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Vero cytotoxin-producing *E. coli* O157 outbreak at a west London school

An outbreak of a Vero cytotoxin-producing *Escherichia coli* O157 (VTEC) has been reported associated with a nursery and primary school in north west London. To date (10 February 2010), 11 cases of *E.coli* O157 PT2 VT2 have been confirmed and a further two are presumptive cases, with dates of onset from 25 January 2010. An additional 12 symptomatic individuals are still under investigation.

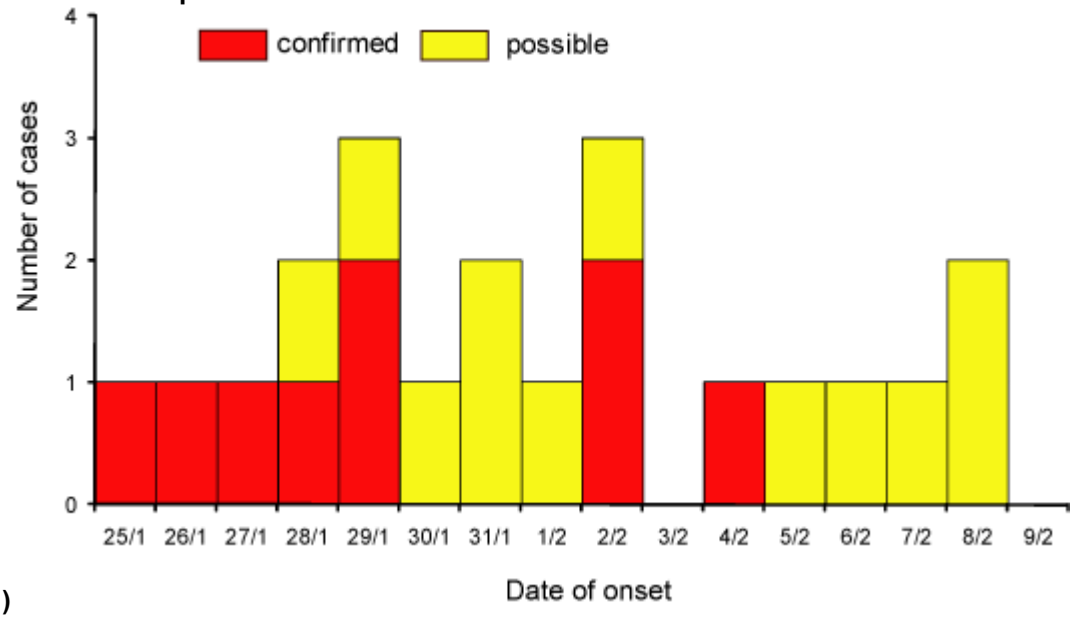
Two of these cases were admitted to hospital with haemolytic uraemic syndrome (HUS). Four individuals with confirmed or presumptive laboratory diagnosis are asymptomatic. No deaths have been reported.

Most of the cases are resident in the same local area of London, and one is resident in Surrey. At this stage no cases have been identified that are not associated with the school or the households of cases. The cases have a mean age of 11 years (median 5, range 8 months to 47 years) and are evenly distributed between the sexes.

On the advice of the HPA the school closed for all pupils and staff on the afternoon of 2 February. It will reopen after deep environmental cleaning and disinfection. Pupils and staff will be readmitted on the basis of stool clearance (two negative stools 48 hours apart).

An outbreak investigation is underway including environmental investigation and a cohort study of all children and staff at the school. To date, all 21 samples of the school environment are negative. While most cases to date appear to have been acquired from person to person transmission, the source of the original infection remains under investigation.

Epidemic curve for possible* and confirmed *E. coli* O157 cases at the north west London school



(n=21)

* Possible cases were defined as children or staff at the school or family contacts of confirmed cases with diarrhoea and/or vomiting with onset after 11 January 2010

S. Enteritidis infections in England in 2009: national case control study report

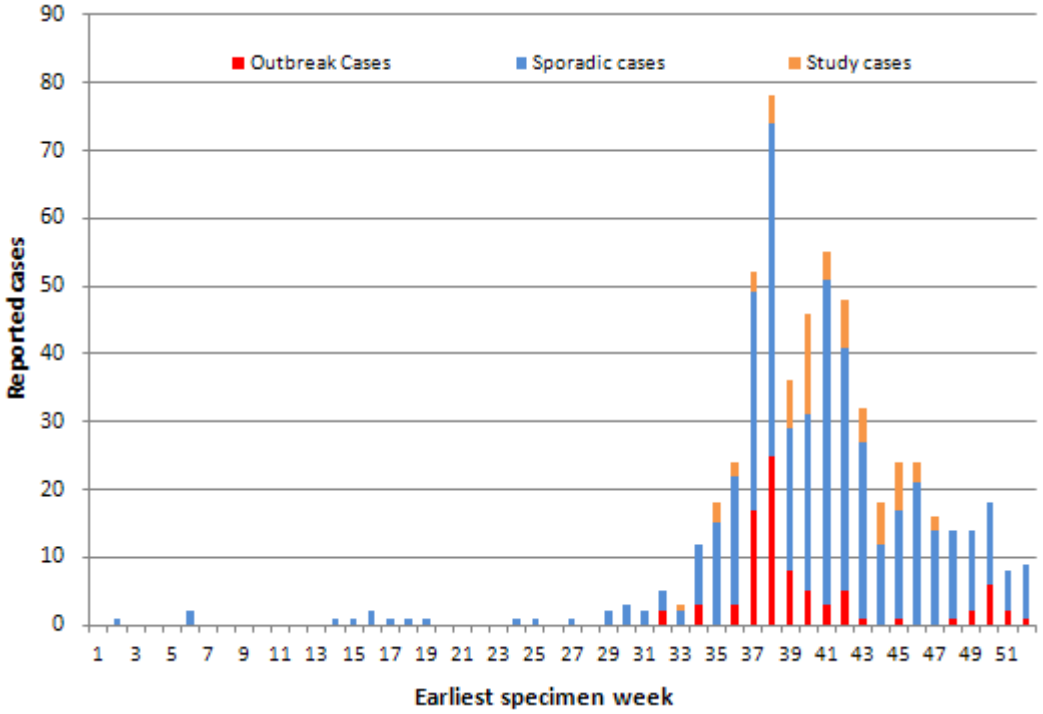
This report presents the conclusions of investigations carried out following an upsurge in cases of non-travel related gastro-intestinal illness caused by Salmonella *Enteritidis PT 14b in England and Wales in the autumn of 2009*

The Health Protection Agency's Laboratory of Gastrointestinal Pathogens (LGP) confirmed 489 cases of Salmonella Enteritidis phage type (PT) 14b with antimicrobial resistance to nalidixic acid and concomitant reduced susceptibility to ciprofloxacin (S. Enteritidis PT 14b NxCpl), in England and Wales, received between 1 September and 31 December 2009. Concurrent with this upsurge in cases, 16 discrete outbreaks were reported and investigated in England and Wales. A total of 152 cases were associated with the outbreaks, ranging in size from 2 to 68 cases [1,2].

Preliminary investigations of the outbreaks suggested putative links to eggs, and this was actively tested through analytical epidemiological studies, outbreak investigations and appropriate investigations of egg supply chains. Eleven of these outbreaks had links to eggs sourced from Spain, and eggs collected from catering premises in seven of the outbreaks (five oriental restaurants, two cafes) had the same origin and farm as indicated by the egg stamp mark on egg shells. Eggs produced by this Spanish farm were found to be contaminated with the outbreak strain, *S*. Enteritidis PT 14b NxCpl (5.0%; 1/20 pooled samples of six eggs), in one of the outbreaks investigated. Subsequently, 480 eggs produced by this farm were sampled from an UK egg importer and the outbreak strain was detected in two (2.5%) of the 80 pooled samples of six eggs. Further investigation by Spanish authorities indicated one flock of layers at the implicated farm were contaminated with *S*. Enteritidis. The outbreak strain was also isolated from samples of egg mayonnaise, egg fried rice, pooled liquid egg and work surfaces in catering establishments investigated in England and Wales during the outbreak investigations.

As part of the requirements laid out in EU legislation for the Salmonella National Control Programme (NCP) [3], from January 2009, eggs from flocks testing positive for S. Enteritidis or *S*. Typhimurium need to be treated in a manner that guarantees the elimination of salmonella, eg eggs from contaminated farms will be sent for heat processing and will not be allowed to enter the fresh table egg market (EC Regulation 1237/2007) [4]. This requirement applies in all Member States.

Epidemic curve of non-travel associated *Salmonella* Enteritidis PT 14b NxCpl, 2009



An unmatched retrospective case-control study with two controls per case was conducted to test the null hypotheses that infection was not associated with the following items: consumption of food outside the home, particularly at oriental restaurants, and consumption of eggs outside the home in the five days prior to onset of symptoms. One hundred and eight controls and 63 cases were included in the analysis.

Dates of onset ranged from 9 June to 16 November 2009, with a median duration of illness of five days (0 – 25 days, mean 5.8). Fifty cases (83%) attended their GP, and 12 cases (19%) were admitted to hospital. No deaths were

reported in the study cases. Diarrhoea (98%), abdominal pain (88%), and fever (58%) were the most commonly reported symptoms, with less than half of cases reporting nausea (46%), vomiting (32%) or having bloody stools (24%).

Ages were respectively <1 year old to 89 years, and <1 year old to 85 years, for cases and controls, with the mean ages of cases significantly lower than controls (37 and 52 years, respectively; two-sided Student's t test P<0.0001). Females were over-represented amongst controls (72/108: 67%) compared to cases (28/63: 44%) (P=0.004). Due to the identified difference in reported ages and genders of cases and controls, single variable analysis was performed using logistic regression analysis adjusting for the potential confounders age and gender. Single variable analysis identified food exposures categorised as "eaten away from home", with the exception of barbecued foods at home as associated with the illness. Multivariable logistic regression adjusting for age and gender identified "eating foods from oriental restaurants" (OR 5.4, 95%CI 1.4 – 21.3, p=0.01); "eating eggs away from home" (OR 12.4, 95%CI 1.6 – 95.4, p=0.1); "eating vegetarian foods away from home" (OR 54, 95%CI 4.8 – 610, p=0.001); "eating cold meats away from home" (OR 26.7, 95%CI 1.9 – 364, p=0.01) and "eating barbecued foods at home" (OR 47, 95%CI 1.8 - 1179, p=0.02) as associated with the illness. Eating away from home became insignificant when respondents who ate at oriental restaurants were removed.

The results support the hypothesis that infection with *S*. Enteritidis PT 14b NxCpl was associated with eating out, particularly foods from oriental restaurants and takeaways, with additional supportive evidence from consumption of eggs away from home. The remaining significant exposures all represent a very small proportion of cases (<11%) as indicated by the wide confidence intervals.

Investigations into discrete outbreaks of *S*. Enteritidis PT 14b NxCpl in the Autumn of 2009 provided evidence of a point source through the collection of foods and environmental samples at implicated catering premises and also from the investigation of supply of raw shell eggs. These have included raw shell eggs (sourced from a single farm in Spain), liquid pooled egg, egg fried rice, chicken skewers and work surfaces. The co-temporality of these outbreaks with the national increase in this particular salmonella serovar / phage type and concomitant antimicrobial resistance profile (NxCpl), and results from the case control study are indicative of a single common source outbreak, accounting for almost 500 reported cases above the seasonally expected number.

A "food-borne outbreak" is defined by EU directive 2003/99/EC as "an incidence, observed under given circumstances, of two or more human cases of the same disease or infection, or a situation in which the observed number of human cases exceeds the expected number and where the cases are linked, or are probably linked, to the same food source" [4].

The European Food Safety Authority (EFSA) currently maintains a classification system for food-borne outbreaks. Under this classification verified food-borne outbreaks are defined as those where "the link between human cases and a food vehicle is supported by the detection of the causative agent in the implicated foodstuff and/or by analytical epidemiological evidence providing a statistically significant association between the food vehicle and human cases [5].

Investigations in the UK and Spain have demonstrated that:

- the outbreak salmonella strain was present in dishes served in outlets implicated in outbreak investigations, in raw shell eggs obtained from the distribution chain, and *S*. Enteritidis was detected in a flock at the implicated production holding in Spain;
- local outbreak investigations have demonstrated an epidemiological link between human cases and outlets where eggs sourced from Spain were served;
- analytical epidemiological studies have demonstrated a statistically significant association between eggs and human cases

Therefore, according to the EFSA criteria outlined above, the national increase in S. Enteritidis PT 14b NxCpl would be classified as a verified food-borne outbreak associated with the consumption of eggs sourced from a specific production holding in Spain.

Reference

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3. The Salmonella National Control Programmes - Defra website
http://www.defra.gov.uk/animalh/diseases/zoonoses/ncp.htm.

4. European Commission. Commission Regulation (EC) 1237/2007 of 23 October 2007 amending Regulation (EC) 2160/2003 and Decision 2006/696/EC as regards placing on the market of eggs from salmonella-infected flocks of laying hens. *Official Journal of the European Union*, L 280, 5-9.

5. Food-borne outbreaks in the European Union in 2007, Community Summary Report. *The EFSA Journal* 2009 – 271, 11/128.

High coverage achieved for human papillomavirus vaccine

A report on uptake achieved during the first year in which immunisation against human papillomavirus was offered to young females in the UK has been published by the Department of Health (DH) [1]. High coverage was achieved during the first year of the programme (academic year 2008/09) with 80.1% of females aged 12-13 years reported to have completed the three-dose course in England, and 80.9% in the UK.

The human papillomavirus (HPV) vaccination programme was introduced in the UK in September 2008 following recommendations made by the Joint Committee for Vaccination and Immunisation (JCVI) in 2007. Similar schemes have operated in England, Wales, Scotland and Northern Ireland [2,3]. In England, routine immunisation of 12-13 year-old females (school year 8) and catch-up immunisation of females aged 17-18 years (school year 13) was undertaken during the academic year 2008/09 with catch-up immunisation of the remaining females under 18 years continuing alongside routine immunisation during 2009/10.

Providing vaccination coverage is sufficiently high, it has been predicted that immunising females before they become infected could eventually prevent up to 400 deaths every year in the UK. However, a decline in cervical cancers and precancers may not be seen for over 10 years. Vaccine uptake data are critical for evaluation of the programme. The DH report summarises the uptake data, aggregated at PCT-level for England, as follows:

For the **routine** programme for 12-13-year-old females:

- all 152 PCTs started the first dose, 88.1% were vaccinated (about 267,300 individuals)
- all 152 PCTs started the second dose, 86.0% were vaccinated (about 260,800 individuals)
- 151 PCTs (99 %) started the third dose, 80.1% were vaccinated (about 243,000 individuals).

For the **catch-up** programme for 17-18-year-old females:

- all 152 PCTs started the first dose, 62.2% were vaccinated (about 206,000 individuals)
- all 152 PCTs started the second dose, 54.2% were vaccinated (about 179,000 individuals)
- 146 PCTs (96 %) started the third dose, 31.8% were vaccinated (about 105,000 individuals).

Clinical trials of the HPV vaccine used in the UK immunisation programme (GlaxoSmithKline's Cervarix™) have reported high efficacy against cervical intraepithelial neoplasia associated with HPV 16/18 and some closely related oncogenic HPV types [4], and duration of efficacy and high immunogenicity for over 6 years [5]. The coverage achieved in the first year of the HPV immunisation programme, together with these data from clinical trials, supports optimism for the programme achieving its aim of greatly reducing the incidence of cervical cancer in due course.

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http://www.hpa.org.uk/hpr/archives/2008/news3608.htm#hpv

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JCVI recommends shingles vaccine for 70-79 year-olds

Following a review of the medical, epidemiological, and economic evidence, and vaccine safety and efficacy data, the Joint Committee on Vaccination and Immunisation (JCVI) has recommended shingles vaccine for people aged 70-79 years, provided that a licensed vaccine is available at a cost effective price [1].

The Public Health Minister Gillian Merron welcomed the recommendation and a rigorous procurement programme will now be undertaken to determine whether shingles vaccine can be procured at a price which would make the vaccination programme cost effective [2]. Up to 4 million people could benefit from protection against shingles, which tends to be more serious in older people. Shingles causes a painful rash of blisters which can last for many weeks or months and, although treatable with antiviral drugs, can be extremely debilitating and result in hospitalisation with many patients suffering chronic pain lasting months.

References

1. DH. Shingles Vaccination. Letter from Dr Dorian Kennedy, head of Immunisation Branch, DH 1 February 2010 (Gateway Reference 13542).

2. DH. Shingles vaccine for those in their seventies moves a step closer, DH press release, 31 January 2010.

Introduction of Prevenar 13™ into the Childhood Immunisation Programme

The Department of Health has provided further information about the replacement of the current pneumococcal vaccine (PCV), Prevenar™, with a new vaccine, Prevenar 13x™, which will protect against the seven strains already contained in the current vaccine as well as six further common strains of the infection [1,2].

The new vaccine should be used by all surgeries by 1 April 2010, and will be given to children according to the same three-dose schedule that is currently followed for pneumococcal vaccination at two, four and thirteen months of age.

Approximately 5,000-6,000 cases of invasive pneumococcal disease (IPD) are reported annually. According to the latest uptake figures, the percentage of children who have received two doses of the PCV vaccine in the UK by 12 months of age is 92.4% and the number receiving a booster dose of PCV by 24 months is 86.6%.

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1. HPA. New pneumococcal vaccine for children, HPR (**3**)10, 22 January 2010 http://www.hpa.org.uk/hpr/archives/2010/news0310.htm#vacc.

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Pandemic H1N1 influenza: closure of NPFS

Key points of the Health Protection Agency's Weekly National Influenza Report of 11 February (week 6) [1] covering the UK situation were as follows:

- Pandemic (H1N1) 2009 influenza activity was generally decreasing across the UK;
- In week 05 (ending 7 February), the weekly influenza/influenza-like illness consultation rate remained stable in England (RCGP weekly influenza-like illness consultation rate: 12.5 per 100,000), increased slightly in Wales (GP consultation rate for influenza increased from 3.5 to 5.8 per 100,000) and N. Ireland (combined influenza and ILI rate increased from 17.8 to 38.7 per 100,000) and decreased in Scotland (ILI rate decreased from 40.8 to 37.2 per 100,000). In all schemes, the rate remains below the baseline level;
- The National Pandemic Flu Service ceased operation on 11 February 2010, antivirals will in future be authorised via health care professionals;
- A decrease in respiratory syncytial virus detections has been observed recently. The GP consultation rate for acute bronchitis decreased overall in week 05, though increases were observed in younger age groups;
- The main influenza virus circulating in the UK continued to be the pandemic (H1N1) 2009 strain, with few influenza H1 (non-pandemic), H3 and B viruses detected. The proportion of specimens collected through GP sentinel systems has decreased and is at a low level (6%).
- Thirty-eight of 5,314 pandemic viruses tested have been confirmed to carry a mutation which confers resistance to the antiviral drug oseltamivir; three are phenotypically resistant to the drug but retain sensitivity to zanamivir;
- The weekly number of pandemic influenza cases reported as admitted to hospital has decreased recently. There have been 411 deaths reported due to pandemic (H1N1) 2009 in the UK; 298 in England (to 03 February), 67 in Scotland, 28 in Wales and 18 in Northern Ireland (to 10 February);
- The UK pandemic influenza vaccination programme continues for people at high risk of severe disease, health-care workers and healthy children aged between six months and five years. For further information see the Department of Health website;
- Very few regions globally are reporting increasing influenza activity, although influenza remains active in parts of North Africa and in parts of South, South East and East Asia. Five European countries continued to report widespread influenza activity but with low-to-medium intensity. Influenza B viruses accounted for 46% of all influenza detections worldwide, an increase from 35.6% last week. The influenza B viruses have mostly been reported from Asia. In Europe pandemic (H1N1) 2009 influenza virus accounted for 95% of all influenza A detections.

Due to the low influenza activity, future National Influenza Reports will be published fortnightly. A short summary of activity will be provided in alternate weeks with a return to a weekly schedule should activity increase again. The next full report will therefore be published on Thursday 18 February 2010.

References

1. HPA. Weekly National Influenza Report: week 6 (11 February 2010, PDF 151 KB), HPA website: www.hpa.org.uk/swineflu/surveillance&epidemiology.