

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

1. The group met on 9 December 2014 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 – September 2014 (provisional data)**

2. Key points from the January – September 2014 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>. 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 September 2014, there were 849 reports of *Salmonella* from livestock species not subject to *Salmonella* National Control Plans (NCPs). This is small decrease compared with January – September 2013 (859 reports) and January – September 2012 (857 reports).
 - There were six reports of *S. Enteritidis* during January - September 2014. One was from cattle and the rest from non-food animals.
 - There were 105 reports of *S. Typhimurium* during January – September 2014, an increase of 22% compared with the equivalent period in 2013 (86 incidents). Phage types U288 and DT193 were mostly associated with pigs and DT2 with pigeons.
 - Reports of *Salmonella* 4,12:i:- decreased slightly from 27 reports during January – September 2013 to 24 reports for the same period in 2014. The number of reports of *Salmonella* 4,5,12:i:-, (38 reports) was similar to the same period in 2013 (39 reports).

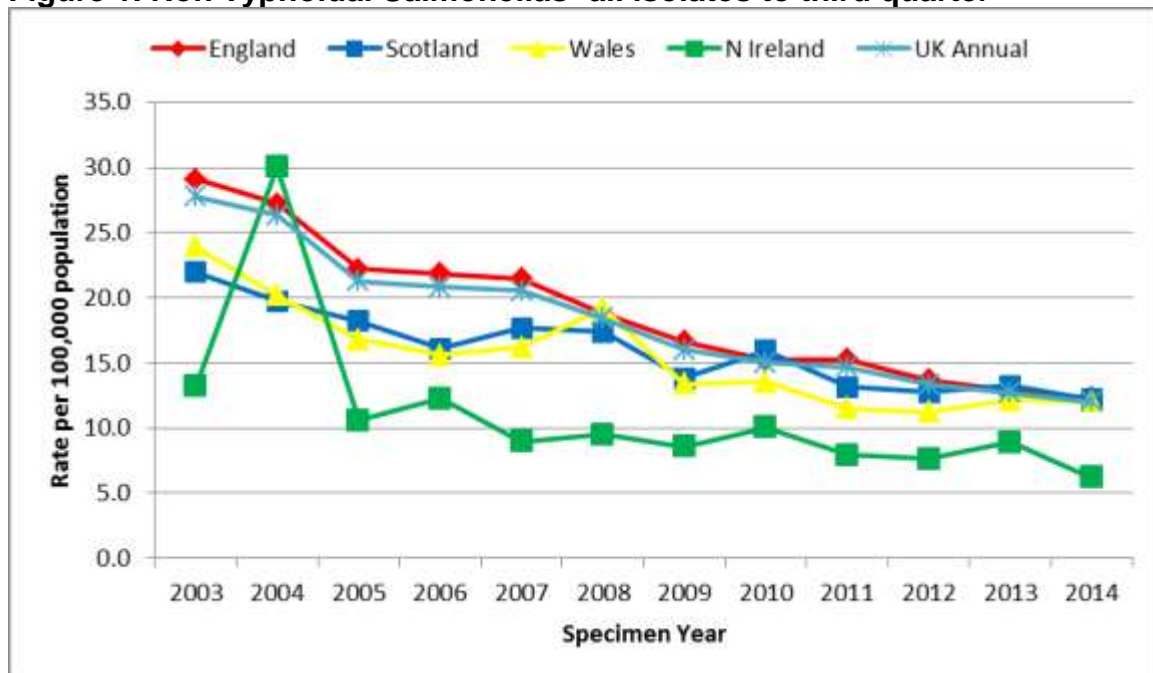
- There were 14% fewer APHA/SRUC submissions to Veterinary Investigation Diagnosis Analysis between January and September 2014 (58,341 submissions) than in the equivalent period of 2013 (68,221 submissions) and 22% fewer than in the equivalent period in 2012 (75,000 submissions). Compared with January – September 2013, there were fewer submissions from all categories with the greatest decrease observed for pigs (29%), sheep (20%) and cattle (16%) and relatively smaller declines for miscellaneous animals (5%) and birds (2%).

Human data - Summary for key pathogens for 2014 (January to September)

Trends in laboratory reports

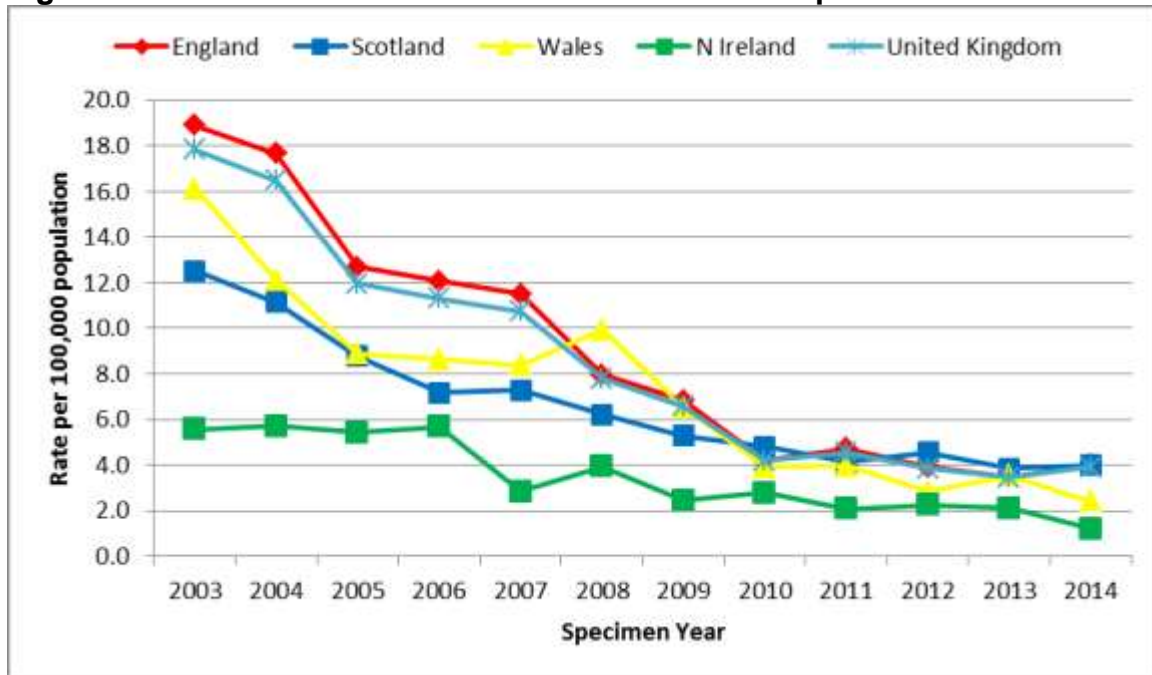
- The following figures 1-8 show the trends in laboratory reports for non-typhoidal *Salmonella*, *Campylobacter*, *Listeria monocytogenes* and *E.coli* O157 in the UK 2003-2014 based on date for January to September each year. Overall, *Salmonella* and Verocytotoxin-producing *E.coli* O157 have declined marginally whilst *Campylobacter* and *Listeria monocytogenes* showed small increases in reporting for the first three quarters in 2014 when compared to the same period in 2013.
- Salmonella* reports continued to decline in frequency in 2014, with 6,138 isolates reported in the UK, a 5% reduction when compared to the same period (Q1-3) in 2013 and equivalent to 46% of isolates reported in 2003 (Figure 1). The predominant cause of the decline remains in *Salmonella* Enteritidis (Figures 2 and 3). There was a 23% decline in *Salmonella* Typhimurium, and a 11% reduction in *S.Typhimurium* DT193 compared to the same period in 2013 (Figures 4 and 5).

Figure 1. Non Typhoidal Salmonellas- all isolates to third quarter



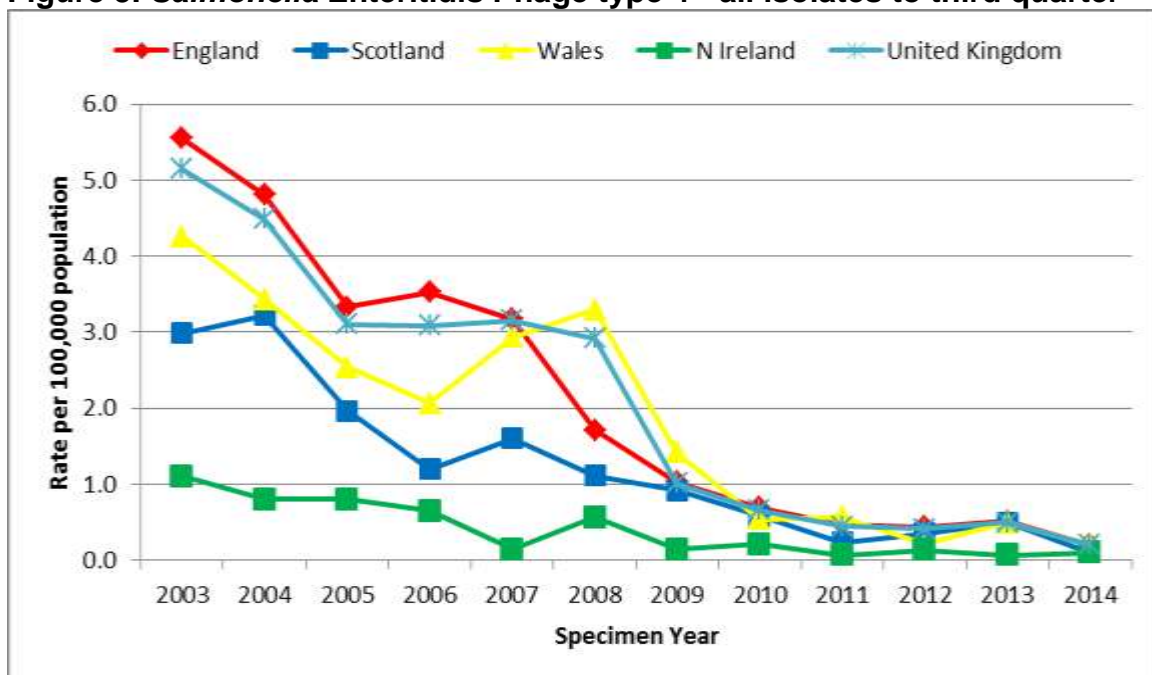
Source: PHE

Figure 2. *Salmonella* Enteritidis - all isolates to third quarter



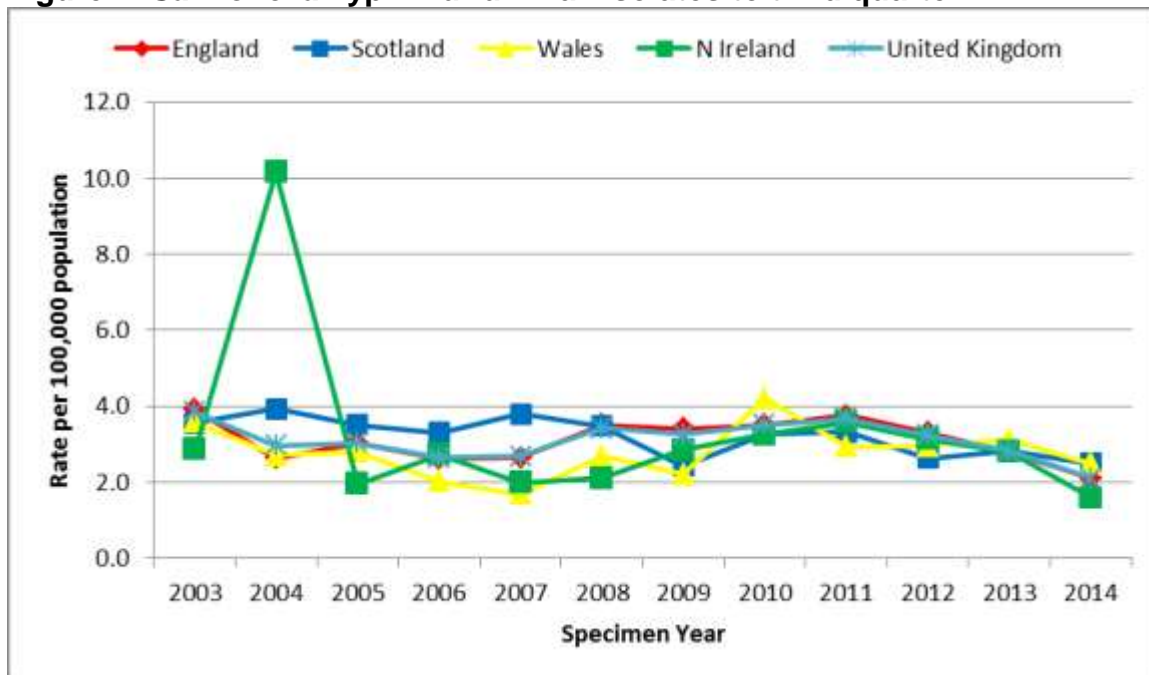
Source: PHE

Figure 3. *Salmonella* Enteritidis Phage type 4 - all isolates to third quarter



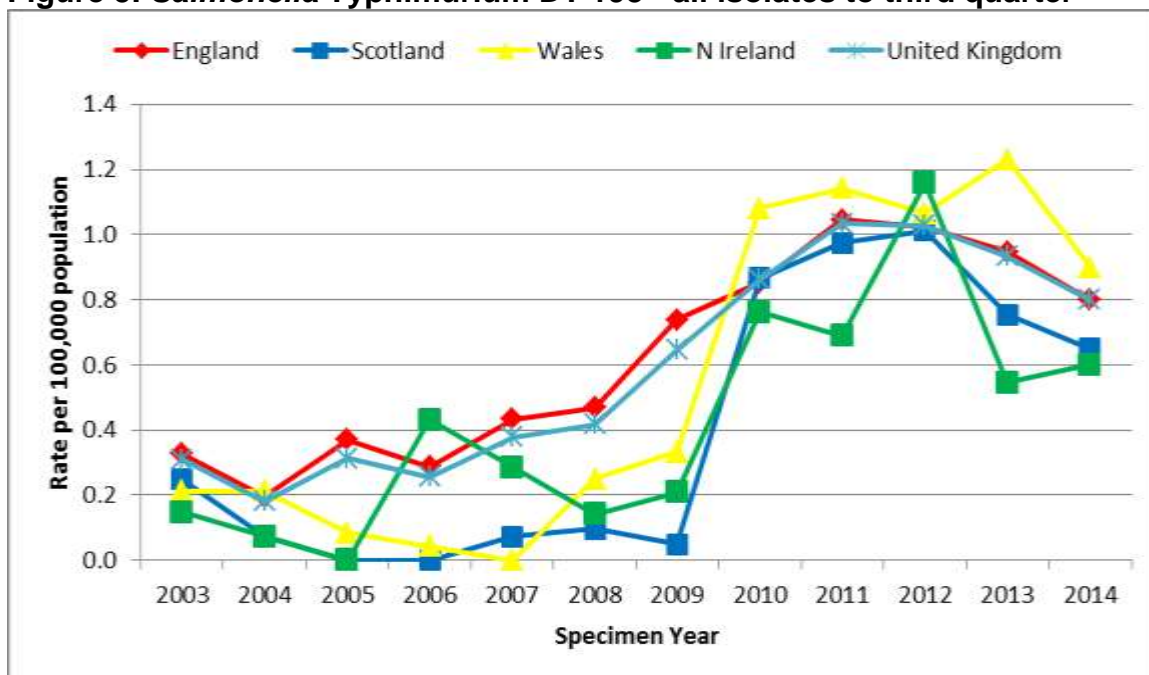
Source: PHE

Figure 4. *Salmonella* Typhimurium - all isolates to third quarter



Source: PHE

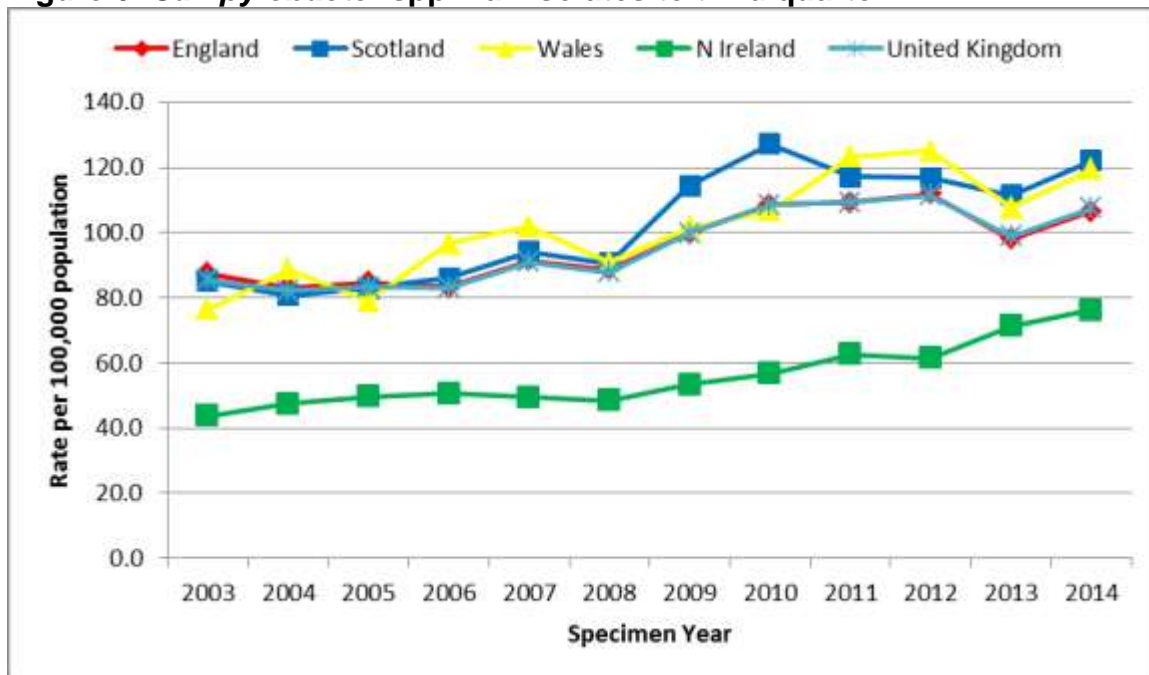
Figure 5. *Salmonella* Typhimurium DT 193 - all isolates to third quarter



Source: PHE

6. *Campylobacter* reporting increased by 8.7% in the first three quarters of 2014, with the increase reported in all countries; England (8.5%), Scotland (10.6%), Northern Ireland (5%) and Wales (11.7%) (Figure 6). There still remains a significant difference in the reporting rates for Northern Ireland against England, Scotland and Wales, with the rate approximately 30% less in Northern Ireland. Prior to 2009, the reported rate of *Campylobacteriosis* in Northern Ireland was consistently 50% of the remaining countries. Since 2009, the Northern Ireland rate has been climbing.

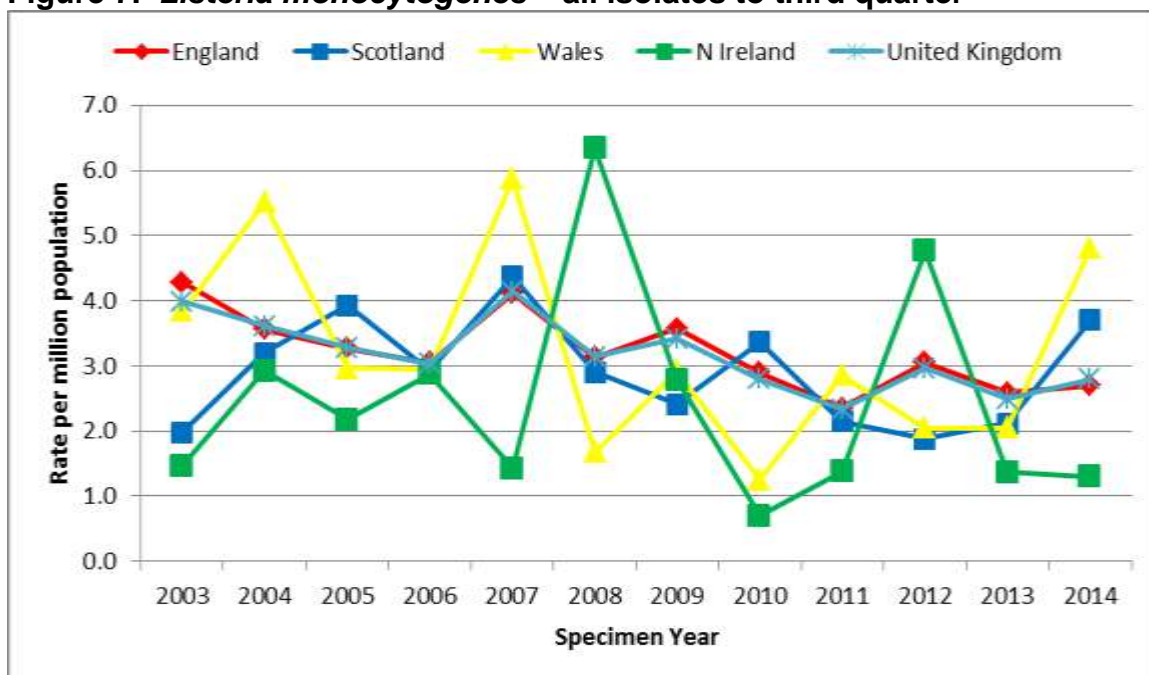
Figure 6. *Campylobacter* spp. - all isolates to third quarter



Source: PHE

7. *Listeria monocytogenes*, though stochastic due to the relatively small numbers reported annually, increased by 15.7% in the first 3 quarters of 2014 compared to the same period in 2013, but was 23% below 2003 levels (Figure 7). There remains considerable variation between the rates in different countries though this is partially due to the small numbers being reported.

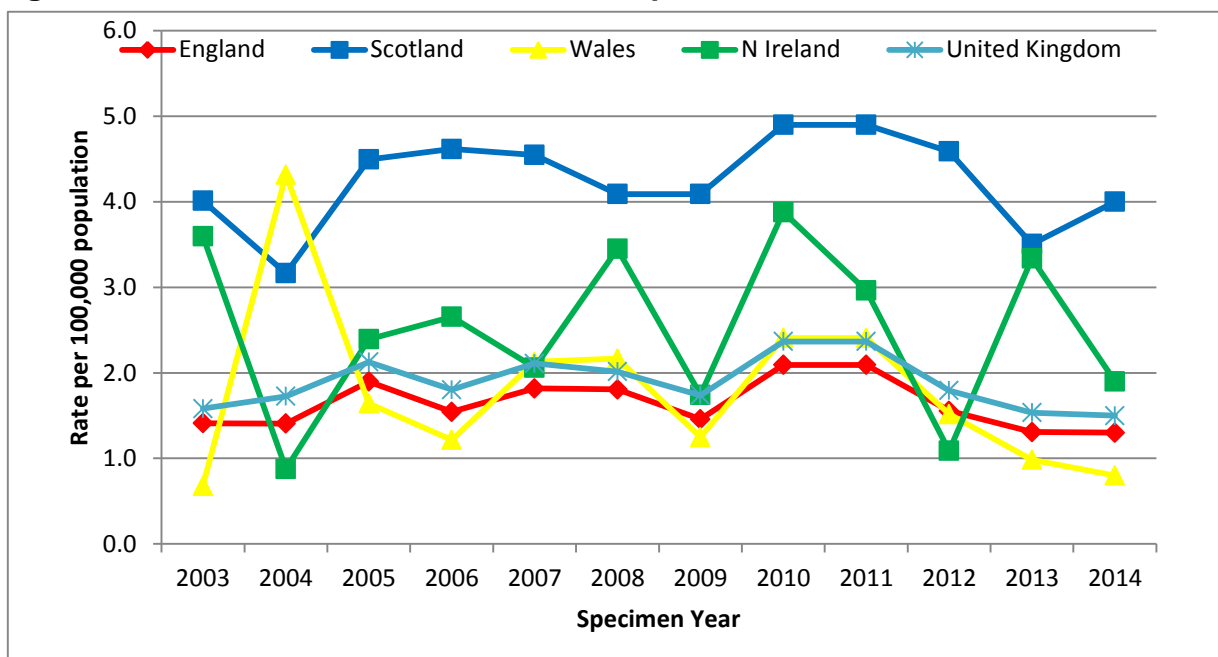
Figure 7. *Listeria monocytogenes* – all isolates to third quarter



Source: PHE

8. Verocytotoxin-producing *E. coli* (VTEC) O157 rates (Figure 8) increased by 1% in the first three quarters of 2014 compared to the same period in 2013 with the increase noted in England and Scotland.

Figure 8. VTEC O157 – all isolates to third quarter



Source: PHE

Outbreak data

9. *Campylobacter*, VTEC and *Clostridium perfringens* were the leading causes of foodborne general outbreaks (7 outbreaks each) in the UK in the first 3 quarter of 2014. There were 3 *Salmonella* outbreaks, 2 of which were *Salmonella* Enteritidis (non PT4).

Other items of interest

***Campylobacter* retail survey of fresh whole chicken cumulative results**

10. The FSA updated the group on the results from the first two quarters of its year-long survey of *Campylobacter* on fresh chickens. It was reported that the 12 month survey running from February 2014 to February 2015 will test 4000 samples of whole chickens bought from UK major retailers and smaller independent stores and butchers. Samples taken from retailers relate to their market share. The results to date reveal 70% of chickens tested positive for the presence of *Campylobacter*. Of these 18% of chickens tested positive for *Campylobacter* above the highest level of contamination (>1,000 cfu/g). With packaging 6% tested positive for the presence of *Campylobacter*.
11. The data showed variation in contamination between retailers with none of the major retailers meeting the end of production target for reducing *Campylobacter*. Industry has agreed a 10% end of production line target by December 2015 which equates to a 7-8% target for birds on retail sale.

12. As the cumulative results for chicken packaging showed 6% contamination the FSA recommendations to reduce contamination include:

- Keep raw meat and fish separate from ready-to-eat-foods, in separate bags.
- If your bags are re-useable, keep one or two for use with raw meat and fish. Do not use them for RTE foods.
- Re-useable bags (and single use carrier bags) should be disposed of if there's been any spillage of raw meat juices.

13. The FSA has welcomed the positive moves made by the industry such as integrated interventions, biosecurity and steam technology and the roast in the bag raw chicken initiative. Survey quarter 3 results are expected to be announced in February 2015 and quarter 4 results in May 2015.

Application of Genomics at PHE for GI pathogens

14. The PHE Gastrointestinal Bacteria Reference Unit gave a presentation on their GI whole genome sequencing (WGS) activities. Members were provided with an overview of the planning for WGS and the sequencing service validation to ensure reliable sample handling through robotics, generation of reproducible high quality data, consistent linking of meta data and reliable capture of quality metrics.

15. Members were briefed on the current typing methods used for *Salmonella* and the aims of the *Salmonella* WGS project which involves identification/characterisation (MLST and AMR virulence factors) and typing (detecting genetic diversity). The presentation covered how similarities between genomes are assessed. It was underlined that in addition to identification (i.e. MLST) whole genome sequencing can be used to obtain the highest possible typing resolution. Members were provided with examples of how whole genome sequencing has been used for the international outbreak of *Salmonella* Enteritidis PT14b in summer 2014 and for other routine sequencing such as for VTEC O157, non-O157 VTEC and *Campylobacter*.

Antimicrobial resistance

16. Members received an update on the Defra Antimicrobial Resistance Co-ordination Group (DARC) meeting held on 24 September 2014 and other issues. Follow-up investigations at a turkey breeding site in England and Wales, in relation to the isolation of livestock-associated meticillin-resistant *Staphylococcus aureus* (LA-MRSA) from a turkey lung in Nov 2013 had proved inconclusive as to the source of the strain. In May 2014 LA-MRSA was isolated from a post-weaning piglet in Northern Ireland and the findings reported in the Veterinary Record.

17. A joint DARC and Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infection (ARHAI) meeting had agreed to publish a joint animal and human "One Health" report on antibiotic sales/ prescriptions and resistance. This is in line with one of the objectives of the 5 year AMR strategy on having more useful and comparable data sets to establish trends. A Veterinary Medicines Directorate report published on UK antibiotics resistance and sale surveillance 2013 was published on 18 November 2014. The publication details antimicrobial sales data for products sold for use in animals in the UK from 2009 –

2013. It shows antimicrobial resistance trends in both veterinary pathogens and zoonotic organisms in England and Wales.

Food Surveillance

18. Public Health England (PHE) provided an update on their diverse range of microbiological food studies nationally, regionally and at local level. Recent studies included Study 51 pre-packed sandwiches from unregistered and small to medium premises, Study 52 Imported fresh leaves, Study 53 Swabs from ready to eat platters used to serve food and Study 54 Hygiene and Food safety in Takeaways with a Food Hygiene Rating score of 3 or below. Reports from some of the earlier studies were expected to be published in the coming months. PHE's coordinated food studies programme for 2015 was yet to be finalised.

Action

19. ACMSF Members are invited to comment on the recent trends in animal and human data and other subjects discussed by EFIG at the December 2014 meeting.

Secretariat
January 2015