

ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD**EPIDEMIOLOGY OF FOODBORNE INFECTIONS GROUP (EFIG)**

1. The group met on 20 June and 6 December 2012 and the following is a combined summary of the animal and human data and other topics that were discussed at the meetings.

Animal data**Review of animal *Salmonella* data January – December 2011**

2. Key points from the January – December 2011 data were highlighted. The data were provisional figures and relate to numbers of incidents rather than flocks or herds. There was a reduction in reports of *Salmonella* in cattle, sheep, ducks and other bird species not subject to *Salmonella* National Control Plans in 2011 compared to 2010. The number of reports from pigs was roughly comparable to 2010. Further details including the reasons for collection of this data are included in the AHVLA report for 2011 available at http://vla.defra.gov.uk/reports/rep_salm_rep11.htm. Although not presented here some data is available for other foodborne pathogens from confirmed clinical diagnoses of non-statutory zoonoses and infections shared between animals and humans from specimens submitted to VLA and SAC laboratories.
 - Cattle and pigs were together responsible for the majority of reports for *S. Typhimurium*, *Salmonella* 4,5,12:i:- and *Salmonella* 4,12:i:- reports during 2011. The most common phage type for all three of these salmonellas was DT193.
 - Low numbers of isolates from turkeys, pigs and cattle were resistant to ciprofloxacin; these isolates included *S. Typhimurium* from cattle and pigs. Most isolates of *S. Dublin* originated from cattle and remained fully susceptible to the panel of antimicrobials tested.
 - Reports of *Salmonella* from ducks during 2011 decreased by 67% compared with 2010; possibly due to a decrease in monitoring on commercial holdings. There was a single report of *S. Enteritidis* and 13 reports of *S. Typhimurium* from ducks during 2011; none of the *S. Typhimurium* strains were monophasic.
 - There were no reports of *Salmonella* from geese during 2011, compared with four reports during 2010.
 - There were 14 reports from pigeons, (13 of which were *S. Typhimurium*), seven reports from pheasants (including single reports of *S. Enteritidis* PT13a, *S. Pullorum* and *Salmonella* 4,5,12:i:- DT193), and five reports

from partridges (including single reports of *S. Typhimurium* DT8 and *Salmonella* 4,5,12:i:- DT193).

- There were 21% fewer reports of *Salmonella* from cattle in 2011 compared with 2010. *S. Dublin* remained the most common serovar in cattle in 2011 but there were only 452 reports throughout the year compared with 585 reports during 2010. There were also 51 reports of *S. Typhimurium*, 27 reports of *Salmonella* 4,5,12:i:-, four reports of *Salmonella* 4,12:i:-, four reports of *S. Enteritidis* and three reports of *S. Infantis* from cattle during 2011.
- Reports from sheep almost halved, from 166 reports during 2010 to 87 reports during 2011. There were single reports of *S. Typhimurium* DT104 and *Salmonella* 4,5,12:i:- from sheep. There were no reports of *Salmonella* from goats in 2011.
- There were 175 reports from pigs during 2011 compared to 170 reports during 2010. *S. Typhimurium* and the related monophasic strains remained the three most common serovars in pigs. However, these serovars have shown contrasting trends in pigs, with a 26% decline in reports of *S. Typhimurium* during 2011 relative to 2010, but a 34% and 54% increase in reports of *Salmonella* 4,5,12:i:- and *Salmonella* 4,12:i:-, respectively.
- AHVLA/SAC submissions for Veterinary Investigation Surveillance (VIDA) VIDA between January and December 2011 (97,479 submissions) were 4% lower than during 2010 (101,768 submissions) and 2% lower than during 2009 (99,032 submissions). Compared with 2010, there were increases in the number of submissions from sheep (10%), miscellaneous (10%), cattle (3%) and birds (1%). The only species from which submissions declined was pigs, for which submissions decreased 9%.
- Although the monophasic *S. Typhimurium* variants *S. 4,5,12:i:-* and *S. 4,12:i:-* have become prominent in pigs and cattle, they may be reported as *S. Typhimurium* or *Salmonella* unnamed in human surveillance data so totals can not currently be compared

Review of animal *Salmonella* data January to September 2012 (provisional figures)

3. Points of interest from the provisional January to September 2012 data were highlighted. These figures relate to number of incidents rather than flocks or herds. There was a higher overall submission rate during January – September 2012 compared with the same period in 2011 (all submissions including *Salmonella*). Increases were seen in the number of submissions from cattle and sheep, but those from other species fell. The increase in sheep submissions may be associated with testing for the Schmallenberg virus.

- Between January and September 2012, there was an overall reduction of 7% in reports of *Salmonella* in livestock species not subject to *Salmonella* National Control Plans compared to the same period in 2011.
- *Salmonella* reports from cattle showed a 27% decrease during January – September 2012 compared with the same period in 2011. *S. Dublin* remained the most common serovar and was responsible for 67% of all cattle reports; reports of monophasic *Salmonella* strains from cattle fell compared with 2011.
- Reports from sheep increased by 8% compared with the same period in 2011; the most common serovar was *Salmonella* 61:k:1,5,(7). There were no reports from goats during January – September 2012.
- There was a small increase in the number of *Salmonella* reports from pigs compared with January – September 2011. The most common serovar was *S. Typhimurium* (47% of total reports in pigs) with phage types DT193 and U288 making up 43% and 21% respectively of all pig *S. Typhimurium* reports. Reports in pigs of *Salmonella* 4,5,12:i:- fell compared with January – September 2011 and reports of *Salmonella* 4,12:i:- increased.
- The proportion of *Salmonella* strains from pigs that are resistant to gentamicin has increased from 8% in the first quarter of 2011 to 27% in the second quarter of 2012. It is likely that this can be linked to both use of apramycin and spreading of resistant clones within the industry.
- It was reported that British Poultry Council members have opted for a voluntary ban on use of 3rd and 4th generation cephalosporins and fluoroquinolones. As a result AHVLA will be looking for any changes in antimicrobial resistance. At the EU level the use of these antimicrobials will now be contra-indicated.

Human data

4. The following figures show the trends in laboratory reports for *Salmonella*, *Campylobacter*, *Listeria monocytogenes* and *E.coli* O157 in the UK 1993-2011.

Figure 1. Non Typhoidal Salmonellas

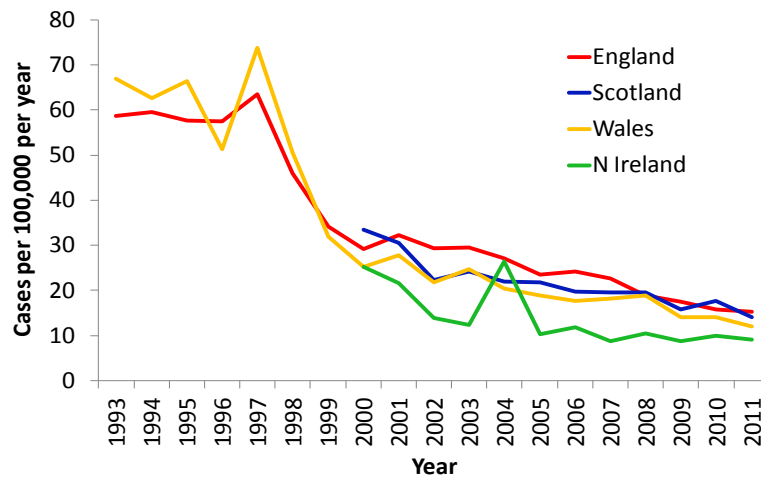


Figure 2. Salmonella Enteritidis

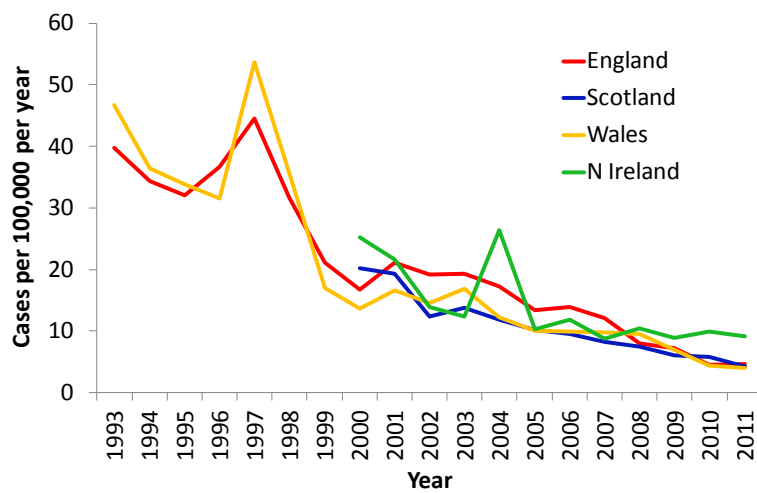


Figure 3. Salmonella Typhimurium

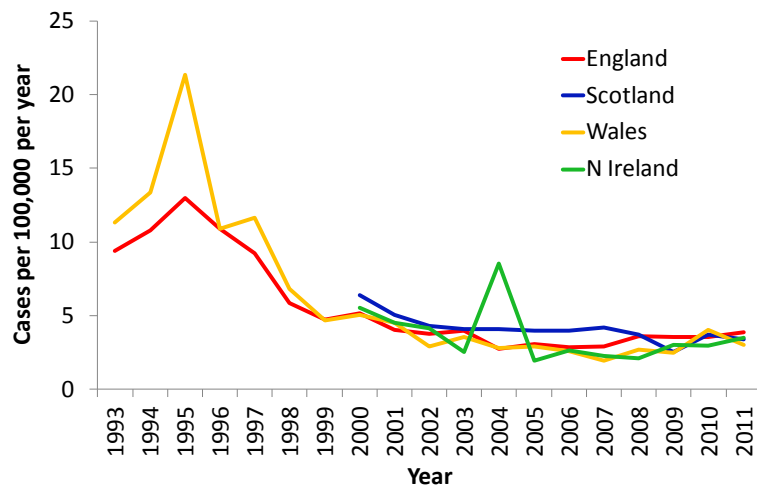


Figure 4. *Campylobacter*

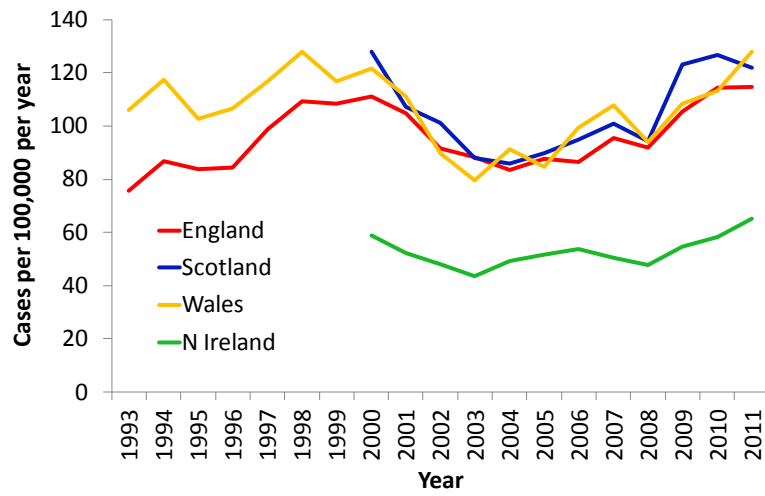


Figure 5. *Listeria monocytogenes*

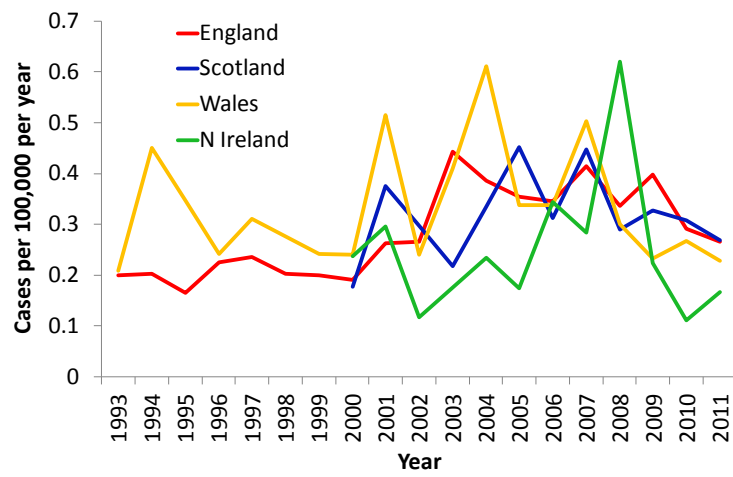
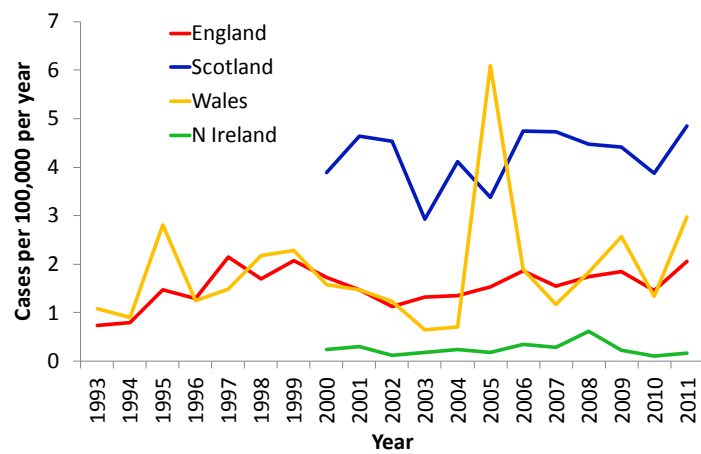


Figure 6. *E.coli* O157



Review of trends in human data

- There is a continuing decrease in *Salmonella* infections that are not *S. Paratyphi* or *S. Typhi*. The decline in *S. Enteritidis* has continued in England, Wales and Scotland but in Northern Ireland has reduced little over recent years. Cases of *S. Enteritidis* PT4 have continued to decline in all four countries. Cases of *S. Enteritidis* in England and Wales have levelled off in the first half of 2012.
- *S. Typhimurium* incidence is declining in Scotland and Wales but is increasing in Northern Ireland and England as a result of an increase in DT193 in all regions. Over the past 10 years, *S. Typhimurium* DT 193 has increased as a proportion of *S. Typhimurium* to become the most frequently reported phage type in England and Wales. The more recent increase in DT 193 reports is likely to be related to the growing proportion of monophasic *Typhimurium* phage typed as DT 193. Australia, United States, Canada, and Argentina have all experienced an increase in monophasic strains..
- The rise in *Campylobacter* cases continued in 2011, reaching highest ever levels in England, Wales and Northern Ireland, but levelling off in Scotland. Outbreaks have been related to chicken liver pate particularly at weddings.
- *Listeria monocytogenes* has seen a decline in cases in all areas except in Northern Ireland where there was an outbreak in 2011. The number of cases is not quite back to 1990 levels.
- The rate of VTEC O157 infection in Scotland remains higher than in other UK countries, with increases in Scotland, England and Wales related to the outbreak associated with unwrapped potatoes and leeks in 2011.

Other items of interest to the Committee

Campylobacter

5. A paper was presented by Health Protection Scotland which provided an estimate of the cost of *Campylobacter* infection to the health service in Scotland each year (£1.78M). This is an underestimate of the true cost of infection as HPS had not attempted to consider wider economic costs such as those due to lost productivity associated with time off work either directly through illness or through caring for an ill child, or any indirect costs. Humphrey *et al.*, (2007) (Int J Food Microbiology **117**:237-257.) reported the estimated average cost of a case of acute *Campylobacter* infection (excluding long-term sequelae) in England in 1995 to be £1315. Using this estimate of cost per case would suggest that the health service related costs in Scotland in 2011 would be much higher (£8.4M). Humphrey *et al* reported that food-borne *Campylobacter* infection costs the UK at least £65 million per annum with the true figure probably being closer to £500 million.
6. EFIG received a presentation from the Health Protection Agency on a descriptive study which reviewed one million cases of *Campylobacter*

infection in England and Wales from 1989 to 2011. There was an increase in *Campylobacter* cases over this period with the largest increased being in people aged over 50 years. The study concluded that a diverse range of factors influence the *Campylobacter* figures. It was highlighted that the relative importance of seasonality, age distribution, population density, socioeconomic and long-term differences were not fully understood. Surveillance and typing were seen as important in providing insights into *Campylobacter* epidemiology and sources of infection. The study has been published and can be found at: <http://www.ncbi.nlm.nih.gov/pubmed/22798256?dopt=Abstract>

EFSA mandate – modernisation of meat inspection

7. At the June meeting an update was provided on the modernisation of EU meat inspection following publication of the EFSA scientific opinion on inspection of pigs. EFSA has identified and ranked *Salmonella*, *Yersinia enterocolitica*, *Toxoplasma gondii* and *Trichinella* as priority targets for official controls on pig meat due to their prevalence and impact on human health. Current meat inspection activities were highlighted as not robust enough to address the above foodborne hazards. The European Commission are in the process of developing a series of legislative proposals for Member States to consider regarding future meat inspections. The first proposal, on pig meat inspection, was issued to Member States for discussion in September 2012 and is now under negotiation. An EFSA Opinion on poultry meat inspection was published in July, and Commission proposals will follow early in 2013.

Antimicrobial resistance

8. The European Parliament's recent call to phase out the prophylactic use of antibiotics in animal husbandry was highlighted. The Commission has published an Action Plan against the rising threat of antimicrobial resistance both in human and veterinary medicine. The Department of Health, Veterinary Medicines Directorate and FSA have reviewed the Government's Antimicrobial resistance strategy, highlighting issues from the veterinary and farming industry side and well as human medicine. It was anticipated that the report will be published in the autumn to coincide with the UK response to the Commission's Action plan, though there has since been slippage and the strategy is now likely to be published in early 2013. The FSA is considering the recommendations in the DARC/ARHAI joint report on ESBLs. It was reported that the FSA is funding research to develop a routine test that can be used to screen for ESBLs in food surveys. DARC is monitoring the issue of antimicrobial sensitivity in relation to *Salmonella* which continues to show low levels of resistance to 3rd generation cephalosporin's and fluoroquinolones in the UK.

Food surveillance

9. The HPA provided an update on UK co-ordinated food surveillance studies. Study 47 on Olympic preparation/response finished at the end of September 2012. Study 48 on pâté is running until the end of March 2013. A reactive

response study is expected to take place between January and March 2013 with target samples yet to be decided. The report from Study 39 - Large events focusing on gatherings of 200+ people, which took place between May 2010 and March 2011, is expected to be published in 2013.

10. A new Laboratory Information Management System (LIMS) will begin to be implemented across the HPA's Food Water and Environment Microbiology Service from April 2013. This system will, for the first time, enable the capture of test data from across England without the need to capture data in other database formats and will replace LIMS that were designed for clinical data entry rather than food, water and environment data.

Action

11. ACMSF Members are invited to comment on the recent trends in animal and human data and other subjects discussed by EFIG at the above meetings.

Secretariat
January 2013