and behind, along with the symptomatic case's row. Airline crew were advised to self-monitor and report flu-like symptoms. The passenger list was obtained outside the chemoprophylaxis window

despite timely requests. Twenty-seven flight contacts were identified, of whom seven had no telephone details. All six contacts with Irish telephone numbers had been well. Of the fourteen contacts with American telephone numbers, two passengers were successfully contacted and were well.

#### Conclusions

Movement across Ireland and abroad undertaken by cases and contacts in this cluster was substantial, demonstrating the potential for viral transmission and the need for timely co-ordination across regional Public Health Departments to manage national outbreaks. Airline contact tracing was resource intensive, with low yield, and Ireland discontinued this intervention at declaration of pandemic phase 6.

**Contact:** mairin.boland@hse.ie

### Largest outbreak to date of 2009 pandemic influenza A(H1N1) affecting England and Wales' prison system, December 2009

*K Choudhury<sup>1</sup>, J Morris<sup>1</sup>, E O'Moore<sup>1,2</sup>*

<sup>1</sup> Thames Valley Health Protection Unit, Oxfordshire, England

<sup>2</sup> Offenders Health, Department of Health & National Offender Management Service, England & Wales

Thames Valley Health Protection Unit in South-East England was notified of a possible influenza-like outbreak among prisoners in a medium-sized prison in early December 2009, the largest such event affecting the England and Wales prison system during the current pandemic.

The outbreak lasted for three weeks. The clinical attack rates were 33.6% among prisoners (153 out of 444) and 6% among prison staff in direct contact with the prisoners (10 out of 164). The attack rates

among the eight wings of the prison varied according to the degree of social mixing among the inmates. Six prisoners were tested for influenza A H1N1 virus, of which five tested positive. The health impact of this infection was minor and all prisoners were able to self-care.

The outbreak was brought under rapid control through isolation and treatment of cases, post-exposure prophylaxis of at-risk asymptomatic prisoners and of prisoners who shared cells with symptomatic prisoners, closing the prison to transfers and strict infection control practice. Prisoners in clinical risk groups and those staff members who provided care to symptomatic prisoners were vaccinated in line with current policy in England and Wales. Advanced planning at a policy level between Department of Health and Ministry of Justice, and partnership work with the Health Protection Agency (HPA) and the National Health Service (NHS) minimised the impact of the event.

The single most important intervention in this outbreak was probably effective isolation of symptomatic cases, which was possible because most prisoners had single cell accommodation. In other prisons, where cell sharing is much more common, cohorting of symptomatic cases is recommended. It should be ensured that prison staffs are trained to identify the symptoms and signs of influenza A H1N1v, and should report an outbreak to their local HPA as soon as it is suspected.

**Contact:** kakoli.choudhury@hpa.org.uk

### **Hospitalised patients with 2009 pandemic influenza A(H1N1) in Northern Ireland (NI), June 2009-February 2010**

*O Sfetcu*<sup>1,2</sup>, *B Smyth*<sup>2</sup>, *C Kearns*<sup>2</sup>, *J Miskimmons*<sup>2</sup>

<sup>1</sup> European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden;

<sup>2</sup> Public Health Agency, McBrien Building, Northern Ireland, UK

#### **Aims**

To describe characteristics and associated co-morbidities of hospitalised cases and to identify risk factors for ICU admission and death.

#### **Methods**

Since June 2009, hospitals in NI were asked to daily report admissions of H1N1 2009 confirmed cases. Details were collected on: demography, clinical outcome, level of care, co-morbidities, and length of stay. Multivariate logistic regression was used to investigate any association of co-morbidities with ICU admission or death.

#### **Results**

Of the 579 cases admitted between 24/06/2009 and 15/02/2010, 50 (8.6%) required ICU/HDU admission, 16 (2.7%) died in hospital and 42 (7.2%) were pregnancies/post-partum. The weekly frequency peaked in week 44 (73 admissions).

The median age was 19 years (mean 25, range 10 weeks to 93 years). 291 (50.3%) were females. Males were significantly younger, median age 15.5 years and mean age 23 years ( $p=0.03$ ). 289 (49.9%) of hospitalised cases were aged under 18 years and 34 (6%) were older than 65 years. 238 (41.5%) of the hospitalised patients had one co-morbidity, 26 (4.5%) had multiple co-morbidities, and 238 (41.1%) had none. Pregnancy (14.4%) and asthma (10.3%) were the most two common co-morbidities in females and asthma (5.6%) and neurological diseases (5.6%) in males. 42% of the females cases aged 14 to 44 years were pregnant/post-partum.

In the multivariate analysis, multiple co-morbidities (AOR 5.7), cancer (AOR 4.3) and pregnancies (AOR 3.7) were significantly associated with ICU/HDU care, and epilepsy (AOR 11.8), cancer (AOR 7.1) and multiple co-morbidities (AOR 5.5) were risk factors for death.

#### **Conclusions**

Half of the H1N1 cases hospitalised in NI, were children and adolescents, with the majority being previously healthy (60% without co-morbidities). Although, females were more likely to have an underlying medical condition on admission (64.6%), gender was not a risk factor for becoming ICU/HDU care or death. Multiple co-morbidities or cancer were both risk factors for severe outcomes.

**Contact:** otilia.sfetcu@hscni.net

## How to efficiently provide antiviral drugs and testing kits to people who need them

P Sheridan <sup>1</sup>, H.Gray <sup>2</sup>, M Gunstone <sup>3</sup>, L Sheridan <sup>4</sup>

- 1 Consultant in Communicable Disease Control, Bedfordshire and Hertfordshire Health Protection Unit
- 2 Head of Pharmacy, Hertfordshire Primary Care Trusts
- 3 Head of Clinical Services, Herts Urgent Care
- 4 Director of Flu Preparedness, East of England Strategic Health Authority

### Aims

This paper describes working closely with NHS partners to achieve shared objectives during the containment of pandemic flu in May-June 2009

### Method

Descriptive study.

### Results

Oseltamivir was provided from the Bedfordshire and Hertfordshire HPU premises for the first week as a temporary measure while options were explored and NHS partners identified.

In the second week, oseltamivir was provided, along with viral swab testing kits, to the out of hours (OOH) GP services in Bedfordshire and Hertfordshire. Patients had swabs taken and received oseltamivir at their initial consultation. During working hours, swab kits and oseltamivir had to be despatched urgently to the GP surgery.

In the third week, fourteen community pharmacies were designated as antiviral collection points. Viral swabs were distributed to GP surgeries. HPU was responsible for contact tracing and organising testing at regional laboratories.

This was a very resilient distribution method and was set up very quickly before the Flu Response Centre opened.

In the seventh week, a cluster associated with Cambridge University was stretching services, antivirals were supplied to Cambridge OOH service before the weekend.

By the ninth week, sustained community transmission was identified in an area around Watford and, later in that week, in Luton. The arrangements for antiviral provision were very good. The escalation over a weekend in Luton when the out of hours service was overwhelmed by over 100 flu calls was eased by having easy access to antiviral drugs.

### Conclusion

Bedfordshire and Hertfordshire dealt with 80% of the flu calls but we would recommend that working with PCTs, OOH services and community pharmacies to ensure access to antiviral drugs, and swab kits, is incorporated into future pandemic flu plans.

**Contact:** peter.sheridan@hpa.org.uk

## How to do it: a regional approach to 2009 pandemic influenza A(H1N1) vaccination

T Cresswell <sup>1,2</sup>, J Waller <sup>2</sup>

- 1 NHS North East
- 2 North East Health Protection Unit

### Aims

In the North East, a region-wide command and control structure for the NHS response to pandemic flu was led by the SHA Director of Flu Resilience. A pandemic flu vaccination cell was established on 13 August 2009 as part of the command structure.

The aims of the cell were to:

- Develop a regional vaccination framework which was both anticipatory and flexible in relation to national guidance.
- Avoid duplication of effort at PCT level.
- Provide one point of definitive advice to Flu Directors on vaccination issues.
- Set up systems for providing guidance to the NHS and for responding to queries.

### Method

The cell usually met two weekly and was chaired by the Deputy Medical Director, accountable to the Regional Director of Public Health, and reporting to the Director of Flu Resilience and Flu Directors through weekly meetings and daily teleconferences when required. Cell membership included the SHA, HPA and PCT immunisation leads and the SHA flu operations manager, communications lead and procurement project lead.

Work was shared by cell members. All new queries (where there was no national line) were agreed electronically so there was absolute consistency across the region.

## Results

The cell produced:

- A final regional framework on 5 October 2009.
- A regional logistics process for vaccine consumables.
- A regional training pack, aftercare leaflet and other materials all posted on the vaccination section of the regional Health Advisory Cell (HAC) website.
- A regional Patient Group Directive.

- Definitive vaccination advice to the NHS via the HAC website, to GPs via a weekly GP bulletin and responses to individual queries at local and regional level

## Conclusions

The vaccination cell met its aims. We have developed a “how to do it” framework for future large scale/mass vaccination programmes based on the lessons learned.

**Contact:** tricia.cresswell@northeast.nhs.uk

Tuesday 18 May 2010

SESSION II

# Surveillance - Time to Discard the Parchment and Quill?

## The development of a systematic surveillance system in a Health Protection Unit (HPU)

*D McCoy, J Sedgwick, N Freeman, A Taye, M Chandrakumar, S Fenn*

Kent Health Protection Unit, Aylesford, England

### Aim

To develop a process to systematically analyse data to identify unusual patterns of disease to prompt investigation and appropriate public health action.

### Objectives

To:

- identify outbreaks/clusters and elevated numbers of cases
- identify potential links between outbreaks, clusters or cases
- provide assurance of surveillance activity.

### Method

A surveillance steering group was formed, comprising CCDCs, a Senior Nurse Manager, a Knowledge Manager, a Surveillance/Information Officer and Health Protection Practitioners. Specific organisms/diseases were identified that warranted regular review, because of public health risk or the volume of cases making it difficult to identify unusual patterns without systematic analysis.

The general principle was that some reports would be considered weekly, others monthly, and others whenever a case was reported. Any member of the HPU could raise concerns regarding the number/pattern of cases and the group would produce and consider appropriate analyses.

A number of data sources were used to develop routine reports and identify which sources would be most useful for analysis on an ad hoc basis.

### Results

Routine monthly reports were developed for campylobacter, cryptosporidium and salmonella, consisting of trends in numbers of cases and maps to identify geographic spread.

A list of diseases to be reviewed in the surveillance meeting immediately following notification to the HPU was developed.

Relevant information from responses to questionnaires administered by Environmental Health Teams or HPU staff was input into HPZone. In particular, “contexts” were identified as key to identifying links in time and place.

HPZone was used to record surveillance activity for specific organisms/diseases to keep staff in the HPU and Region up to date with developments. This has also provided an audit trail for governance purposes.

## Conclusion

By establishing an HPU surveillance steering group and using routinely available information, it has been possible to develop a systematic approach to surveillance in an HPU. HPZone functionality has enabled surveillance activity to be documented and provided staff in the HPU and Region with a mechanism for keeping up to date with developments.

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## Harnessing database automation to enhance surveillance of infectious diseases

*I Roddick, S Bracebridge, M Reacher*

HPA East of England Regional Epidemiology Unit

### Aims

To develop a suite of database tools to enhance surveillance of pathogens, enabling better informed, quicker health protection measures to be taken.

### Methods

In order to make proper use of surveillance data a lot of effort is employed to capture, clean and analyse it. These processes are necessary, but if done manually, can delay feedback and appropriate public health actions.

The East of England Regional Epidemiology Unit (REU) has used SQL Server database programming routines to automate some of these processes.

This has created datasets that are more complete, easier to analyse than before, and provide better information for public health action.

SQL Server automation has saved a lot of time, has ensured that the data manipulation is easily repeatable and the resulting data consistent, to an extent that would have been impossible before. A significant advantage of consistent, clean data is that additional programmed analyses, requiring less manual inspection, are possible. If employed carefully these techniques result in faster, better surveillance outputs.

### Results

By embracing SQL Server automation as a core tool the REU has been able to achieve a number of enhancements to its surveillance role

These include:

- Automated cleaning and de-duplication of *Chlamydia* testing data.
- Seasonal Exceedance Algorithms based on specimen date which scan all recent CoSurv reports and mandatory HCAI data for statistically significant events.
- Automated postcode parsing and assignment of geographical information, quickly preparing the data for Geographical Information Systems, helping in the investigation of clusters and outbreaks.
- Mathematical Time-Space Clustering of important pathogens such as *L. pneumophila*, *Campylobacter*, *Salmonella* and VTEC *E. coli*.

## Conclusions

Automated data handling routines make possible improvements in the quality of collected surveillance data, reduce the likelihood of important health protection events being missed, and enable surveillance teams to respond more quickly to events soon after they arise.

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## A 'break-glass' approach to surveillance in a public health emergency

*DRh Thomas<sup>1</sup>, S Scourfield<sup>2</sup>, S Cottrell<sup>1</sup>, C Coombes<sup>1</sup>, D Lewis<sup>1</sup>, J Hunt<sup>2</sup>, RL Salmon<sup>1</sup>*

- 1 Public Health Wales Communicable Disease Surveillance Centre, Cardiff, Wales CF10 3NW
- 2 Primary Care Informatics Programme, Informing Healthcare, Wales

In 2007, Welsh Assembly Government procured a new service to support the data requirements of general practices, health boards, Welsh Assembly Government and Public Health Wales. This service comprises: a general practice based module (Audit+), a central repository and a web reporting module (Audit Web). By May 2009, Audit+ had been installed in over 90% of the 489 practices in Wales. Public Health Wales included in the tender specification the requirement for automated sentinel general practice surveillance. An additional requirement was the facility to 'switch', in the event of a public health emergency, from weekly to daily reporting and from sentinel practice reporting to reporting by all practices in Wales. This 'switch' was tested during the influenza H1N1(v) outbreak in 2009.

On implementation, over half of practices commenced daily reporting of influenza consultations; between May and December 2009 this proportion increased steadily, to reach 85%. Data from this system proved to be reliable and valid, and was widely used in the management of the outbreak in Wales. Between July and December 2009, the web pages presenting daily data from this system were the most visited pages on the Public Health Wales website, reaching a peak in October (41,558 visits; 21% of all visits to website). We are now working to develop the system further for use in other public health emergencies, for example: major outbreaks, acute chemical incidents, or extreme climatic events, and in producing guidelines for when and how to 'break glass' and 'switch' on (and off) the escalated public health surveillance response.

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### **Leveraging Public Health Wales' informatics assets to expedite MRSA reporting**

*M C Thomas*

Informatics, Temple of Peace and Health, Cardiff, Wales

#### **Aims**

Improve timeliness of reporting hospital acquired MRSA to the Welsh Assembly Government.

#### **Methods**

Public Health Wales Informatics' DataStore is deployed across Welsh Microbiology Laboratories, holding authorised results from the Laboratory Information Management Systems. DataStore is the bedrock of a wider surveillance infrastructure developed by the Informatics team, and is capable of providing automated data feeds to partners like the Welsh Hospital Acquired Infection Programme (WHAIP). The latest feature of the surveillance IT infrastructure is an automatic weekly extract of DataStore's *Staphylococcus aureus* results and blood culture denominator figures into a central database for the efficient production of timely and accurate reports by the WHAIP team.

#### **Results**

Monthly reports are possible 2 weeks after month-end, in contrast to the web data entry system it replaces that produced quarterly reports approximately 4 months after the end of the quarter.

#### **Conclusions**

DataStore has vast potential for extending surveillance programmes by enabling a high level of automation, thereby improving timeliness and quality of data available to Health Protection professionals.

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Tuesday 18 May 2010

Session III

## Environmental hazards – Making the Environmental Connection

### Adverse health effects of recreational bathing: A meta-analysis of randomised exposure trials in four European countries

HC Au-Yeung<sup>1</sup>, D Kay<sup>2</sup>, DRh Thomas<sup>1</sup>, M Figueras<sup>3</sup>, M Vargha<sup>4</sup>, M Kádár<sup>4</sup>, PR Hunter<sup>5</sup>, J Bartram<sup>6</sup>, RL Salmon<sup>1</sup>

- 1 Communicable Disease Surveillance Centre, Public Health Wales, UK
- 2 University College of Wales, Aberystwyth, UK
- 3 University of Rovira and Virgili, Spain
- 4 National Institute for Environmental Health, Hungary
- 5 University of East Anglia, UK
- 6 UNC Gillings School of Global Public Health, USA

Epibathe is a collaborative project between Public Health Wales and 5 other European partners and the World Health Organization to evaluate the adequacy of the revised EC Bathing Water Directive (2006/7/EC) in protecting the health of recreational bathers. Analysis of data derived from 17 separate randomised exposure trials was completed. These were located in 15 natural bathing sites and involved approximately 8,000 volunteers. Data from all trials were combined and analysed by meta-analysis, taking into account a number of non-water related confounding factors. The outcome of interests included gastroenteritis (GI), acute febrile respiratory infection (AFRI), and ear/eye/skin ailments.

Results showed an overall increased risk of GI amongst bathers (OR=1.29, 95% CI 1.04-1.60), and that the excess risk was approximately two-fold higher in marine (OR=1.39, 95% CI 1.03-1.87) than fresh (OR=1.20, 95% CI 0.88-1.62) water sites. A positive dose-response relationship was observed between water Enterococci levels and risk of GI in marine studies. Other illnesses including AFRI (OR=1.56, 95% CI 1.01-2.39) and ear (OR=3.54, 95% CI 2.1-5.94) and eye ailments (OR=1.65, 95% CI 0.95-2.88) were also higher in marine water, with the exception of skin ailments which was significantly higher in freshwater (OR=2.39, 95% CI 1.44-3.96). Further analysis of the combined data set using Monte Carlo simulation suggests similar risk levels to those assumed in derivation of the original Guidelines for Safe Recreational Water Environments by WHO

in 2003 and the revised Bathing Water Directive in 2006. Thus, the Epibathe project concluded that no significant alteration in the water quality standards suggested by either the WHO or the European Union could be supported by the new information.

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### Too little, too late - lessons learnt from a case of Legionnaires' disease

M Moonan<sup>1</sup>, A Peel<sup>2</sup>

- 1 Greater Manchester Health Protection Unit, Manchester, UK
- 2 Microbiology Department, Pennine Acute NHS Trust

#### Aim

This presentation concerns a case of Legionnaires' disease associated with the water supply from a continuous positive airway pressure (CPAP) machine. We describe lessons learnt and actions to be taken as part of a risk assessment in a case of Legionnaires' disease and highlight the importance of early respiratory sampling to identify the point source of exposure.

#### Methods

Investigation of a case of Legionnaires' disease. Literature review of *Legionella* associated with respiratory devices, including CPAP machines.

#### Results

A 61-year-old man presented to A&E with increasing shortness of breath, a cough productive of yellow sputum, and left-sided chest pain worse on inspiration, one day after returning from Spain.

*Legionella pneumophila* serogroup I antigen was detected in his urine using a commercial enzyme-linked immunoassay. The patient's CPAP humidifier water container grew *Legionella pneumophila* serogroup I at a concentration of  $8.8 \times 10^4$  cfu/ml; anything greater than 1000 cfu/ml would provoke urgent action by

environmental agencies. The patient's community CPAP service, machine's manufacturer and the Medicines and Health products Regulatory Agency (MHRA) were contacted and the device destroyed. As a consequence of a heavily contaminated respiratory sample being collected 72 hours after antibiotics had been initiated, *Legionella* was not detected in the sputum by culture or PCR at the HPA reference laboratory in Colindale. Serological investigations were of limited usefulness.

The CPAP service has developed an A4 leaflet summarising key guidance messages.

### Conclusions

Respiratory devices, including CPAP machines, should be considered as potential sources of exposure of *Legionella* bacteria. Patients on home CPAP devices should have clear and succinct guidance on how to care for their machines. Urinary antigen testing is of limited usefulness in identifying the point source of exposure. Respiratory samples should be sent as soon as a positive *Legionella* urinary antigen test is received or *Legionella pneumoniae* is clinically suspected.

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Wednesday 19 May 2010

## SESSION IV

# Outbreaks and Incidents

### An outbreak of tuberculosis in a sixth form college in Yorkshire and Humber region

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3 Northern Lincolnshire and Goole Hospitals NHS Foundation Trust

4 TB Section, HPA Centre for Infections, Colindale, London

#### Aim

To describe the management of a large outbreak of TB in a sixth form college arising from a single infectious student case.

#### Methods

An incident control team was convened and decided to screen by interferon gamma release assay (IGRA) student classes having cumulative contact greater than 7 hours with the index case, in addition to family and friendship groups.

#### Results

In the first screening round 29/67 (43%) students tested positive prompting further rounds of screening. In round two of classroom contacts with exposure

times between 2-4 hours, 11/51 (22%) tested positive; in a third round including two large groups having less intimate contact for a briefer period (1-2 hours) 13% of 204 students tested positive.

Further screening ceased at this point as positivity rates had approached guideline cut-off levels and no further contact groups were identifiable within the college setting which would distinguish their exposure risk from local background risk.

During May 2009 two students from outside the groups screened presented to local NHS services with clinical signs of TB. Following a revised risk assessment, the whole college population was screened – i.e. a further 2,300 students and staff, in addition to re-screening those previously testing indeterminate or negative.

Excluding the index case, 19 cases of active TB were diagnosed during the incident; the index case and seven of the eight cases confirmed by culture were indistinguishable on VNTR-MIRU typing. Overall 436 cases of latent TB were diagnosed and offered treatment.

#### Conclusions

This large incident posed a massive challenge for the local NHS and partners. Issues raised included: the

role of IGRA testing in such situations; the apparent ease of spread from one identified infectious case; the apparent lack of a protective effect of BCG in students; and travel outside low incidence countries as an independent risk factor for TB infection.

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### **An outbreak of *Bacillus anthracis* in drug users in NHS Greater Glasgow and Clyde**

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1 NHS Greater Glasgow and Clyde, Glasgow

2 Health Protection Scotland, Glasgow

#### **Aims**

This is the first known outbreak of anthrax in conjunction with drug use. This presentation aims to describe the first few weeks of the outbreak of *Bacillus anthracis* infection from the perspective of NHS Greater Glasgow and Clyde. It will draw attention to the challenges faced, the evidence for action and will make a comparison with the response to the outbreak of *Clostridium novyi*, which also affected injecting drug users in Scotland in 2000.

#### **Methods**

Following the identification of an outbreak of *Bacillus anthracis* NHS GGC worked closely with colleagues from HPS, local microbiologists and clinicians, Strathclyde police, the Health Protection Agency's Special Pathogens Reference Unit at Porton Down and the Center for Disease Control in Atlanta.

Detailed epidemiological, environmental and microbiological investigations were carried out to identify the source and extent of the outbreak.

#### **Results**

In December 2009 NHS Greater Glasgow and Clyde (NHSGGC) was notified of two cases of anthrax in drug users in the city. In the forthcoming weeks this outbreak spread further with more cases, and deaths, in NHSGGC and other areas of Scotland and the UK. A fatal case in a drug user in Germany in December also appears to be linked to this outbreak.

#### **Conclusions**

As at 11 March 2010, there have been 26 confirmed cases of anthrax across Scotland and 10 deaths. NHS

GGC not only had the first cases but has had both the largest number of cases (12) and deaths (six) in the UK. A number of challenges and lesson learnt have come out of this outbreak, which was the first of its kind and one that affected a hard to reach group.

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### **Investigating clustering cases of meningitis in Suffolk -usefulness of genotyping for risk assessment**

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1 Norfolk, Suffolk & Cambridgeshire Health Protection Unit

2 HPA, Meningococcal Reference Unit (MRU), Manchester

#### **Background**

A cluster of three children and one adult with fatal meningitis in Ipswich, Suffolk, between December 2009 and January 2010 was investigated.

Case 1 occurred before Christmas, Cases 2 and 3 during the New Year. Case 3 was later confirmed as not being a meningococcal case. Case 4 was an Ipswich resident who was outside the region at the time of onset. National guidance suggests community interventions should be considered at an incidence of 40 cases per 100,000 of the outbreak strain.

#### **Aims**

Investigate possible links between the cases and consider whether wider community interventions were required.

#### **Methods**

Clinical and contact tracing information and serogroup confirmation by PCR and genotyping (porA sequencing) from Meningococcal Reference Unit (MRU) was obtained.

Age-specific incidences in the Ipswich area were calculated. The cluster definition was confirmed meningococcal cases residing in Ipswich during 1st December 2009- 28th February 2010.

#### **Results**

Table 1 summarises the typing data for all cases. No temporal linkage or common source directly

Table 1: Cases of meningococcal infection reported for Suffolk between 1st December 2009 and 28th February 2010, with associated serogroup and PorA sequence results (includes 3 Ipswich cases and 2 other Suffolk cases \*\*)

	Child/Adult	Serogroup	PorA sequencing
Case 1	Child	B	VR1= 19-1,VR2=15-11,VR3= 36
Case 2	Child	B	VR1= 19-1,VR2=15-11,VR3= 36
Case 3	Child		Considered not a case
Case 4*	Adult	B	VR1=7
Non-fatal case 1**	Adult	B	VR1=22,VR2=9,VR3= 35-1
Non-fatal case 2**	Child	B	VR1=22,VR2=9,VR3= 35-1

\* Serogroup and porAVRI from skin biopsy, data supplied by Pasteur Institute, France

connected cases 1 and 2 as contact was outside incubation period. Case 3 was excluded from cluster. The incidence of genotype specific serogroup B meningococcal infection in the last quarter of 2009 was 24.7 cases per 100,000 children aged 0-4.

### Conclusion

Interventions such as meningococcal outer membrane protein vaccines (as used in New Zealand and France), would not have been beneficial in Suffolk as several genotypes were observed, none of which were covered by the porA specific vaccines. Attack rates of individual strains were also not considered high enough to warrant community intervention<sup>1</sup>. Both genotypes identified in the paired cases were common in the UK. Genotyping was helpful to understand the dynamic nature of common strains circulating in Suffolk at any one time. Enhanced surveillance for meningococcal disease is already in place and will be strengthened by including genotyping data where possible.

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### Infant and toddler swimming pool-associated outbreak of cryptosporidiosis - how should it be managed?

M Moonan, A Modi, R McCann

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### Aims

This presentation describes an infant and toddler swimming pool-associated outbreak of cryptosporidiosis in Greater Manchester, England. The challenges, lessons learnt and actions taken as part of the risk assessment in such a specialised swimming environment will be discussed. The development of an HPA national guidance on the investigation of cryptosporidium outbreaks in

swimming pools, subsequent to this outbreak, will also be mentioned.

### Methods

Investigation of a cohort of patients clinically diagnosed with cryptosporidiosis was undertaken. Pool water samples were tested for both chemical and microbiological standards as well as environmental swabs taken. An independent pool engineer was appointed to validate the pool plant and operating procedures. A detailed epidemiological questionnaire was developed and completed for each case.

### Results

The management of this outbreak was challenged by the vulnerable nature of the client group and the lack of guidance particularly around chemical and microbiological standards. In a busy pool operating at 32.8°C with classes of 10 infants/toddlers plus their carers every 30 minutes, the calculation of bather load was also discussed. The additional questionnaire highlighted the need for parents/carers increased appreciation of what procedures should be adhered to in the event of a faecal accident in the pool and what actions they can undertake to reduce risks.

### Conclusion

All cases reported links to the pool in question. Both the Environmental Health Officers and the pool owners identified improvements that could be made in the operation of the specialised swimming pool in order to reduce the risk of future outbreaks. The recommendations following this investigation for the management of this pool and the lessons learnt will be discussed at the conference. The development of an HPA national guidance on the investigation of cryptosporidium outbreaks in swimming pools will also be mentioned.

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## Does hospital admission increase opportunity to spread disease? Implications of contact networks in the community and hospital

*JMF Temple*

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### Introduction

Contact tracing is the cornerstone of outbreak control, and it is by limiting contacts between susceptible people that outbreaks can be prevented; comparing contact networks in the community and hospital may help guide nosocomial policy.

### Methods

Community contact tracing collects network details routinely. Ward receptionist records detailed where patients sleep during their admission. (Staff contact data is not collected.)

The Public Health Workforce volunteered to record their home and work contacts on a secure intranet site as part of pandemic flu preparations.

After simplifying the networks, by combining multiple links into one, the degree gives the personal number of direct contacts, (calculated with UCINET 6)

### Results

In one community bacterial outbreak, the mean degree of contact was 58.9 and in another it was 3.7, in one community viral outbreak it was 5.1, in the

Welsh Public Health Workforce it was 2.7 whilst for a Hospital viral outbreak each patient had a mean of 21.4 prolonged contacts with other individual patients.

### Discussion

Comparing data collected differently requires care. The hospital based data only considered overnight sleeping in the same room as contacts, thus excluded contact with staff, visitors, and communal area mixing; thus underestimating each patient's contacts. Additionally, some patients were in protective isolation, so contacts were lower than in hospital generally. Despite this, only the bacterial outbreak involving a primary school had a higher mean number of contacts. Compared to other settings personal contacts in hospital are an order of magnitude higher.

Nosocomial transmission is enhanced by large contact numbers, and policy should achieve reduced contacts generally as one that ignores personal contacts is likely to fail.

The increased contact in hospital explains how persistent infections become established in hospitals.

### Conclusion

Nosocomial infection policy must address patient mixing directly and not focus on particular infective agents.

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Wednesday 19 May 2010

Session V

## Tackling Zoonoses: Partnerships & Progress

### On Safari - multiple potential zoonotic exposures and other human health threats associated with a local safari park

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West Midlands West Health Protection Unit, Health Protection Agency

In 2009 a response to an alert involving notification of B-Lyssa virus in a free flying bat enclosure at a local safari park triggered further multiagency investigations showing a wide range of potential zoonotic and other health threats to visitors and staff at the park. Approximately 400,000 people visit this park annually and 'animal encounters' that involve direct contact with animals is a key feature of their experience and is actively promoted by the safari park.

Among the human health threats revealed was a case of infectious Mycobacterium Bovis in an animal fed by the public; detection in a range of animals of other potential zoonotic infections such as Salmonellae; the discovery of inadequate and time expired stocks of anti-venom for a collection of highly venomous snakes; and evidence of a large number of bites from a variety of animal species to visitors and staff at the park. These findings led to a multiagency health protection response that included introduction of control measures limiting public contact with the animals and screening of animal handling staff for Tuberculosis.

We review the role of the Health Protection Agency, Department of Health, Local Authorities, Animal Health, DEFRA, Trading Standards, and the HSE in tackling public health risks in commercial animal encounter establishments.

Findings of concern are the lack of clear, definitive national guidelines on roles and responsibilities of various partner organisations; the lack of commercial occupational services; and the large scale exposure of the public to animals known to be carriers of zoonotic infections in these settings.

This review is of relevance to interested organisations across the UK that may have public health responsibilities for incidents in similar safari park and zoo settings.

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### Integrating laboratory and epidemiological data: elucidating the aetiology of VTEC in Scotland

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#### Aims

Screening and surveillance of verotoxigenic *E. coli* (VTEC) in Scotland involves close, multidisciplinary collaboration between various professionals including front-line healthcare staff, laboratories, local health protection and environmental health teams. We describe the benefits of the integrated surveillance system operated by the Scottish *E. coli* O157/VTEC Reference Laboratory (SERL) and Health Protection Scotland (HPS).

#### Methods

The SERL receives samples from all primary diagnostic laboratories in Scotland, (i) to confirm identity and type presumptive isolates of *E. coli* O157 and non-O157VTEC; (ii) to screen high risk faeces designated by clinical criteria for sorbitol fermenting and non-sorbitol fermenting *E. coli* O157, and non-O157VTEC and; (iii) to detect antibodies to O157 LPS in patient sera.

HPS, in close liaison with SERL, compiles the national surveillance dataset, based on laboratory reporting. In 1999, HPS extended this surveillance to create an enhanced, population-based system integrating microbiological, public health and clinical data into a standardised dataset for every case, including epidemiology and health outcomes. In 2003, HPS also established direct clinical reporting of thrombotic microangiopathies such as HUS.

#### Results

By integrating data from various sources, we can identify microbiologically or epidemiologically linked cases across health administrative boundaries. We can also identify and compare epidemiology and

outcomes, and the proportion of all clinically significant, hospitalised or HUS cases, between *E. coli* serogroups eg 10% developing HUS amongst *E. coli* O157 cases, compared to 4% amongst non-O157 VTEC; and within subsets of typed organisms eg 92% of vtx2 only strains (associated with more severe outcomes) were acquired in Scotland, compared to 62% of strains with vtx1 and vtx2, possibly contributing to higher rates in Scotland.

### Conclusions

The close collaboration of HPS and SERL is crucial in providing enhanced surveillance data in real-time, for use in local investigations and incident control, as well as for national agencies.

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Wednesday 19 May 2010

Session VI

## Hot Topics

### Most farm-related *E. coli* O157 outbreaks in Scotland occur on private farms

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#### Aim

A recent large *E. coli* O157 outbreak at an open farm in the UK demonstrates various public health dilemmas. Contaminated livestock do not contravene any legislation. Faecal contamination can spread throughout livestock environments, and is not limited to direct animal contact. Guidance on risk minimisation at open farms has been extant for some years, but evidence from surveillance in Scotland suggests that private farms residents and visitors are also at risk.

#### Methods

Health Protection Scotland (HPS), in close collaboration with the Scottish *E. coli* O157/VTEC Reference Laboratory and local public health teams, collates standardised datasets for all laboratory-confirmed cases. HPS integrates epidemiological, microbiological and clinical data from enhanced surveillance of individual cases, with data from surveillance of general outbreaks (i.e. outbreaks involving more than one household) of all infectious gastroenteritis.

#### Results

From 1996 to 2009, a provisional total of 21 outbreaks involved visitors to, or residents of, farm premises, with animal contact or environmental spread identified as the main mode of transmission. The 15/21 (71%) outbreaks on private farms involved 50 symptomatic cases, of which 45 (90%) were microbiologically confirmed. The majority of confirmed cases were farm residents or their visiting relatives or friends. All but three of 15 farms were identified with cattle on the premises. The 6/21 (29%) outbreaks on open farms involved 26 symptomatic cases, of which 20 (77%) were microbiologically confirmed. Less data was available on species present, but cattle were reported on two premises.

#### Conclusions

Most farm-related outbreaks in Scotland involved private rather than open farms, confirming that HPS and Scottish Agricultural College should continue widespread partnership campaigns throughout rural communities. The precautionary principle requires that all farms should be considered contaminated. In addition to premises-specific measures, simple but fundamental precautions such as handwashing, and separating food areas, remain crucial irrespective of type of farm.

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# Poster Abstracts

## Swine Flu – Pandemic or Panic?

### **A survey of healthcare professionals provides feedback on pandemic 'flu information provided at the HPSC website in Ireland**

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Health Protection Surveillance Centre (HPSC), 25-27 Middle Gardiner Street, Dublin 1, Ireland

#### **Aim**

During a public health emergency, one of the main methods of providing timely information and guidance to healthcare professionals in Ireland is via the HPSC (Health Protection Surveillance Centre) website. We evaluated the website by means of a user survey and present one of the first evaluations of a pandemic flu information website.

#### **Methods**

A national survey of the healthcare professionals was carried out using an on-line questionnaire. Questions sought information on respondents' frequency of use of the website and their views regarding its navigability and the timeliness, relevance and usefulness of the information provided. Suggestions for improvement were also sought. Survey Monkey, an on-line survey tool, was used. The data were analysed using Excel, SPSS 16.0, with textual data analysed using grounded theory methodology.

#### **Results**

Of the 380 responses received, 86% (n=325) reported using the HPSC website. Of these, 25% used it daily and 44% weekly. Respondents' areas of work were: hospital (30%); public health (27%); general practice (29%); other community-based services (9%); and other (5%). The proportions rating aspects of the website as excellent or good were as follows: ease of navigating the website to access required information 75% (n= 224); clarity of guidance documents 77% (n= 229); comprehensive coverage of key issues 80% (n= 238); timeliness of appearance of information and guidance on the website 72% (n= 214); usefulness in supporting decision making 72% (n= 213). Important suggestions for improvement include improved layout

and navigability of the website and the provision of additional information on pregnancy, aspects of infection control and vaccination.

#### **Conclusions**

The website and its contents were rated quite well. This user survey provides useful suggestions as to how best to meet the challenge of providing healthcare professionals with a clear and seamless overview of a complex and dynamic situation.

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### **Differences in the first and second wave of influenza A (H1N1v) 2009 in Wales**

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#### **Introduction**

Wales as elsewhere in the UK, experienced two waves of influenza-like illness (ILI) during the 2009 pandemic. However, there were notable differences in their epidemiological profiles.

#### **Aim**

To describe, compare, and investigate the differences between the first and second waves of ILI in Wales.

#### **Methods**

Integrated data from different enhanced surveillance systems for influenza (two general practice surveillance systems, laboratory-based surveillance, hospital admissions and deaths from swine flu) and other data sources (media activity figures, calls to NHS Direct Wales) were reviewed.



## Results

The first wave in Wales peaked in late July and was characterised by high ILI consultation rates (nearly 100 consultations/100,000 practice population), and high levels of media activity. However, the proportion of confirmed A(H1N1) influenza infections in sentinel practices was low (positivity rate did not exceed 25%) and there were very few hospital admissions and deaths. By contrast, the second wave was characterised by much lower, though more prolonged ILI consultation rates (65 consultations/100,000 people) peaking in late October, but much higher positivity rates for influenza (60%) and substantially more hospital admissions and deaths.

## Conclusion

Much of the first pandemic wave in Wales was probably due to high media activity, a lower threshold for consulting a GP, and a lower diagnostic threshold for ILI, rather than genuine influenza. This led to an overestimation of the true size of the influenza pandemic during the initial stages and emphasizes the need to be cautious when interpreting GP surveillance data during high profile influenza epidemics. It highlights the importance of using integrated epidemiological, virological and hospital surveillance data to accurately monitor and interpret the epidemiology of an influenza epidemic.

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## Impact of H1N1 on a local HPU

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### Aim

To summarise South East London Health Protection Unit's (SELHPU) response during the first 4 weeks of the H1N1 pandemic before the London Regional Flu Response Centre was established.

### Method

Using paper records of enquiries, databases of cases monitored and treatment delivered, log records of algorithm changes, and minutes of outbreak meetings and staff work time-tables, to build a picture of the impact of the H1N1 pandemic at a local level.

## Results

Business continuity was activated, during the first week of the response, and some work delegated to Environmental Health. Despite needing to manage important incidents including a lookback, there was an overall reduction in routine calls. However, H1N1 calls increased so dramatically, the switchboard became overwhelmed and a separate call-centre was set up off site to triage calls staffed by HPU staff and trainees. At its height this call centre handled over 100 calls per day.

Up to 22 May, testing and treatment was arranged for 267 individuals. Of these 35 tested positive. All confirmed cases required further assessment to identify close contacts requiring prophylaxis, including work and school contacts. A number of schools were involved, the first requiring closure and prophylaxis of all pupils and staff (around 1500 individuals), the next two requiring prophylaxis of year groups only. SELHPU staff were sent to the schools to give advice to parents and assist with antivirals distribution. In addition to overtime worked by SELHPU staff, additional help was received from local public health staff and trainees as well as HPU staff from other Regions.

## Conclusions

Although the H1N1 pandemic situation continued to be handled by the local offices for longer than was initially expected, business continuity was maintained within SELHPU due to the efficient maintenance of workloads, monitoring of changing situations, and the dedication of staff.

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## Management of H1N1 in a residential special needs school

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### Background

By late October 2009, four out of 10 deaths due to H1N1 in Northern Ireland were in children with special needs and underlying medical conditions. These deaths occurred just as H1N1 vaccine started to become available and children with special needs were prioritised

to receive the vaccine. On Thursday 29 October 2009, advice was sought from NHS Lanarkshire Health Protection Team (HPT) (Scotland) about a situation in a special needs school, which had both residential and day pupils. The HPT was informed of two children, one of whom was admitted to hospital, and three staff with symptoms suggestive of viral gastroenteritis. A third child was reported to have fever.

### Methods

The HPT immediately treated the situation as suspected H1N1, commenced antiviral prophylaxis for close contacts and arranged emergency school based (and home if required) vaccination sessions for the next day (Saturday). This involved a degree of persuasion of NHS colleagues and education staff. The school was closed for nine days.

### Results

Out of the total number of 29 pupils, two were confirmed as cases. 25 children and 100 out of the 150 staff were vaccinated.

### Conclusions

The decision to undertake emergency vaccination was welcomed by the school, community, education, local media and politician. The vaccination programme for 14 other special needs schools was brought forward and first doses of H1N1 were completed within the next two weeks. Clear decision making and explanation with colleagues along with strong support from primary care, pharmacy, school and others helped achieve favourable outcome.

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## Managing the information overload – establishing a health advice cell

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### Background

The concept of an expert advisory group is well-documented in major incident response; the current arrangement is for the Strategic Command Group of a multi-agency response to be supported by a Science and Technical Advice Cell (STAC).

## Establishing a Health Advice Cell

During the recent swine flu (H1N1v) pandemic an overwhelming amount of information was cascaded to health professionals. Detailed plans had been drawn up prior to the pandemic based on Department of Health modelling of a severe infection, leading to high levels of morbidity and mortality and extreme pressures on healthcare resources. In the event, the clinical impact of the illness was less severe with much of the NHS operating normally. Guidance therefore had to be amended, updated and circulated to clinicians as new information about the progress of the disease and the risk groups affected became available.

In the North East, a NHS-wide command and control structure was led by the strategic health authority's Director of Flu Resilience. A Health Advice Cell (HAC) was established in August 2009 to provide clinical and public health advice to the Director; the cell included representatives from key clinical specialties.

## The Health Advice Cell website and guidance

The aim of the HAC was to provide expert guidance where national guidance was not available or was inconclusive and to provide a managed entry point to national guidance. The HAC had a dedicated website which was publicised to all clinicians in the region. On this site were posted guidance notes, a "frequently asked questions" mini-site and links to the most up-to-date national websites and guidance documents. This was particularly valuable in handling pandemic flu vaccination guidance and queries.

### Conclusions

We have reviewed the operation of the HAC and discuss the lessons identified from its use in pandemic flu and how these can be applied to other major incident scenarios.

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## Outcome of surveillance of pandemic H1N1 in Northern Ireland (NI), 2009

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### Aim

To describe the epidemiological characteristics of the first and second waves of pandemic H1N1 2009 in NI.

## Methods

Data collected through syndromic sentinel surveillance in 37 general practices across Northern Ireland.

Total calls received and ILI calls from 5/7 Out of Hours (OOH) centres.

Respiratory specimens (from sentinel and non-sentinel sources) at the Regional Virology Laboratory were tested for all influenza types and specific subtypes were identified using PCR assays directed at matrix gene sequences of influenza A.

Data on hospitalised cases and deaths with confirmed swine flu.

Data on numbers of antivirals prescribed.

## Results

The first swine influenza detection was in Week 20. The first wave lasted from Week 27 to Week 35 (9 weeks) and the second wave from Week 36 to Week 4 (21 weeks) as determined from ILI consultation rates and comparisons with baseline information (see table 1).

## Conclusion

Surveillance of all combined GP and OOH consultations and antiviral data sources showed a first wave peak in Wk31 with laboratory data peaking in Week 33, with a higher peak in Week 44 during the second wave.

The age-group affected most in both waves were the 15-44 years. The mean age for confirmed hospitalised cases was lower in the second wave than the first ( $p=0.01$ ). The case fatality rate (CFR) was similar for both waves ( $p=0.43$ ).

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## Pandemic influenza A H1N1 (swine flu) and flu response centres: perspectives from flu response centre staff in the West Midlands

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## Aim

On 18 May 2009 the West Midlands Flu Response Centre (FRC) was established, and among its functions was to provide callers with rapid access to public health information and advice during the 'containment' phase of the influenza pandemic. This report evaluates the experience, perceptions, and knowledge of staff who worked at the West Midlands FRC during the 'containment' phase.

## Methods

A cross-sectional survey of all staff (clinicians and non-clinicians) who worked in the West Midlands FRC between 18 May 2009 to 10 July 2009 was conducted using an on-line self-administered questionnaire. The questionnaire included sections related to the respondents: demographics; experience of working at the FRC; sources of information on swine flu; and, knowledge about swine flu and the containment phase.

## Results

A response rate of 47% (89/176) was obtained, and the majority of respondents were clinicians (55%, 37/67). Overall experience of working in the FRC was rated as very good/good by the majority of respondents (64%, 48/75), and 80% believed that the general and clinical information provided by FRC staff met the expectations of callers. However, respondents (54%) felt that expectations with regard to reporting of laboratory results were not met. FRC staff cited a

Table 1

Summary results table	First wave	Second wave	Significance level
<b>Confirmed Cases</b>			
Number confirmed	126	1205	
Positivity rate peak week (week)	17% (Wk33)	41% (Wk44)	
Age-range (median years)	10wks-75years (22)	5wks - 68yrs (15)	P=0.0168
<b>Hospital Confirmed Cases</b>			
Number	50	524	
Age-range (median years)	10wks-75years (27)	4wks - 93yrs (17)	
Mean	31 years	24 years	P=0.0136
CRF	2	2.7	P=0.430

variety of sources used to obtain information about swine flu and the HPA (89%, 65/73) and Department of Health (52%, 38/73) websites were the most cited sources of information. Clinicians and non-clinicians had similar levels of knowledge regarding the rationale for the containment phase, however specific knowledge was lacking in both groups regarding public health measures.

### Conclusion

This survey demonstrates that FRC staff had good overall knowledge of swine flu and the containment phase. Standardised training will likely improve the quality of this service for future.

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### Pandemic Influenza: predicting the effect of resource shortages to allow planning decisions to be made

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### Aim

To demonstrate the use of a model that estimates resource shortages and their effect on outbreak progression, when the amount of the resources available can be estimated.

The model has been applied as an example of its application to Essex, United Kingdom.

### Methods

A deterministic SEIR like model programmed in MS Excel was used. The effect of antiviral treatment,

shortcomings in hospital beds and medical ventilators were calculated throughout the outbreak period. The number of cases and deaths were calculated. A literature review was conducted in November 2009 to find modelling parameters for pandemic influenza A/H1N1 2009.

The model has been applied to Essex, United Kingdom as an example of its application. The resources currently available were estimated using information supplied by Essex's five acute trusts. The model was applied for two scenarios, only the percentage of all symptomatic cases hospitalised changed (0.47%, 1%). The effect of varying the percentage of all intensive care beds available for patients with pandemic influenza was considered.

### Results

The model estimated approximately 385,000 clinical cases in Essex for the entire wave, without resource restrictions.

Table 1. Number and percentage utilisation of general hospital beds and intensive care (IC) beds with ventilators required at the peak to treat all pandemic flu patients in Essex.

	Hospitalisation Rate	
	0.47%	1%
Number of patients requiring hospitalisation without ventilation	118	249
Percentage of all non-IC beds required	3.9	8.2
Number of patients requiring IC AND ventilation	40	85
Percentage of all intensive care beds with ventilation required	45.5	96.6

### Conclusion

This model is simple to use, can be run on a standard computer using MS Excel and interpreted by local public health professionals to estimate the resources required. The model allows you to see the effect of resource restrictions on the number of cases and deaths.

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# Surveillance – Time to Discard the Parchment and Quill

## A national surveillance programme for *Clostridium difficile* infection (CDI) in Scotland

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### Aims

To understand the epidemiology and facilitate the reduction of CDI in healthcare settings in Scotland through the implementation of a national mandatory surveillance system for CDI, alongside strain typing provided by a reference service.

### Methods

Following a national protocol for testing and reporting, cases of CDI in patients aged 65 and above from all acute and non-acute hospitals, as well as general practices, are submitted. Samples representing severe cases and suspected outbreaks are submitted to the reference service for PCR ribotyping. Rates are calculated by NHS board using occupied bed days (OCBDs).

### Results

All NHS boards across Scotland have complied with the protocol. For patients aged 65 years and above, 6430 cases were reported in Year 1 (annual rate 1.34 per 1000 total OCBDs); in Year 2, there were 6322 cases (annual rate, 1.23); in Year 3, there were 3625 cases (annual rate, 0.71). Overall rates for Scotland have decreased consecutively over seven quarters since the beginning of Year 2, with the last quarter in Year 3 having the lowest reported rate since surveillance began. Between Year 2 and Year 3, overall rates have decreased 42% (95% CI 38%, 46%). 64% of ribotypes reported were of three main types: 106, 001 and 027, with 106 predominating.

### Conclusions

The national mandatory surveillance programme has led to harmonisation of testing, diagnosis and reporting of CDI, with the same case definition used by all clinicians in all NHS boards across Scotland. Surveillance, along with the implementation of

guidance, has raised awareness of CDI and supported the significant reduction in reported rates. Typing of isolates from severe cases and outbreaks suggest that 106, 001 and 027 have become predominant in Scotland. Type 106 is predominantly found in the UK compared to the wider distribution of 027 and 001.

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## Assessing the performance of the new STI surveillance system in Wales

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### Aims

The new sexually transmitted infection (STI) surveillance scheme in Wales was developed to provide timely, person- and area-based surveillance of sentinel STIs in Wales. The system has now been piloted in three genitourinary medicine (GUM) clinics and four laboratories, and is currently being rolled out across Wales. We aimed to assess the performance of the new system to date.

### Methods

The timeliness and validity of the new surveillance system was audited using the data from the pilot sites.

### Results

Inconsistencies in the numbers of total episodes per condition per quarter between the KC60 forms submitted by the clinics and the data extracted direct from the GUM central management system varied between 11% and 48%. However, differences in the data only varied by one or two integers in 65% of instances and by 10 integers or less in 88% of instances. As of the 1st March 2010, KC60 forms for all four quarters of 2009 had been received from only seven of the 23 GUM clinics (30%) and three (13%) had returned none. In comparison, on the 26th February 2010 data was available until the 22nd February 2010 from all clinics from which data was being received (nine in total), with the exception

of one clinic for which data was available until 31st December 2009. Data from the laboratories in which the extract had been installed was available up until the 19th February 2010. Quality issues which have arisen during development and implementation of the new system include: low proportions of completed sexual orientation data; changes in GUM methods of coding attendances; and the use of free text 'Comments' fields to laboratory data.

### Conclusions

The results of the audit suggest that the new system is as valid as the KC60 forms and is more timely in its data collection.

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### Enhanced surveillance of invasive pneumococcal disease in the North East of England: clinical presentation and risk factor association with disease outcome

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### Aims

Infection with *Streptococcus pneumoniae* can develop into serious invasive pneumococcal disease (IPD). An enhanced surveillance system was established in 2006 by the North East Health Protection Unit to monitor IPD in local residents. The overall aim of this surveillance system was to improve the understanding of the epidemiology of IPD in the region. The clinical presentation and risk factor association of IPD cases in relation to disease outcome was investigated.

### Methods

A case of IPD was defined as a North East England resident of any age with laboratory-confirmed IPD between 1st April 2006 and 31st March 2009 inclusive. An enhanced dataset was collected from hospital clinicians and primary care including demographics, laboratory and clinical information, risk factor and previous immunisation information.

### Results

Of the 826 cases of IPD identified in North East England between April 2006 and March 2009 the clinical presentation was known for 818 of which 72% presented with pneumococcal pneumonia, 9% with meningitis, 8% with septicaemia and 11% with other forms of invasive disease. The overall fatality rate was 19%; there was variation in fatality rate by clinical presentation, clinical at-risk group and age. Septicaemia was associated with the highest fatality rate by clinical presentation (30%) and persons  $\geq 65$  had the highest fatality rate by age (34%). Almost a quarter of cases in an at-risk group died; the fatality rate of those aged 5-64 in an at-risk group was over double that of those aged 5-64 not in an at-risk group ( $p < 0.05$ ).

### Conclusions

This regional population based IPD enhanced surveillance system has highlighted the high fatality rate among IPD cases in North East England and that clinical presentation and risk factors are associated with differential risks of fatality. This information could be of importance for targeting at-risk groups for immunisation.

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### Exploring changes in tonsillectomy methods and outcomes

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### Introduction

Tonsillectomy is effective treatment for recurrent severe tonsillitis. Cold steel is the traditional technique but new methods such as diathermy and more recently coblation, have been introduced. This study explores the techniques used and outcome in Wales.

### Methods

SPC charting of the proportion of surgery using different techniques and secondary major haemorrhage using Welsh SIS data.

## Results

From 2004 until mid 2006 49% of procedures (Upper and Lower control limits 58% to 49%) used cold steel dissection (no diathermy or coblation). It then fell until early 2008 when it stabilised at 27% (35% to 18%) of tonsillectomies.

The use of diathermy and coblation initially accounted for 35% (42% to 27%) but following a change in practice in mid 2007, it increased and is now used in 70% (78% to 61%) of procedures. The rate of secondary haemorrhage requiring surgical intervention was initially 0.4% (UCL 1.6%) but in mid 2007 rose to 0.7% (UCL 2.2%)

## Discussion

The change in technique over a prolonged period, accompanying a rise in patients requiring further surgery, warrants investigation.

Possible explanations for this include:

1. Changes in surgical training or personnel: These are not coincident with the outcome change.
2. Sudden and sustained changes in patient demographics.
3. Continuing problems with single use instruments: Not reported.
4. Technique change.

The risk of post operative haemorrhage is multifactorial. Thus prior to formulating definitive conclusions from surveillance, the data must be validated against other routine data and patient notes.

## Conclusion

This longitudinal assessment of the SISP database demonstrates that tonsillectomy techniques and the pattern of post-operative haemorrhage in Wales is changing, this may require re-evaluation of technique choice by surgeons.

The health protection utility of continuous surgical surveillance revealing unexpected effects of changes in practice is demonstrated.

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## Implementation of the web based Enhanced TB Surveillance System in the West Midlands

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## Aims

The Health Protection Agency (HPA) has carried out Enhanced Tuberculosis Surveillance (ETS) in England since 1999 collecting information on notifications and outcomes. In order to improve surveillance, in line with recommendations from the Chief Medical Officers Tuberculosis Action Plan 2004<sup>1</sup>, the HPA introduced a new web based real time surveillance system. This was rolled out in the West Midlands in 2009. This poster reviews the impact the new system has had on TB data collection in the region from a regional and Health Protection Unit (HPU) perspective and recommends further improvements.

## Methods

A review of TB surveillance data flows in the West Midlands before implementation of the new ETS was completed. Data quality of notification and outcome data was also compared. Differences in the efficiency of data collection processes and feedback from local TB services were reviewed.

## Results

Prior to implementation, collating HPU and regional level data was time consuming and not in real time. Data flows have now been greatly standardised with the majority of clinics inputting cases onto ETS themselves. Clinics are now able to access their own data, making it easier to add and denotify cases and update outcomes. Consequently the timeliness, accuracy and completeness of epidemiological and outcome data has improved resulting in increased Public Health application of the data.

## Conclusions

Although the ETS has only been in use in the West Midlands for a year many improvements are already apparent. Clinics benefit from easier access to their own ETS data and the ability to access and share information with other services. Planned amendments to ETS, including improvements to the download facility, adding a contact tracing module and

historical records fields will further improve access to information. Region wide, work is needed to further improve the timeliness and data completeness of reporting, particularly for the new risk factor fields.

1. Department of Health 2004. Stopping Tuberculosis in England: An Action Plan from the Chief Medical Officer.

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### Reviewing the effectiveness of current NICE guidelines for tuberculosis contact screening

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#### Introduction

Sandwell TB Services have implemented a more cautious approach to contact screening of cases of TB in their area (from 2008) when compared to nationally accepted guidance published by NICE. Results are presented for 2009 to demonstrate if this approach is more effective in picking up cases.

#### Method

Data on all TB cases from the TB Services based at Sandwell Acute Trust was analysed. Electronic records for the year 2009 were available for this review. Advice on tuberculosis was sought from local & national TB experts.

The Sandwell Approach:

1. BCG status of all patients is ignored.
2. 6mm Mantoux skin test is regarded as positive.

#### Result

When reviewing all the data from Sandwell, it has been shown that Sandwell TB Services identified and treated 13 extra potential TB cases (following their algorithm) that would be missed if NICE guidelines were followed to the letter. Sandwell has about 110-120 TB cases annually and so this early identification could significantly reduce the long-term rates of TB in the population.

#### Conclusion

The Sandwell experience in demonstrates the need to review the current NICE guidelines based on research evidence. It also highlights the need for local flexibility from NICE guidance based on local needs and research.

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### Surveillance calendar - a co-ordinated approach to local surveillance outputs

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#### Aim

Health protection units in England are the 'eyes and ears' of the HPA. Local teams are involved in a range of local disease surveillance activities and alert systems. The West Yorkshire unit produced adhoc surveillance reports and annual infections summary for local stakeholders. However, there was need to review and standardize outputs to enhance the value of available data and produce fit for purpose reports.

#### Method

A West Yorkshire HPU surveillance group was established to identify gaps and establish a rolling calendar of surveillance outputs at local level. It specified timescales for outputs, target audiences and geographical level the reports would be presented. A traffic light system was used to identify outputs already established, those under development and new ones needing development. This provided a snapshot of current and intended outputs with agreed timescales for final roll-out. Information officers set up standard queries for reports adaptable by other units in the Region.

#### Results

A standardised calendar of outputs was agreed with local stakeholders. The added value of using this approach of a surveillance calendar was:

- improved comparability of data across the different local authorities within the unit
- provision of more relevant and reliable communicable disease surveillance data for local partners



- avoiding duplication of work through provision of one single disease or topic specific output
- strengthening local surveillance system by working towards a common standard of reporting
- allowing more efficiency and sustainability in a limited resource setting through regional roll-out
- ensuring partners have access to regular surveillance reports on a variety of infections

### Conclusion

This approach of using the West Yorkshire Surveillance calendar was extremely beneficial in providing a consistent and easily available overview of the unit's surveillance outputs. Although simplistic, it helped to rationalise and target right audiences for local communicable disease surveillance.

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### **S. aureus bacteraemia: why is the incidence of MSSA different to that of MRSA?**

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#### Aim

To compare demographic and clinical information between patients with meticillin sensitive *S. aureus* (MSSA) and those with meticillin resistant *S. aureus* (MRSA) bacteraemia.

#### Method

During 2008-2009, 8 laboratories (~83% NI population) participated in the voluntary reporting of *S. aureus* bacteraemias to the European Antimicrobial Resistance Surveillance System (EARSS). Using EARSS data, MSSA and MRSA patient episodes were compared using logistic regression, adjusted for clustering, by: age, gender, Trust, specimen within 2 days (inpatients only), presence of a urinary catheter, dialysis and IV device.

#### Results

A significant association was found between the type of *S. aureus* bacteraemia and age, with the odds of MSSA compared to MRSA being 0.97 times lower per year increase in age ( $P < 0.001$ ). There was a significant association between the type of bacteraemia and Trust ( $P = 0.002$ ). For inpatients only, the odds of a having a

specimen taken within 2 days of admission were 2.05 times higher for MSSA compared to MRSA ( $P = 0.0001$ ). A significant association was found between the type of bacteraemia and urinary catheter ( $P < 0.001$ ), dialysis ( $P = 0.03$ ) and IV device ( $P = 0.04$ ). The multivariable analysis, adjusting for all significant variables ( $P < 0.05$ ), showed the odds of MSSA compared to MRSA were still significant; per year increase in age (OR 0.97), in Trust C compared to Trust A (OR 2.19) and between those with a urinary catheter compared to those without (OR 0.27).

### Conclusion

EARSS data is a voluntary scheme which represents 91% of *S. aureus* episodes reported through the mandatory scheme (979/1078). For every year increase in age the likelihood of MSSA compared to MRSA was lower. The likelihood of MSSA compared to MRSA was twice as high in Trust C compared to the Trust A. In individuals with a urinary catheter compared to those without, the likelihood of MSSA compared to MRSA is lower, that is, there are a higher proportion of MRSA bacteraemias.

### **Variation in incidence of invasive meningococcal and pneumococcal disease in Northern Ireland, 1999-2009**

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#### Aim

To evaluate incidence of invasive meningococcal disease (IMD) and invasive pneumococcal disease (IPD) in Northern Ireland 1999/2009.

#### Methods

Data collected from Enhanced Surveillance of Meningococcal Disease (ESMD) database (confirmed cases) and confirmed reports of *S. pneumoniae* from laboratory information system. Linear regression and Pearson's correlation coefficient ( $R^2$ ) used to measure association between IMD and IPD incidence and to compare epidemiological characteristics.

#### Results

866 IMD and 1517 IPD cases reported. There was no correlation between the incidence of the two diseases. Incidence varied from 2.9 - 8.0/100,000 for IMD and 6.1 - 10.3/100,000 population for IPD ( $p = 0.61$   $R^2 = 0.03$ ).

Difference between age-groups for IMD and IPD ( $p=0.0001$   $R^2 = 0.38$ ). Age-group specific incidence highest in 0-4 years for IMD (average incidence 2.8/100,000), incidence rates for IPD were higher in the over 65 year olds (average incidence 3.2/100,000).

No difference in seasonality of incidence of diseases ( $p=0.5$   $R^2 = 0.0002$ ).

Average incidence rate for IMD highest in January (6.5/100,000) and in December (10.0/100,000) for IPD.

There was an association between incidence of diseases and year ( $p=0.001$   $R^2 = 0.0177$ ). IPD Incidence peaked

in 2003 and in 2000 for IMD. Incidence decreased after vaccines introduced for IPD in 2003 and IMD in 2000.

### Conclusions

Incidence rates of IPD are higher than IMD. There was a slight increase in both diseases in 2006. The rates of IMD are higher in children, conversely rates of IPD are higher in the elderly. Both diseases are more prevalent in winter. There is a need for enhanced surveillance for IPD.

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## Environmental Hazards – Making the Environmental Connection

### Legionnaires' disease in Northern Ireland 1980-2009

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#### Aim

To describe the epidemiology of legionnaires' disease in Northern Ireland (NI) between 1980-09.

#### Methods

Enhanced surveillance has been undertaken since 1980 in collaboration with microbiologists and consultants in communicable disease control (CCDC). Data is collected on: demography; clinical presentation; risk and exposure; and whether the case was community, nosocomial or travel associated. Cases are defined in accordance with HPA guidelines. Data is validated annually with CCDCs and microbiologists.

#### Results

73 cases (66 confirmed, 7 presumptive) were reported with 9 deaths (case fatality rate 12.3%). Ages ranged 30-83 years (median 56) with a M/F ratio of 3.2:1. While the annual incidence rate has risen since 2002 it has been consistently less than that reported for England and Wales but greater than the Republic of Ireland. 40% cases are reported during June-August. There were two reported clusters each of 3 cases.

45/73 (62%) were acquired abroad, 18/73 (25%) were community acquired and 5 were probable nosocomial cases. 32/45 travel associated cases were associated with travel to Mediterranean countries. Compared with E&W during 1980-2008, NI had lower rates of cases acquired abroad (2.5/100,000 v 5.4/100,000), community acquired (1.0 v 6.4) and nosocomial (0.2 v 0.6).

During 1990-9, 71% cases were diagnosed by culture/serology compared to 8% in 2000-9 with urinary antigen testing being the main diagnostic method in 78% cases in the past decade.

#### Conclusion

NI's annual incidence rate of legionnaires' disease remains less than E&W and for most European countries with most cases associated with non UK travel. Urinary antigen testing has increased case ascertainment. Under reporting is unlikely because of annual validation with data providers. Further study is required to determine if the lower incidence rate reflects a combination of: reduced exposure to legionella aerosol generating procedures within NI; reduced clinical suspicion with reduced testing; and less foreign travel.

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# Outbreak and Incidents

## Beware social networking sites – they can influence outbreak perception and investigation!

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### Background

Social networking sites such as Facebook® have grown in popularity over the past five years. They allow the rapid dissemination of information through groups of “friends”, which in a truly social setting is useful and entertaining, however, in outbreak investigation, this “sharing” can be problematic.

We describe two recent outbreaks where the use of social network sites had an impact on the perception of events, if not the final outcome of the investigations.

### Outbreak 1

The North East Health Protection Unit (NEHPU) investigated an outbreak of *E coli* O157 associated with a sandwich shop; when searching for details of the premises on the internet, a public Facebook® group of people who were fans of pork sandwiches (an implicated food item) bought from the premises was found. Messages were posted on the group’s page about the closure of the premises, the sampling results and the names of some of the cases interviewed as part of the outbreak.

### Outbreak 2

The North East HPU received a report of an outbreak of diarrhoea and vomiting (later confirmed as norovirus infection) associated with a wedding party at a local country house hotel; the report was from a member of the party who had also posted information about their illness and made allegations about the source of infection on their personal Facebook® account. Investigation of the outbreak subsequently identified a symptomatic child who attended the party as likely source of infection. However, the reports on Facebook® caused considerable distress to the bride and was of great concern to the hotel which was falsely “accused” as the source of illness.

### Conclusion

Outbreak control teams should be aware of the increasing use of social networking sites, many of which will not be publicly accessible, and the potential for information shared by this route to influence investigations. It is recommended that media monitoring arrangements are put in place to monitor such sites during an outbreak as part of the usual communications handling plan.

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### Children with red faces

*J Reid, S Anthony, M Schweiger, L Inamdar*

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### Aim

50/77 nursery children from three separate children’s centres became ill immediately after eating a chicken pie dinner provided by a central distribution centre run by the council. The children’s symptom consisted of rash around face and mouth and spots/blisters in the mouth and in some cases swelling around the face. The younger the child the quicker the symptoms developed. In some very young cases the onset was instantaneous whereas adults who also ate the dinner experienced little or no symptoms. Sudden onset within one hour is suggestive of a chemical or toxin contaminant or a histamine type reaction. Histamine type reactions are usually associated with contaminated fish or shell fish but none had been served on that day.

### Method

EH colleagues investigated the incident on the same day. They collected food samples at the children’s centres but there was no food left at the main distribution centre to test. The samples were sent for analysis both to the Regional Food laboratory and the Public Analyst. Food histories from all the children and staff were documented.

### Results

Results from the food samples tested by the Public Analyst showed that there was histamine present in

the food tested. No other organisms were identified in any of the food samples tested. Histamine in foods other than fish and shell fish has been reported in similar incidents in other parts of the country over the last few years. However there are currently no recognised levels that are known to cause illness in food other than fish or shell fish.

### Conclusion

The symptoms could be attributed to the histamine found in the food. Histamine is a heat stable substance; so that once it is formed it will not be destroyed by cooking. The likely pathway for this to occur is from the ageing of chicken meat outside of a temperature controlled environment.

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### **Clostridium difficile associated disease in acute general hospital – dealing with the problem**

*J Cartwright, P Cleary*

HPA NW

#### Aim

The aim of this investigation was to describe, investigate and manage an outbreak of *C. difficile* infection in a hospital setting, against a background of high prevalence.

#### Methods

We conducted a study with a retrospective cohort design based on a predefined protocol, collecting epidemiological, microbiological typing and qualitative data to characterise the outbreak and its possible causes.

#### Results

Data was collected on 64 non-relapsing cases of CDI diagnosed between November 2009 to February 2010 inclusive. Most cases were associated with a particular ward and occurred 48 hours or more after admission. Of the “community acquired cases”, most had had previous *Clostridium difficile* infection and/or had been in hospital in recent months. Many were from care homes. Nearly half of the cases died.

Risk factors identified include use of specific antibiotic classes and exposure to a case of *Clostridium difficile*. The majority of samples typed were of ribotype 027 (14; 53.8%). Ribotyping and MLVA data allowed a

plausible hypothesis of the pattern of transmission to be constructed, identifying two separate outbreaks and a likely index case who acquired infection elsewhere.

### Discussion

This investigation used a combination of epidemiological and typing data to trace and explain plausible transmission patterns of *Clostridium difficile* during a period of increased incidence in an acute general hospital. The investigation also identified issues such as poor hand hygiene and cleaning scores, an unusual isolation/cohorting policy, high bed occupancy as other factors which could have contributed to the increased incidence.

Actions taken included establishment of an isolation ward with stringent admission and discharge criteria; rapid detection and treatment of new cases; prudent antibiotic prescribing; enhanced environmental cleaning; increased hand hygiene measures; and a programme of staff education and training.

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### **Hepatitis B (HepB) in a renal patient**

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#### Background

A male patient with a long history of chronic renal failure, currently managed on home renal dialysis, was found to be positive for acute Hepatitis B (Hep B) on routine testing. Prior to these test results, this case had renal dialysis at 3 different hospitals, including 3 pre arranged sessions at a European hospital whilst on holiday. Therefore the source of the infection was difficult to ascertain. Investigations into the source of the infection are continuing. Serial bloods suggest that he is now in the recovery stage.

#### Method

The case was visited at home by a HPA nurse where diagnosis, risk factors and preventative measures were discussed. Other details regarding current and previous treatment including immunisation history were also discussed. A serious untoward incident was declared and a case conference was convened by the hospital where the patient is currently receiving treatment / dialysis. All household contacts were identified.

## Results

On discussion with the patient no other risk factors were identified apart from those associated with renal dialysis, nor had he been offered or received any Hep B vaccinations previously. It was also found that within the renal unit where he regularly attended for treatment, Hep B vaccinations were not routinely offered.

The case conference agreed the following actions:

- Other patients who attended the unit on that day would be identified, contacted and offered testing and vaccination
- A Hep B vaccination programme would be implemented within 6 months for other renal patients. Other hospitals involved to be formally informed of the situation.

All identified household contacts of the case were advised to be tested and vaccinated for Hep B.

## Conclusion

This situation may have been prevented if a vaccination programme had been implemented in the unit as recommended in the DoH 2002 'Good practice guidelines for renal dialysis units'. It also highlights how there is inconsistency across the units regionally, and most probably nationally, with regards to vaccinations.

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## Impact of the accelerated MMR campaign: a regional mapping exercise

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## Introduction

In August 2008, the Chief Medical Officer (CMO) sent a national alert to strategic health authorities (SHAs) across the UK outlining the potential for a measles epidemic. By March 2009, the number of cases of measles in the North East had risen to the highest level for 20 years. Currently, there is little evidence from the UK to suggest the most effective strategy for enhancing the uptake of childhood vaccinations. Each of the four regional Primary Care Organisation (PCO) clusters responded to this situation in different ways and much can be learnt from considering their experiences.

## Method

The aim of this piece of work was to map the initiatives employed in the North East during the 12 months following the publication of the CMO letter, and to link these to changes in uptake data for the MMR vaccine. Qualitative data were obtained by interviewing immunisation co-ordinators from across the region and linked to quantitative uptake data from the Immform and COVER networks. Any apparent trends in coverage over the period concerned were consequently noted.

## Results

The proportion of un-vaccinated children in the North East decreased consistently between September 2008 and August 2009. Although different immunisation strategies were employed throughout the region, these could not be clearly linked to the observed patterns of change and it is likely that a multi-faceted approach is required to enhance vaccine uptake.

## Discussion

The response to this incident resulted in containment of the local measles outbreak and maintenance of greater MMR vaccine coverage in the North East when compared with England as a whole. Despite this, uptake rates remain below the World Health Organisation's (WHO) target of 95% to achieve herd immunity. A number of barriers to implementing initiatives were identified during this period, which may be drawn upon to inform future vaccination strategy.

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## Investigation of multiple gastrointestinal infections acquired at a sports club initiation ceremony

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Point-source outbreaks with multiple gastrointestinal organisms are uncommonly reported. We report on the investigation of a food poisoning incident with five confirmed cases and four different organisms (*Salmonella*, *Campylobacter*, *Giardia* and *Shigella sonnei*) in members of a university society sports team.

A number of unusual activities occurred at this initiation ceremony and the infections followed consumption of partially cooked and raw offal, including liver prepared by the students, and raw heart. Exposure to other potentially contaminated foodstuffs followed a 'gherkin walk', the tonsorial application of raw egg, followed by keep-fit exercises with a gherkin in situ. The routes by which these may have individually contributed to gastrointestinal illness in the participants will be discussed.

Interviews with confirmed and suspected cases suggested that this was a point source outbreak, and illness was associated with a single incident. Case finding identified another six club members who were symptomatic but did not seek medical attention.

This investigation highlights the possibility of cross-contamination associated with consumption of ubiquitously contaminated foodstuffs prepared under less than satisfactory circumstances, as potential risks to human health. No other risk factors or other at-risk groups were identified. The incident did not present a continuing public health risk to the wider student population or to the population of Cardiff.

The university, in conjunction with Cardiff City Council provided advice on the control and management of student sports and recreational events and on safe food preparation as an extension of the general advice given to all first year students. A number of public health messages arising from this event will be discussed.

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### **Investigation of nosocomial legionella infection at a local NHS Foundation Trust**

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#### **Background**

A patient was admitted to the local hospital with a diagnosis of legionella infection. This patient had been an in patient at the same hospital, for an unrelated illness, during the incubation period for legionella infection. The local HPU was invited to take part in incident meetings. Legionella was isolated from the suspect ward and elsewhere in the hospital.

#### **Issues raised**

Acute trusts are under considerable pressure to meet their performance targets and hence there was considerable tension and resistance to the closure of the suspect ward during the investigations.

The majority of the incident team was constituted of hospital staff and the local HPU became a lone voice in advocating ward closure.

In house hospital staff undertook the collection of water samples, thus there is no independent verification about the taking of environmental samples.

The clinical sample from the patient was initially processed in the local laboratory and subsequent further polymerase chain reaction and more specialised culturing and profiling was to be undertaken at the HPA laboratory. Despite assurances this sample was never sent to the HPA laboratory.

#### **Learning Outcomes**

It feels incongruous for a hospital trust, under investigation, to undertake its own collection of evidence.

In a NHS acute trust there is a grey area with regard to the independence of environmental sample collecting in the event of the incident described above.

A protocol between the local hospital laboratory and the specialised laboratories of the HPA is required so that independence and robustness can be shown in the processing of the clinical samples.

The roles and responsibilities of the major stake holders, such as the Local Authority, the Health and Safety Executive, the HPA and the Foundation Trust may benefit from being more explicitly defined.

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### **Mass TB contact screening in schools: a two-tiered approach**

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#### **Introduction**

Contact tracing is key to interrupting TB transmission. In this report, we describe our experience in using

a two-tier Interferon Gamma Release Assay (IGRA) screening approach for school contacts in two unconnected TB incidents in 2009.

### Methods

Close contacts among pupils and staff were identified in accordance with NICE guidelines. The Incident Control Team (ICT) agreed a two-tier IGRA screening programme, with the first tier being a Quantiferon-Gold (QG) blood test (~£35/test) for the majority, and those having a positive or indeterminate result receiving a second round of screening with Elispot (~£75/test). Any immunosuppressed individuals identified through a screening questionnaire went straight to Elispot testing. Those with positive Elispot results were referred to chest physicians for further management.

### Results

School A, a community school, had a majority of pupils of South Asian descent. Among the 53 pupils and 22 adult staff screened with QG, 12 (23%) pupils and 6 (27%) staff required Elispot testing. One staff-member then tested positive on Elispot screening.

School B was a selective grammar school with most pupils being White British in ethnicity. Among the 100 pupils and 12 adult staff screened with QG, 16 (16%) pupils required Elispot testing. Eight pupils then screened positive with Elispot.

### Conclusions

The ICT chose this approach as few individuals had a previous BCG and there was limited availability of TB nurses for Mantoux screening. By using the cheaper but less specific QG as the initial screening test followed by the second round with Elispot, overall costs were minimised. This approach was well received by pupils and parents. Good communications and operational coordination was vital in ensuring the success of both screening events. This two-tiered system highlights the discrepancies between the IGRA tests and confirms that this approach is clinically effective and operationally convenient.

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### MDRTB in a school in a low incidence area

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Contacts of two cases of multidrug resistant tuberculosis (MDRTB) in a school were screened. Two sisters, one aged 13 and the other aged 16, presented with respiratory tuberculosis. Relevant past history included previous treatment for tuberculosis in India which had probably been incomplete. Gene analysis and subsequent culture confirmed an extensive resistance pattern; the isolates were one drug short of being classed as extensively drug resistant.

### Contact tracing

Three tranches of contact tracing took place, beginning with the closest circle of friends, followed by the tutor group and the teachers followed by the whole year group. Due to a lack of capacity among the contact tracing team, the incident team agreed to omit the Mantoux testing step and proceed to testing via a T-Spot test.

### Results and actions undertaken

A total of 149 contacts were screened of which 24 (16%) had positive T-Spot results. A full breakdown of groups screened and their results is given in table 1. After the third screening exercise a low level of T-Spot positives were continuing to be identified, so the incident team wrote to parents and staff across the whole school informing them of the screening exercise, explaining why everyone was not screened and the importance to be aware of any signs and symptoms of a TB infection. A letter was sent to the GPs of the whole school informing them that their patient may have been a contact of a case infected with MDRTB. Depending on the patient's age, further clinical management was carried out by the regional tertiary TB and paediatric infection centre.

Table 1: Screening Results

Date of screening	Screening Tranche	Contact screened	Number screened	Number positive	Positives as a %
March 09	1	Friends of 13yr old	9	2	18
	1	Close friends of 16yr old	7	1	14
	1	Girls tutor	1	0	0
March 09	2	Year group for 13yr old	25	3	12
	2	Tutor group of 13 and 16 yr olds	27	3	11
	2	Teachers of 13yr old	10	5	50
	2	Other teachers for the year group 9 and 11	6	0	0
April 09	3	Year group of 16yr old	60	8	13
	3	Teachers who taught the two girls in last academic year	2	0	0

### Discussion

This incident generated a lot of work. The low prevalence of TB locally meant that a permanent contact tracing team didn't exist, and work was carried out by the respiratory team in discussion with tertiary specialists, public health and microbiology.

Other complex issues arose in the screening process, including the need for long-term follow-up of test-positive cases and anxiety amongst the non-screened group.

### Recommendations

For robust TB control it is important to have systems for contact tracing and managing complex cases.

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### Private water supplies in Scotland - still an important source of *E. coli* O157 outbreaks?

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### Aims

The reasons for Scotland's higher *E. coli* O157 infection rates are undoubtedly multifactorial and complex. Scotland's greater reliance on private water supplies (PWS) may be a real, rather than artefactual, contributor. HPS enhanced surveillance identifies the role of PWS in *E. coli* O157 outbreaks, and may indicate whether recent legislation on treatment and inspection has influenced this.

### Methods

Health Protection Scotland (HPS), in close collaboration with the Scottish *E. coli* O157/VTEC Reference Laboratory and local public health teams, collates standardised datasets for all laboratory-confirmed cases. HPS integrates epidemiological, microbiological and clinical data from enhanced surveillance of individual cases, with data from surveillance of general outbreaks (i.e. outbreaks involving more than one household) of all infectious intestinal disease.

### Results

From 1996 to 2009, a provisional total of 17/121 (14%) outbreaks involved water supplies, all private, with *E. coli* O157 isolated from 16/17. Infection was microbiologically confirmed in 76/115 (66%) symptomatic cases involved. Three (4%) of 76 confirmed symptomatic cases were attributed to secondary spread. The source and condition of 15/17 supplies was known; in 15/15 the source, pipeline or tank was on grazing land, with *E. coli* O157 isolated from livestock faeces found by six supplies. Ten outbreaks with 47 confirmed cases occurred before new legislation, averaging 4.7 cases each. Seven outbreaks with 29 confirmed cases occurred after new legislation, averaging 4.1 cases each. Four of these outbreaks occurred within four months after enactment; and one outbreak in 2008 had the most confirmed cases (12).

### Conclusions

Private water supplies accounted for a substantial proportion of *E. coli* O157 outbreaks 1996-2009. Most post-legislation PWS outbreaks occurred soon after implementation, but it may be too early to fully evaluate the legislation – 2009 was not the only year without PWS outbreaks. As the most recent PWS outbreak had most confirmed cases, however, its importance remains clear.

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## Rising TB rates in Greenwich

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### Aims

To investigate possible causes for increasing rates of TB in Greenwich.

### Methods

Descriptive epidemiology

### Results

Rates of TB have increased in Greenwich over the last 5 years with incidence of 61.5 per 100,000 in 2007 (see table 1). Greenwich now ranks as the PCT with 5th highest incidence of TB in London. The rapid increase is due to a mix of new infection, reactivation of latent TB, and onward transmission. There has been an increase in the number of cases born in Somalia and in the UK. Majority of cases are born in the UK; of these the largest population is White (shift to middle-aged age group), and there has been an increase in the proportion of Black-African UK-born cases. There has been an increase in migrant cases from India and Nepal and an increase in unemployed cases.

Table 1: TB rates in Greenwich 2003-2008

Year	TB rate per 100,000 population in Greenwich	TB rate in South East London per 100,000 population	TB rate in England per 100,000 population
2003	32.6	30.7	13.4
2004	40.3	32.5	14.0
2005	38.6	34.1	15.4
2006	44.0	32.8	15.4
2007	47.5	31.3	15.1
2008	61.5	32.2	15.5

There is high concentration of cases along the Thames Gateway. Anecdotal evidence exists for association with overcrowding in the buy-to-let market.

Anecdotally, there has been no increase in co-infection rates with TB-HIV in the HIV cohort at the local secondary care hospital.

There has been a dramatic increase in demand for TB services in Greenwich, reflected in expansion of TB services. However, these are believed to be overstretched if rates continue to rise. TB services

have initiated local health promotion campaigns that may have contributed to some early diagnosis of TB infection and increased workload.

### Conclusions

Causes for the increase in TB rates in Greenwich are complex and multi-factorial. Policy implications include targeting migrant, middle-aged White and homeless populations; characterisation of overcrowding of buy-to-let properties. Continue to educate clinicians for early diagnosis and referral of TB cases. Increase capacity of TB services to manage outbreaks and increasing demands on services. Prospective TB isolate typing will help characterise patterns of TB transmission.

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## Salmonella meningitis in an immunocompetent adult, associated with a cluster of Salmonella Enteritidis PT 14b

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We report a fatal case of meningitis caused by *Salmonella Enteritidis* phage type 14b in an immunocompetent middle-aged man. This case was associated with a nationwide Irish cluster of 17 cases of *Salmonella Enteritidis* PT 14b infection, for which a national investigation was undertaken.

Although *Salmonella Enteritidis* is a common serotype in human salmonellosis, the European literature includes only two previous case reports of adults with meningitis due to *Salmonella Enteritidis*, one of whom was immunocompromised<sup>1,2</sup>.

Our case was in his late 40s, had a stable chronic mental illness and lived in a community psychiatric hostel in an urban area. His regular medications included clozapine, amisulpride and valproate. Regular full blood counts outruled drug-induced agranulocytosis. He did not abuse alcohol or intravenous drugs. He had no risk factors for HIV or hepatitis B or C, and

tested negative for these. Although there were no known symptomatic contacts, stool samples from hostel staff and residents were screened. Samples of food, eggshells and water from the hostel were also tested. Food premises where the case was known or thought to have eaten were inspected, foods sampled and distribution chains traced. Particular attention was paid to foods containing chicken, eggs or egg products of any kind. Salmonella was not detected in any of the dozens of stool or food samples.

The phage type of *Salmonella Enteritidis* involved in this fatal case was identified in 16 other sporadic cases around Ireland (republic only) since October 2009<sup>3</sup>, and in 443 sporadic cases and 14 outbreaks in England and Wales since August 2009<sup>4,5</sup>. This supports the value of surveillance and investigation at regional, national and transnational level to reduce the risk of further infections with *Salmonella Enteritidis* PT 14b.

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## Screening a hard to reach population - a novel use for dried blood spot testing

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### Introduction

In January 2010, a case of acute Hepatitis B was reported in a child from a Romanian family in Newcastle. A review of records in the Health Protection Unit (HPU) identified three other families from the Romanian community who had a family member with Hepatitis B (chronic infection identified on antenatal screening).

A number of concerns were flagged up regarding the management of cases in these families and the possibility of transmission within their close-knit community.

As a result, an incident management team was convened with representation from PCT (public health and community provider services), the HPA Regional laboratory and the HPU.

### Screening the families

As the families did not reliably attend appointments, the incident team decided to use dried blood spot (DBS) testing to screen the children in families – ensuring that screening could be carried out in an opportunistic way by community staff.

### Methods

DBS kits were supplied by Manchester Reference laboratory and were forwarded to four GP practices known to have had families registered with them in the past year. A letter outlining the action plan and instructions on how to use the kits was provided to all clinical staff in the practices.

### Results

Nine children were screened using dried blood spot tests. All were negative for Hepatitis B.

### Lessons learned

The use of DBS enabled prompt screening of a hard to reach group within the local community and allowed us to exclude ongoing transmission in the households / families.

A number of lessons / practical issues about using a test designed primarily for screening / surveillance rather than acute diagnosis were identified during a debrief meeting following reporting of the first screening results.

We share these practical issues and recommend the use of DBS for screening hard to reach communities, particularly when a large number of children need to be screened.

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# Tackling Zoonoses: Partnerships and Progress

## A rat's tale

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### Aims

The West Yorkshire HPU was notified of an acute case of Weil's disease in a 25 year old female. The patient developed multi organ failure requiring admission to an intensive care unit. Investigations revealed that the patient had two pet rats, one of which had previously lived in the wild. Contacts of the case who had also been in contact with the rats were traced and given prophylactic antibiotics. The case was later interviewed to gain an accurate history of when and where the rats were obtained.

### Methods

The patient had two pet rats, both of which had been euthanised by the time the HPU was informed of the case. The vet that carried out the procedure performed a post mortem and obtained tissue for leptospirosis testing. The case confirmed that she regularly handled the rats and therefore had the opportunity to come into contact with their urine.

### Results

One of the rats and the case both tested positive for *Leptospira icterohaemorrhagiae*. The rat that tested positive was a 'fancy' rat that the case had found in a friend's kitchen and they had since cared for as a pet. It's possible that this was an escaped pet rat, which had been living wild, and could have been brought into the house by the friend's cat.

### Conclusions

Anyone who handles wild rats should be aware that their urine, bedding and nearby water are all potential sources of infection, as are rat bites which can cause infection both by leptospirosis and other organisms.

The risks of acquiring zoonotic diseases, such as leptospirosis, directly from wild rats or via pet rats which have contact with wild rats, should not be underestimated, and the practice of keeping feral rats as pets should be actively discouraged.

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## The importance of secondary spread in the epidemiology of *Escherichia coli* O157 infections in Scotland, 1999-2008

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### Aims

Preventing secondary spread of *Escherichia coli* O157 infection rightly remains a high priority in outbreaks. Most cases, however, occur within single households not linked to wider incidents. In Scotland, where incidence is comparatively high, we used data from the entire population to compare secondary spread within both single households and outbreaks, as opposed to extrapolating from outbreak studies; and to compare characteristics and sequelae of secondary and primary cases.

### Methods

Health Protection Scotland (HPS), in collaboration with the Scottish *E. coli* O157/VTEC Reference Laboratory and local public health teams, collates standardised epidemiological, microbiological and clinical data for all laboratory-confirmed cases and integrates this with data from surveillance of general outbreaks (i.e. those affecting more than one household) of all infectious gastroenteritis. Secondary cases are those symptomatic cases from whose onset date, and an assumed incubation period, we can infer that contact with a confirmed case was more likely than any other exposure to be the source of infection.

### Results

Of 2228 cases reported 1999-2008, 11% were secondary with similar risk of haemolytic uraemic syndrome (HUS) as primary cases ( $p = 0.95$ ); 12% of all HUS was in secondary cases. Although 20% of all cases occurred in outbreaks, 80% of all cases (and 64% of secondary cases) were single household cases or clusters ("sporadic cases"). Sporadic and outbreak cases had similar risk of HUS ( $p = 0.89$ ). Sporadic secondaries were younger than outbreak secondaries with similar risk of HUS ( $p = 0.97$ ). Risk of HUS increased with bloody diarrhoea, in all cases ( $p < 0.0005$ ).

## Conclusions

Infection control is emphasised in outbreaks but the danger of secondary spread from single household cases, and its risk of HUS, may be underestimated. We recommend immediate action to prevent transmission

from every clinically suspicious case, without awaiting identification of an outbreak.

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## Hot Topics

### Caseload analysis of TB services to better understand the complexity of local TB control

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- 3 Walsall Teaching PCT
- 4 Dudley PCT
- 5 Wolverhampton PCT

#### Aims

To increase awareness and understanding of the complexity of tuberculosis (TB) control within local TB services in four PCTs in the West Midlands region. Increasingly it has been recognised that the traditionally used ratio of TB nurses to TB notifications in the planning of services has become less meaningful as the complexity of care required for sub-groups of TB patients has increased.

#### Methods

A local TB Nurse and Health Protection Unit Forum developed a dataset (in addition to National Enhanced TB Surveillance) to be collected on TB patients under their care at the end of each calendar quarter. These data included an assessment of co-infection, drug resistance, alcohol or drug misuse and the use of Directly Observed Therapy (DOT) for all patients as well as free text fields where TB nurses could make notes on additional issues.

#### Results

In a cohort of over 500 patients (notified from 2006 to 2008 across four PCT areas), the prevalence of co-infection was found to be around 8.5%, the misuse of alcohol or drugs was around 9.3% and 7.3% of patients were classified as having housing issues. The

additional information fed back from TB services also highlighted the changing profile of some patients as they began their TB treatment and the difficulties faced in promoting adherence to treatment.

#### Conclusions

This dataset highlighted the challenges TB services face, especially in higher incidence urban areas. The data has already highlighted the complexity of the management of some TB patients in our local PCTs. A number of these fields have now been incorporated into the national web-based TB surveillance system, so will allow comparison across areas and targeting of public health intervention and best practice management of such patient groups. The challenge is now to highlight the need to collect this information as completely as possible.

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### Surveillance of antimicrobial use and resistance in Scotland – setting the baseline

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Antimicrobial resistance is recognised as a major threat to public health and patient safety. It reduces the available treatment options for infection and is associated with increased morbidity and mortality due to a failure of the initial empirical antimicrobial therapy. Inappropriate use of antimicrobials increases the risk of antimicrobial resistance developing and

is a significant risk factor for healthcare associated infections such as *Clostridium difficile* infection (CDI) and methicillin-resistant *Staphylococcus aureus* (MRSA) bacteraemia.

In 2008 the Scottish Government issued the five-year national action plan

'ScotMARAP' which aims at developing a strategic approach to contain antimicrobial resistance and preserve the effectiveness of antimicrobial agents in the future. This is implemented by introducing a 'national antimicrobial stewardship programme' that brings together a range of activities in antimicrobial prescribing, surveillance and infection management that links up with the work already being undertaken to reduce healthcare associated infections.

In order to evaluate this process (and monitor the impact of interventions) it is essential that standardised national surveillance systems that monitor antimicrobial use and resistance are in place.

In January 2010, Health Protection Scotland and Information Services Division on behalf of the Scottish Antimicrobial Prescribing published jointly the first annual report that combines information on antimicrobial use and resistance in humans in Scotland. The report covers quantitative information on the use of antimicrobials in primary care (2004-2008), and antimicrobial resistance in key organisms associated with bacteraemia reported in 2008.

The report sets the baseline for Scotland against which emerging trends in antimicrobial use and resistance can be monitored as the national antimicrobial stewardship programme progresses. It furthermore highlights a number of existing issues in antimicrobial prescribing and resistance, including increasing use of fluoroquinolones, resistance to first-line treatment antibiotics and multi-drug resistance in Gram-negative organisms and resistance to vancomycin in *Enterococcus faecium* (VRE) from bacteraemias.

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## The epidemiology of MRSA in Scotland

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### Aims

Scotland has a mandatory reporting scheme whereby all first MRSA bacteraemia isolates are referred to the Scottish MRSA Reference Laboratory for typing and antibiotic susceptibility testing. Little is known about the characteristics of non-bacteraemia isolates at a national level. This study was designed to look at MRSA isolated from all specimen types and will monitor trends in strains, emerging antimicrobial resistance and toxin genes. The changing epidemiology of MRSA is a matter of public health concern and this programme will provide a comprehensive picture of circulating strains of MRSA in Scotland

### Methods

Scottish diagnostic laboratories were asked to send all new MRSA isolates collected over a period of one week, four times a year to the Scottish MRSA Reference Laboratory for typing and toxin testing.

### Surveillance period: Jan 09 - Dec 09

### Results

Four hundred and eighty six isolates were collected with the majority originating from skin and soft tissue specimens. Eighty one percent of these were the epidemic strain MRSA-15 (EMRSA-15), 10% EMRSA-16 and 9% fell into the "other" category (see Figure 2).

The most frequently identified spa types were t032, t022 (both EMRSA-15) and t018 (EMRSA-16).

The most common antibiotic resistance was to ciprofloxacin with 94% of isolates being resistant. Sixty nine per cent of isolates were resistant to erythromycin and 17% were resistant to clindamycin. MRSA mupirocin high level resistance was 3% with 2% of isolates displaying low level resistance. No MRSA resistance was detected for chloramphenicol, linezolid, teicoplanin or vancomycin. In general, antimicrobial resistance was higher in EMRSA-16 compared to EMRSA-15.

## Conclusion

In the absence of resources to type all isolates, this programme has been designed to provide detailed typing of a subset of isolates, applying a consistent methodology, which allows a more reliable assessment of the changing epidemiology of MRSA strains in Scotland.

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## The national impact of the oral fluid service on pertussis disease epidemiology

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### Aims

To review the epidemiological impact of a nationally piloted oral fluid (OF) service available between June 2007 and September 2009 for laboratory confirmation of pertussis.

### Methods

The OF assay was developed as a surrogate for the standard serum antibody assay and estimates pertussis toxin IgG antibody titres. The OF assay has lower sensitivity than the serum assay but offers non-invasive sample collection. It was available nationally for routine follow-up of all notified cases where diagnosis had not been confirmed by other laboratory methods during the pilot period.

All pertussis cases in England and Wales confirmed by the Respiratory and Systemic Infection Laboratory (RSIL), notifications, hospital admissions data (England only) and deaths reported to the Office of National Statistics were analysed to review the recent epidemiology of pertussis. Data were compared in time periods when OF testing was and was not available and by different laboratory methods of confirmation.

### Results

OF testing was available over 27 months: approximately 1600 oral fluid samples were received by RSIL and approximately 40% tested positive. In this time nearly a quarter of laboratory confirmed cases were confirmed by OF testing only. It accounted for the greatest proportion of confirmations in those aged 1-4 years (52%), and those aged 5-9 (55%). The profile of cases when OF testing was available was not different, in terms of age distribution and percentage hospitalisations, to periods when cases were confirmed only by other laboratory methods.

### Discussion

Routine OF testing was introduced as a surveillance, rather than diagnostic tool to provide more complete national data on pertussis epidemiology. Testing of suspected cases of pertussis by OF was well-accepted by parents and health professionals. The availability of OF testing may have increased ascertainment of cases of pertussis. It did not, however, alter our overall understanding of pertussis disease epidemiology.

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## Speakers and Chairs

### **G K Adak**

Head of Epidemiological Services, Department of Gastrointestinal, Emerging & Zoonotic Infections, HPA Centre for Infections

Bob Adak has worked at the national centre since 1989 on surveillance and research into the epidemiology of *salmonellas*, *Campylobacter* sp., Vero-cytotoxin *Escherichia coli* O157, norovirus and the development of models for measuring the burden of foodborne infections. He has also been heavily involved in designing and conducting investigations into recent national outbreaks of foodborne disease.

### **Lesley J Allison**

Lesley completed her BSc and PhD in microbiology at the University of Aberdeen. Following a number of postdoctoral research positions she was appointed Principal Clinical Scientist of the Scottish *E. coli* O157/VTEC Reference Laboratory (SERL) in 2000. Clinical samples are referred to the SERL from Scottish diagnostic laboratories, general practitioner surgeries and specialist in-patient units (e.g. renal units, infectious disease units) and the laboratory also receives samples from veterinary, environmental or food sources, when relevant to public health.

### **Ho-Kong Christopher Au-Yeung**

After graduating from Cardiff University I joined CDSC as an Epidemiologist in 2007 to work on an EU/WHO project "Epibathe", looking at the health effects of recreational bathing in European waters. With Epibathe coming to an end I will continue my role as a researcher and take part in other ongoing projects within CDSC on sexually transmitted infections and zoonoses.

### **Eleanor Bradford**

I have been BBC Scotland's health correspondent since 2001. I cover all Scottish health stories for the BBC, broadcasting on BBC Scotland's evening television news programme, BBC Radio, BBC Online, and UK-wide television news programmes such as the One O'Clock news and BBC News24. During the last 9 years I have reported everything from outbreaks of e-coli amongst girl guides to norovirus on cruise ships and last year's outbreak of swine flu in Scotland, during which I was often on air from 6am until 11pm at night. Last year I was voted 'regional health journalist of the year' by the UK's Medical Journalist Association.

### **Máirín Boland**

Dr Máirín Boland MD, FFPHMI, MRCPI, DCH, DME is a graduate of University College Dublin. She has been a Consultant in Public Health Medicine since 2006. Her current work and interests include areas of health protection, notably influenza issues; cancer screening and disability.

### **Kakoli Choudhury**

I am a Specialist Registrar from Oxford Deanery. I am currently posted in Thames Valley Health Protection Unit.

### **John Cowden**

Consultant Epidemiologist, Health Protection Scotland, Glasgow.

John Cowden qualified from Sheffield University in 1977. He entered public health in 1981, and joined the Communicable Disease Surveillance Centre of the Public Health Laboratory Service in 1985, where he was appointed the first consultant in charge of the newly formed Gastrointestinal Diseases Section in 1989. He was appointed Consultant Epidemiologist at Health Protection Scotland (formally the Scottish Centre for Infection and Environmental Health) in 1995. Since 1995 he has been the consultant epidemiologist responsible for national surveillance of, and operational support for, infectious intestinal diseases (IID).

### **Tricia Cresswell**

Dr Tricia Cresswell is currently Deputy Medical Director at the North East Strategic Health Authority and a Consultant in Health Protection at the Health Protection Agency North East. Previously she was Executive Director of Public Health for County Durham PCT and Darlington PCT and prior to that DPH for Durham and Chester-le Street PCT, DPH in Newcastle and North Tyneside and a General Practitioner in North Tyneside. She has experience of tackling inequalities in health at policy, strategic and operational level. She has a longstanding interest in the health and wellbeing of children and young people and has published on child health, health services for children and NHS professional practice in child protection. Nationally, she is a member of the Ethics and Confidentiality Committee of the National Information Governance Board.

### **Yvonne van Duynhoven**

Yvonne van Duynhoven, PhD, is Head of the Laboratory for Zoonoses and Environmental Microbiology at the National Institute of Public Health (RIVM) in the Netherlands. In the last years, emerging zoonoses became an increasingly important topic in her work. Since the start of the Q-fever outbreak in 2007, she has been involved in the outbreak investigation and is coordinating part of the national public health research programme. Besides, she is actively involved in a national project on early warning and surveillance of emerging zoonoses.

### **Meirion Evans**

Meirion Evans is a Regional Epidemiologist at the Communicable Disease Surveillance Centre, Public Health Wales and Senior Lecturer, Department of Primary Care and Public Health, Cardiff University.

He trained in public health medicine in the West Midlands, and worked as a consultant in communicable disease control for 10 years before taking up his present post. His research interests include food-borne disease, child and adult immunisation and sexually transmitted infections.

### **Neil Irvine**

Consultant in Health Protection, Northern Ireland Public Health Agency

### **David Kirrage**

David has a background in general practice and moved from Devon to Worcestershire in 1996. He is currently Director of West Midlands West Health Protection Unit covering both the large rural area and the Black Country. He has an interest in zoonotic diseases, emergency planning and environmental issues.

### **Lorraine Lighton**

Dr Lorraine Lighton was appointed Consultant in Communicable Disease Control in Tameside and Glossop in 1991 and is currently based at Greater Manchester Health Protection Unit. Her special interests include sexual health, zoonoses and information management.

### **Mary Locking**

Mary Locking is an Epidemiologist at Health Protection Scotland, where she established the National Enhanced Surveillance System for *E. coli* O157. Her work includes *E. coli* O157 outbreak investigations, and using surveillance data on the aetiology and outcomes of infection to support health protection, particularly in rural communities.

### **Terry Matthews**

Dr Matthews qualified from Liverpool University and worked in General Practice and overseas - in the Solomon Islands and Nepal - before undertaking public health training. He has worked as a consultant in communicable disease control in Yorkshire and the Humber for the last ten years. He is currently based in the North Yorkshire and Humber Health Protection Unit.

### **Paul McKeown**

Specialist in Public Health Medicine, HSE – Health Protection Surveillance Centre, Dublin

### **Denise McCoy**

Denise McCoy is a Health Protection Practitioner at Kent Health Protection Unit and is the local lead for surveillance. After graduating in Statistics from the University of Bath, Denise worked for many years in NHS information management before moving into public health. She has a masters degree in Health Promotion and Public Health and joined the Health Protection Agency in 2008.

### **May Moonan**

May Moonan is a Specialty Registrar in Public Health. At the beginning of this year she was appointed as a Clinical Lecturer in Public Health Medicine at the University of Liverpool. Prior to this she was placed at the Greater Manchester HPU and worked at NHS Bury for two years, during which she obtained her MFPH and MPH. After qualifying as a medical doctor from Imperial College, London, she trained in general medicine and critical care medicine and gained her MRCP.

### **Dilys Morgan**

Dilys is Head of the Gastrointestinal, Emerging and Zoonotic Infections Department at the Health Protection Agency Centre for Infections, Colindale, London. She has had an interesting career alternating between UK public health and research/field epidemiology in the more remote parts of Africa.

### **Margaret O'Sullivan**

Dr Margaret B O'Sullivan MB MPH FFPHMI is a Consultant in Public Health Medicine with the Department of Public Health, Health Service Executive (HSE-South) and is based in Cork. Her health protection brief includes the surveillance and control of gastrointestinal infections, zoonotic infections and tuberculosis.



She is chair of the National Zoonoses Committee, chair of the TB Screening Subgroup of the National TB Advisory Committee, a member of the Veterinary Council of Ireland and former Vice-Dean of the Faculty of Public Health Medicine.

#### **Iain Roddick**

I am the Regional Information Manager at the HPA East of England Regional Epidemiology Unit. I have worked in the information and analytical side of disease surveillance for 10 years. Before this I studied Chemical Physics at the University of Glasgow, followed by postgraduate studies in computational chemistry at University of London.

#### **Charles Saunders**

Consultant in Public Health Medicine (Communicable Disease & Environmental Health) at Fife NHS Board since 1995. Former GP. Member of Health Protection Advisory Group, Health Protection Network, HAI Task Force, National Advisory Board Patient Safety Alliance.

#### **Martin Schweiger**

Son of a shoe maker who opted for the smell of hospitals rather than the smell of leather, but once qualified was challenged by preventable ill health. Two decades of practice as a CCDC in Leeds, West Yorkshire, leaves him convinced that here is still a lot to do. Working with others on Risk Assessment and more recently on HPZone which provides a framework for future constructive opportunities in health protection.

#### **Otilia Sfetcu**

I am an EPIET (European Programme for Intervention Epidemiology Training) fellow, based in Northern Ireland, 2008-2010, working under the supervision of Dr N Irvine and with the professional support of Dr B Smyth. Romanian epidemiologist (MD MSc) with experience in communicable diseases surveillance and environmental health.

#### **Peter Sheridan**

A former GP and DPH, Peter has been a CCDC since 2003 in North London and then Bedfordshire & Hertfordshire. He was recalled from a secondment to the Pandemic Flu Office last March for six to eight weeks. Swine flu arrived and he was recalled from last year's conference after he had presented the new Hepatitis A guidelines. After a hectic couple of months of containment, he returned to Cfl to support the

Influenza Surveillance and Information Service for the second wave. He is married to Linda and they have four grown up children.

#### **Alex Stirling**

Alex Stirling is a Specialty Registrar in Public Health Medicine in her third year of training at NHS Greater Glasgow & Clyde. She is a medical graduate of Charing Cross & Westminster Medical School (MBBS, 1997). She is currently working on a number of projects at ISD.

#### **Torbjorn Sundkvist**

CCDC Suffolk Office NSCHPU Worked as a CCDC since 1997 first in London later in Suffolk. Also specialist in infectious diseases working at Consultant level in Sweden and background in that speciality before Public Health Training in the UK.

#### **Mark Temple**

Having spent a dozen years in a valleys general practice, the time came to think about disease rather than simply treating it. After almost as long as a consultant in public health, using tools developed outside mainstream public health to get new understanding of problems, is still rewarding enough to make coming to work fun. Oh, and I still use a pen(cil) when thinking is required; computers lack judgement!

#### **Daniel Thomas**

Daniel Thomas is Head of Surveillance at Public Health Wales Communicable Disease Surveillance Centre where he has responsibility for surveillance of infectious diseases acquired in the community. Daniel also has an honorary appointment at Cardiff University and is a visiting lecturer at University of Wales Institute Cardiff. He maintains an active research interest in the epidemiology of infectious diseases.

#### **Matthew Charles Thomas**

A developer of the original CoSurv system in the early nineties, Matthew rejoined the Informatics team at Public Health Wales last September. In his new position as Technical Consultant - Surveillance, Matthew brings broad industrial experience of quality driven systems development methods.



# Notes

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