

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

1. The group met on 5 June 2015 and the following is a combined summary of the animal and human data and other topics that were discussed at the meeting.

**Animal data**

**Animal *Salmonella* data January – December 2015 and January - March 2015 (provisional data)**

2. Key points from the January – December 2015 data were highlighted. The data were provisional and related to numbers of incidents rather than flocks or herds. The annual Animal and Plant Health Agency (APHA), formerly AHVLA, reports on *Salmonella* in livestock provide further details including the reasons for collection of this data. The latest report (2013) is available at <https://www.gov.uk/government/statistics/salmonella-in-livestock-production-in-great-britain-2013>. The report for 2014 is expected to be published later this year. Although not presented here, some data is available for other pathogens from clinical diagnoses of non-statutory zoonoses and from other infections shared between animals and humans from specimens submitted to APHA and Scotland's Rural College (SRUC) laboratories.
3. An isolation is defined as the report of the first isolate of a given *Salmonella* (defined by serovar, and/or phage type, if available) from the same group of animals on a given occasion. If two submissions from the same group of animals on different dates give the same serovar, this is reported as two isolations. An incident comprises the first isolation and all subsequent isolations of the same serovar or serovar and phage/definitive type combination of a particular *Salmonella* from an animal, group of animals or their environment on a single premises, within a defined time period (usually 30 days).
  - Between January and December 2014, there were 1,127 reports of *Salmonella* from livestock species not subject to *Salmonella* NCPs. This is 3.5% decrease compared with January – December 2013 (1,168 reports) and a 2.3% decrease compared with January – December 2012 (1,153 reports). The top serovars in cattle, sheep, pigs and ducks in 2014 were Dublin, 61:k:1,5,(7), Typhimurium and Indiana respectively.
  - Between January and March 2015, there were 228 reports of *Salmonella* from livestock, which is 8% fewer than in the first quarter of 2014 (248 reports) and 23% fewer than in the first quarter of 2013 (298 reports). The decline since 2014 is largely attributable to a decrease in *Salmonella* reports from cattle (60 vs. 94 incidents) and horses (8 vs. 22 incidents).
  - There were nine reports of *S. Enteritidis* between January - December 2014 including single reports from ducks (PT9b) and cattle (PT13a). There were two reports in the period January to March 2015 none of which were from food animals.

- There were 137 reports of *S. Typhimurium* between January – December 2014, an increase of 27% compared with the equivalent period in 2013 (108 incidents). U288, DT193 and DT2 were the most commonly reported phage types with U288 and DT193 being predominantly associated with pigs and DT2 with pigeons. Reports of *S. Typhimurium* from January to March 2015 decreased by a fifth compared with the same period in 2014 (20 vs. 25 incidents) with U288 being the most commonly reported phage type.
- Reports of *Salmonella* 4,12:i:- decreased slightly from 38 reports during January – December 2013 to 35 reports during January – December 2014; most of the isolates were from pigs. The number of reports of *Salmonella* 4,5,12:i:- in 2014 was similar to 2013 (59 vs 58 incidents); over half of the isolates in 2014 were from pigs. Reports of *Salmonella* 4,12:i:- more than doubled (21 vs. 9 incidents) from January to March 2015 when compared to the same period in 2014. Reports of *Salmonella* 4,5,12:i:- decreased by 35% when compared to the same period in 2014 (11 vs. 17 incidents).
- There were 12% fewer APHA/SRUC submissions to VIDA between January and December 2014 (77,729 submissions) than in the equivalent period of 2013 (88,723 submissions) and 21% fewer than in the equivalent period of 2012 (98,259 submissions). Compared with January – December 2013, there were fewer submissions from all categories with the greatest decreases observed for pigs (21%), cattle (14%) and sheep (14%) and relatively smaller declines for miscellaneous (5%) and birds (4%).
- On the non statutory zoonoses there was a significant increase in the proportion of calf diarrhoea cases in which cryptosporidiosis was diagnosed in England and Wales. With respect to Verocytotoxin-producing *E.coli* there were four farm related investigations in 2014.

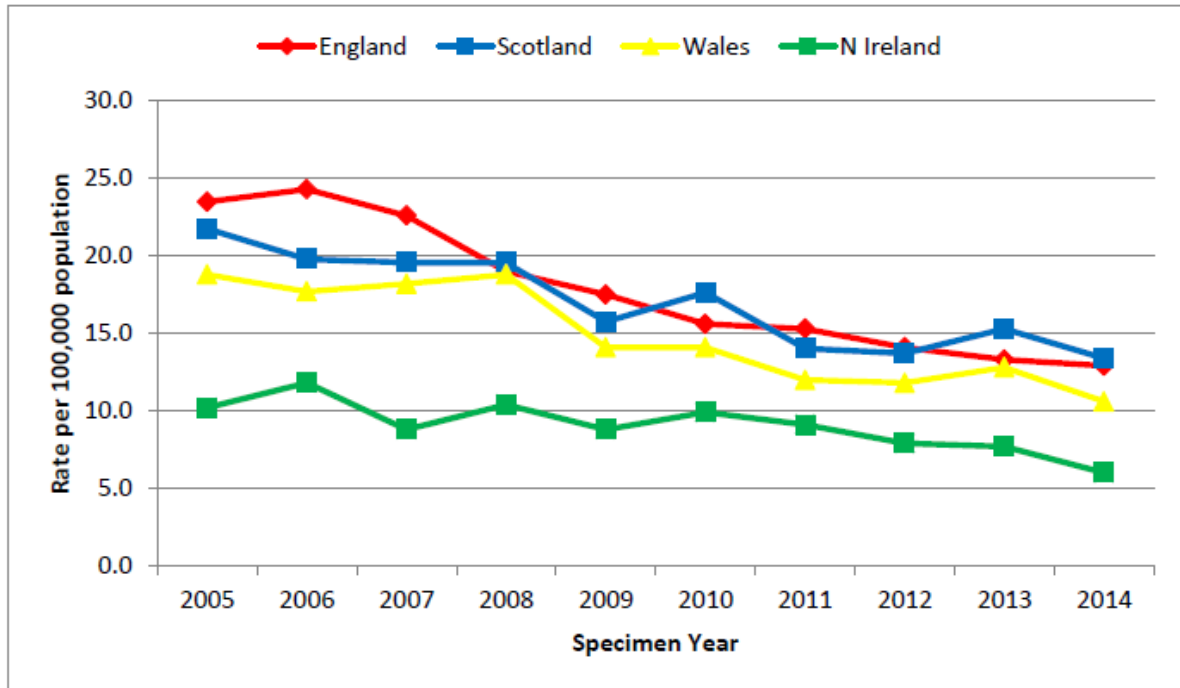
## Human data - Summary for key pathogens for 2014

### Trends in laboratory reports

4. The following figures 1-8 show the trends in laboratory reports for non-typhoidal *Salmonella*, *Campylobacter*, *Listeria monocytogenes* and *E.coli* O157 in the UK 2005-2014. Overall, *Salmonella* and Verocytotoxin-producing *E.coli* (VTEC) O157 have declined marginally whilst *Campylobacter* and *Listeria monocytogenes* showed small increases in reporting in 2014 when compared to 2013.
5. The decline in non-typhoidal *Salmonella* infections (Figure 1) continues, with the numbers of cases and rates of infection remaining in decline for the past 10 years in the UK. The decline in *S. Enteritidis* (Figure 2) has continued in all countries except England which saw a small increase (4%) in 2014, reflecting the national outbreak of *S. Enteritidis* PT14b in the summer. Reports of *S. Enteritidis* PT4 infections (Figure 3) continue to decline following interventions in the poultry and egg industries. Infections with *S. Typhimurium* overall (Figure 4) are only marginally lower than ten years ago (proportionately), but would be lower still, were it not for the elevated reports of *S. Typhimurium* Definitive Type 193 (DT 193) that has been seen in all countries in recent years (Figure 5). *S.*

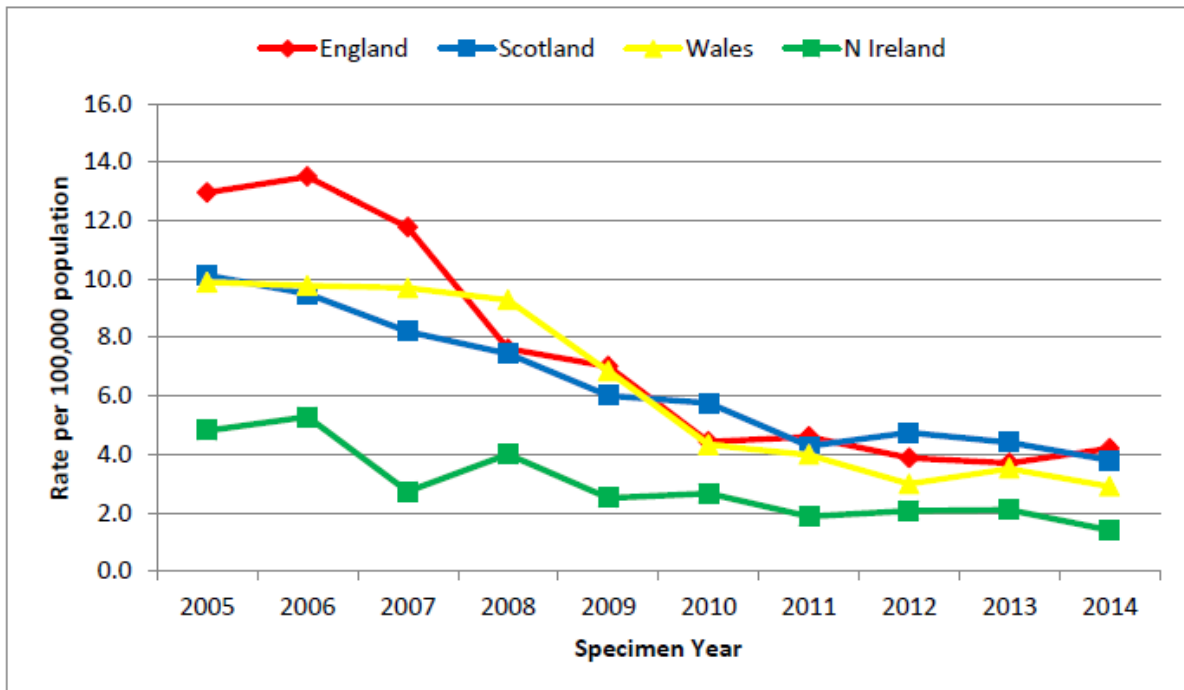
Typhimurium DT 193 has, in England and Scotland, continued its marginal year on year decline, though remains stochastic in Wales and Northern Ireland, presumably in response to the relatively small numbers reported from those countries.

Figure 1. Non-Typhoidal *Salmonella* all cases, 2005 - 2014



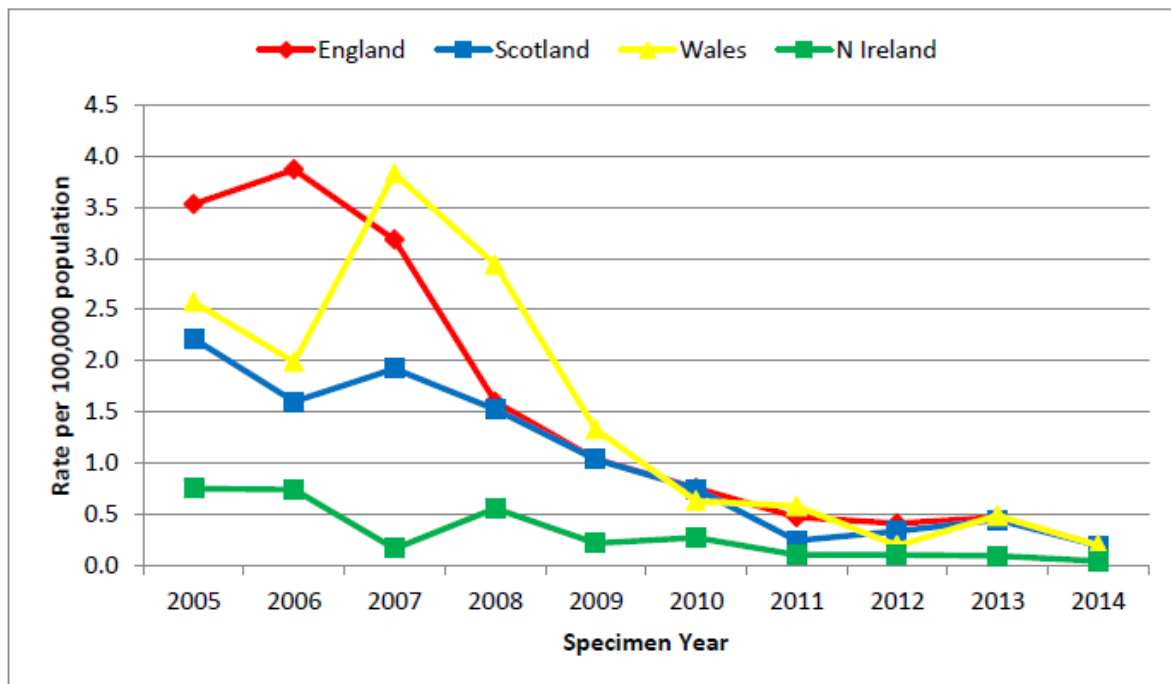
Source: PHE

Figure 2. *Salmonella* Enteritidis all isolates, 2005 - 2014



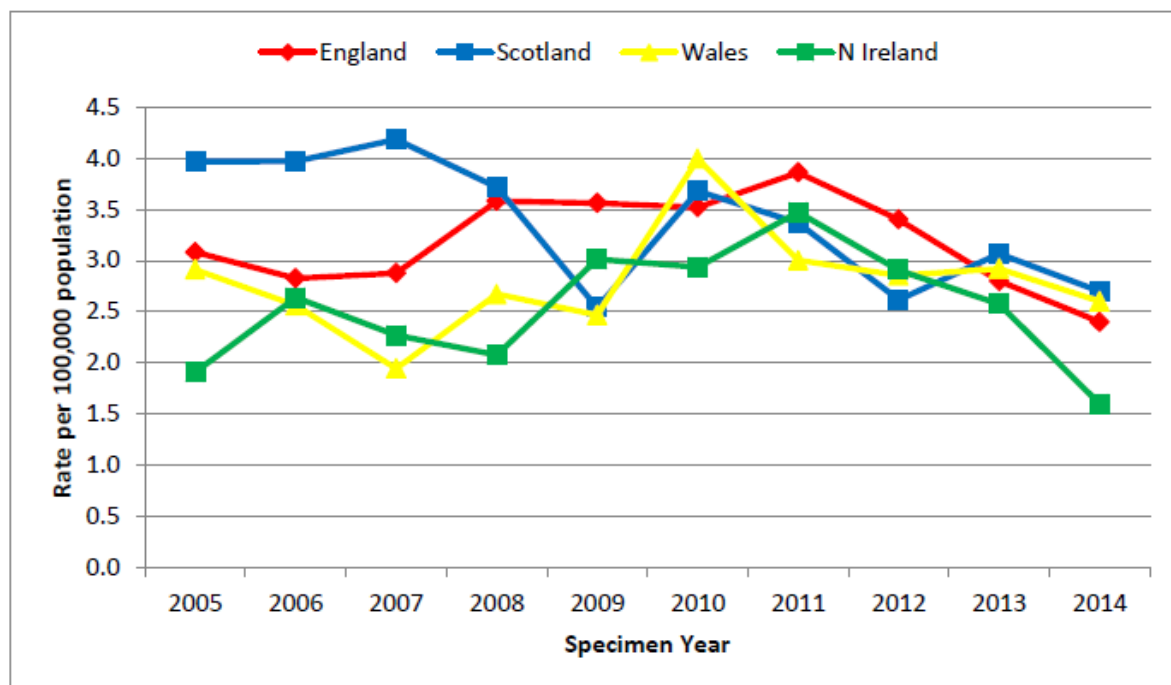
Source: PHE

Figure 3. *Salmonella* Enteritidis Phage type 4 all isolates, 2005 - 2014



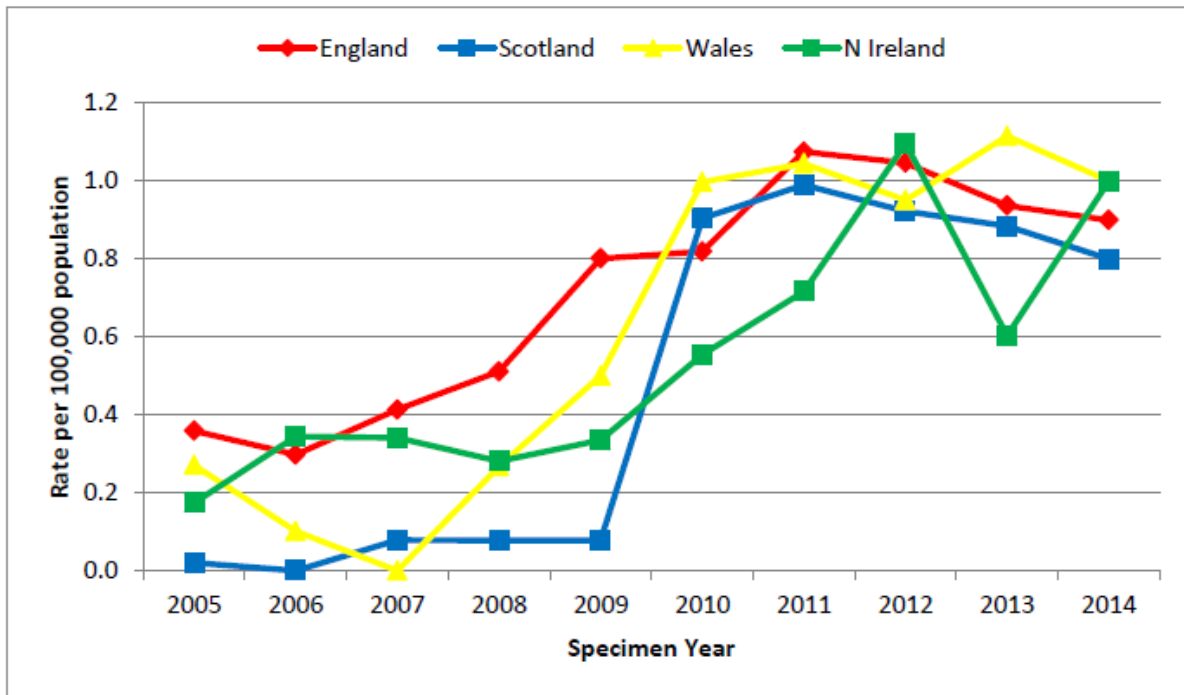
Source: PHE

Figure 4. *Salmonella* Typhimurium all isolates, 2005 - 2014



Source: PHE

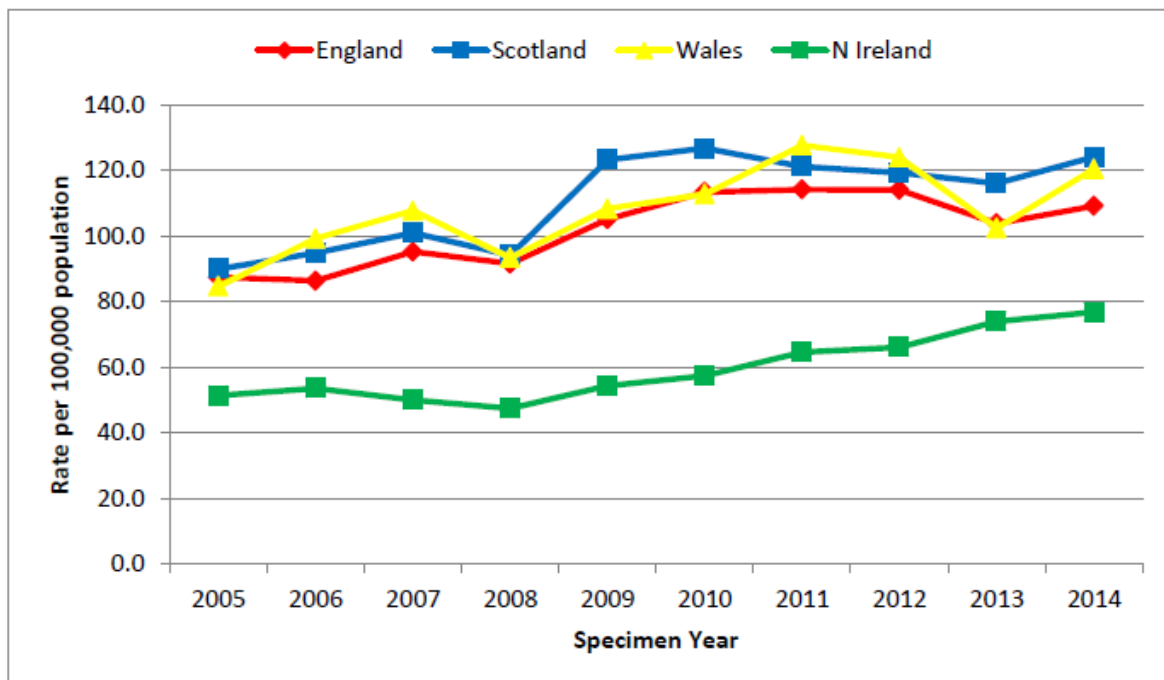
Figure 5. *Salmonella* Typhimurium DT 193 all isolates, 2005 - 2014



Source: PHE

- Reported *Campylobacter* infections (Figure 6) remain relatively static in England, Scotland and Wales, whilst Northern Ireland continues to report rates of infection considerably lower than those for the rest of the UK although rates have been climbing since 2008. In 2014 the UK rate per 100,000 population was 110 compared to 103.9 in 2013. In Northern Ireland in 2014 the rate per 100,000 population was 77.

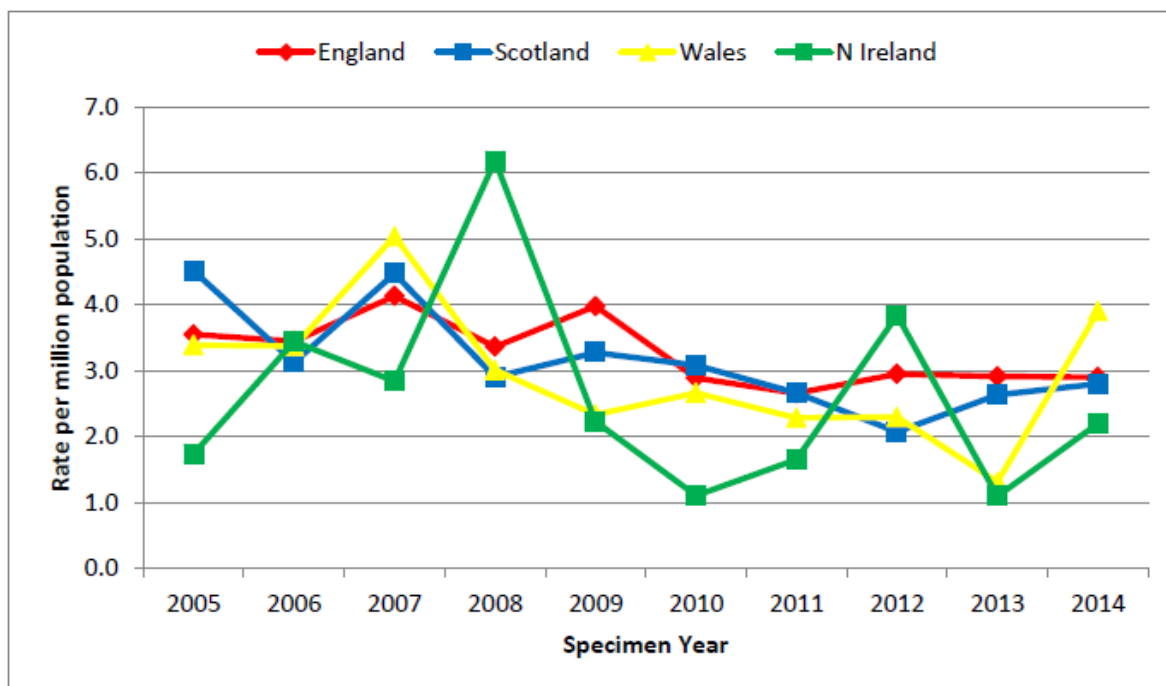
Figure 6. *Campylobacter* spp. all isolates, 2005 - 2014



Source: PHE

7. *Listeria monocytogenes* remains lower than in most recent years, though with small reported numbers the data remain particularly stochastic, with the overall rate of infection in the UK fluctuating from 2.6 to 4.1 cases per million population in the past 10 years. For the UK as a whole the rate in 2014 was 21% lower than in 2005. There remains considerable variation between the rates in different countries though this is partially due to the small numbers being reported.

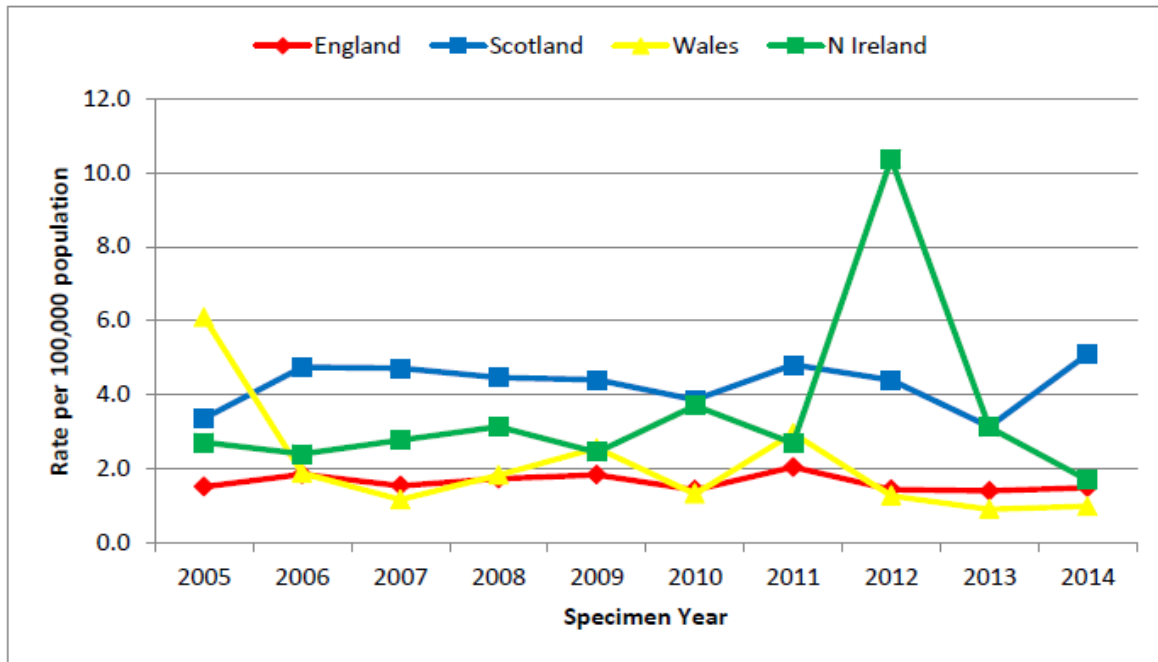
Figure 7. *Listeria monocytogenes* all isolates, 2005 - 2014



Source: PHE

8. The rate per 100,000 population for Verocytotoxin-producing *E. coli* (VTEC) O157 infection in the UK in 2014 was 1.78. In Scotland the rate remains higher than in England and Wales where the rate has remained relatively static over the past 3 years. In England and Wales phage types PT21/28 and PT8 remain the commonest phage types reported as in previous years.

Figure 8. *E. coli* O157 all isolates, 2005 - 2014

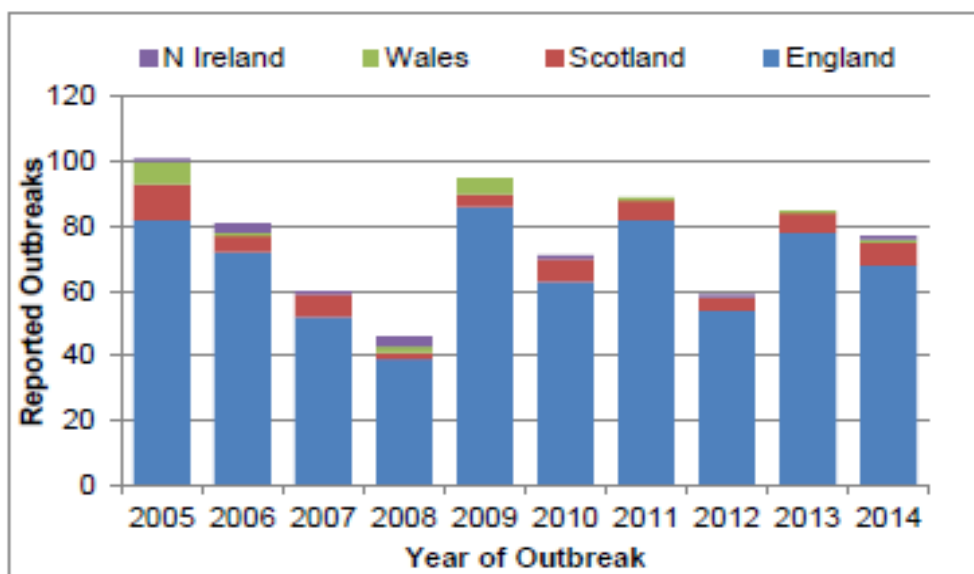


Source: PHE

**Outbreak data**

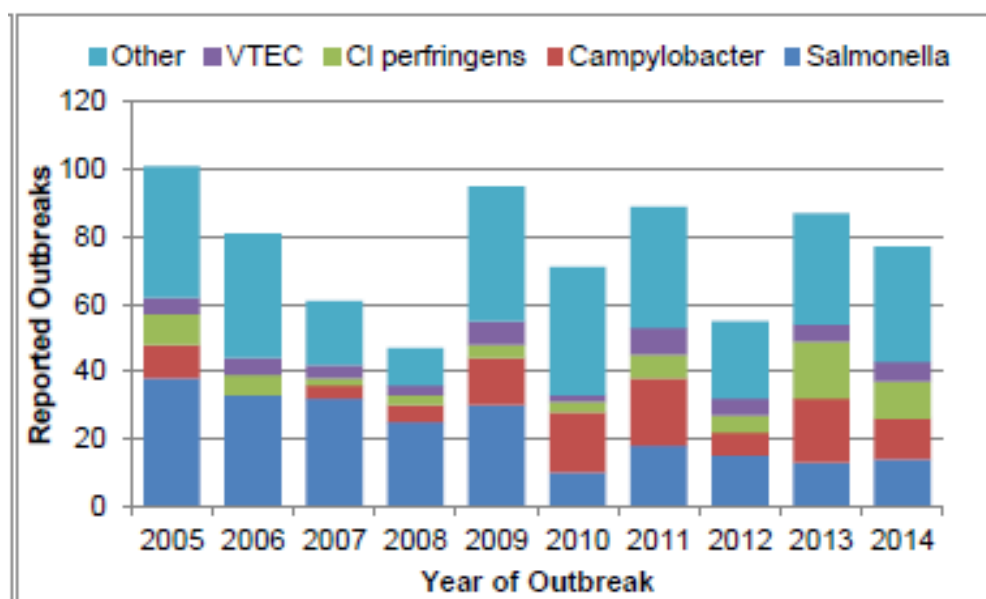
9. Figures 9 and 10 show reported general outbreaks by country and by primary pathogen 2005-2014. In 2014 *Salmonella*, *Campylobacter* and *Clostridium perfringens* were the leading causes of foodborne general outbreaks in the UK. There were fewer outbreaks of *Campylobacter* and *Clostridium perfringens* in 2014 compared to 2013. In 2014 there were large outbreaks (>100 cases) involving *Salmonella* Enteritidis PT14b, VTEC O157 PT8 and enteroinvasive *E.coli*.

Figure 9. Reported outbreaks by year and Country, 2005 – 2014.



Source: PHE

Figure 10. Outbreak reports by primary pathogen and year, 2005 – 2014



Source: PHE

### Other items of interest

#### VTEC O157 surveillance in England and Wales

10. PHE provided a summary of recent trends in VTEC infections in England and Wales 2009-2014. Most non-travel associated cases were of serotype O157. The predominant phage types in this period were PT21/28 and PT8 which account for over 60% of all cases and over 75% of cases in outbreaks; a higher proportion of cases were female, particularly in outbreaks. An update would be provided at a future EFIG meeting.

#### Campylobacter retail survey of fresh whole chicken

11. The Food Standards Agency updated the group on the results from its year-long survey of *Campylobacter* on fresh chickens at retail between February 2014 and February 2015. It was reported that more than 4,000 samples comprising fresh whole chilled chickens and packaging have been tested. The chickens were bought from large UK retail outlets and smaller independent stores and butchers. The data shows variations between the retailers, but none has met the target for reducing *Campylobacter*. Little change was observed throughout the year.

12. The overall results for the full year show:

- 73% of chickens tested positive for the presence of *Campylobacter*.
- 19% of chickens tested positive for *Campylobacter* within the highest band of contamination (>1000 cfu/g).
- 7% of packaging tested positive for the presence of *Campylobacter*.
- 0.1% (five samples) of packaging tested positive at the highest band of



contamination.

13. It was highlighted that some promising interventions that may help reduce levels of *Campylobacter* are yet to be fully operational although recent data from certain retailers is encouraging. Members were informed that another survey is being planned to commence in the next few months and will once again sample fresh whole chickens from all types of shops.

### **Genomic characterisation of *Campylobacter* isolates from the Infectious Intestinal Disease studies (IID1 and 2)**

14. EFIG received a presentation from Prof Craig Winstanley of the University of Liverpool on an FSA funded project to characterise the *Campylobacter* isolates from the two infectious intestinal disease studies (IID1 and 2). The objectives of the study were to use Whole Genome Sequencing (WGS) to obtain a comprehensive genome sequence data-set from the IID isolates, to examine the Multi-Locus Sequence Typing (MLST) of these isolates alongside other studies, to carry out phylogenetic analysis of the IID isolates and to conduct more comprehensive WGS on a subset of the IID isolates. This would provide additional *Campylobacter* reference genomes which could be made available for the research community.

### **Antimicrobial resistance**

16. Members received an update on the Defra Antimicrobial Resistance Co-ordination Group (DARC) meetings held in February and June 2015 and other issues. There have been 3 reports of LA-MRSA from livestock in the UK and a small study in Manchester reported LA-MRSA from retail meats. A risk assessment for LA-MRSA in food will be discussed by the ACMSF's antimicrobial resistance working group on 16 June.
17. The FSA published a research call in March 2015 for a systematic literature review to increase our understanding of the role of food production, processing and consumption in the development and spread of AMR. It is anticipated that this study will commence in summer 2015 and report in early 2016.
18. In March 2015 the European Medicines Agency (EMA) received a request from the European Commission for a joint EFSA and EMA scientific opinion on measures to reduce the need to use antimicrobial agents in animal husbandry in the European Union, and the resulting impacts on food safety. The work will be carried out by a joint working group of experts of the EMA and EFSA and is scheduled to be completed by December 2016.
19. An ECDC/EFSA/EMA first joint report on the integrated analysis of the consumption of antimicrobial agents and occurrence of antimicrobial resistance in bacteria from humans and food-producing animals was published in January 2015. This explored associations between consumption of antimicrobials in humans and food-producing animals. Associations between consumption of antimicrobials and the corresponding resistance in bacteria were observed for most of the combinations investigated. In some cases, a positive association was also found between antimicrobial consumption in animals and resistance in bacteria from humans. The report recognised that there were current data

limitations and the complexity of the AMR issue and made recommendations to address some of these.

### **Food Surveillance**

20. Public Health England presented reports on two of their co-ordinated food liaison group studies: An Assessment of the Microbiological Safety of Duck Eggs in the United Kingdom with focus on *Salmonella* spp. and An Assessment of the Microbiological Safety of Pre-Cut Fruit from Retail and Catering Premises in the United Kingdom. Members were informed that there were ongoing surveys on raw milk and on the microbiological quality of bagged salad.

### **Other issues**

21. The issue of how to make data considered by the group more accessible was briefly discussed. Although it was acknowledged that a summary of EFIG's discussions is provided to ACMSF via a paper that is published on the ACMSF webpage, members agreed to discuss access to EFIG data at its next meeting.

### **Action**

22. ACMSF Members are invited to comment on the recent trends in animal and human data and other subjects discussed by EFIG at the June 2015 meeting.

**Secretariat  
June 2015**