ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD

EPIDEMIOLOGY OF FOODBORNE INFECTIONS GROUP (EFIG)

1. The group met on 6 October 2020 and the following is a combined summary of the animal and human data and food surveillance activities that were discussed at this meeting.

2. EFIG welcomed comments made by ACMSF on the need to improve updates provided to the committee. However, other pressures have delayed the group's response to ACMSF's comments (minutes of 94th meeting paragraph 9.6 refers[1]).

Animal data

Animal *Salmonella* data for 2019 and January – June 2020 (provisional data)

3. Key points from the January – December 2019 and January – June 2020 data were highlighted. The data are related to numbers of incidents rather than flocks or herds. The annual Animal and Plant Health Agency (APHA), reports on *Salmonella* in livestock provide further details including the reasons for collection of this data. The latest report (2019) is available at:

   https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/917011/salm-livestock-prod-gb19.pdf

4. 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.

5. 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).

Animal *Salmonella* data January – December 2019

6. Between January and December 2019, there were 1161 reports of *Salmonella* from livestock, which is 7% higher than during January – December 2018 (1090 reports) and 4% higher than during the equivalent period of 2017 (1116 reports).

[1] https://webarchive.nationalarchives.gov.uk/20200405231229/https://acmsf.food.gov.uk/acmsfmeets/acmsfmeets/acmsf-meeting-27-june-2019/acmsf-minutes-27-june-2019

7. There were 17 reports of *S.* Enteritidis during January – December 2019 from quail, pigs, horses and non-statutory species)

8. Reports of *S.* Typhimurium fell by 6% compared with January – December 2018 (111 vs. 118 reports) but increased slightly compared with the equivalent period of 2017 (115 reports). The most common phage types were DT193 (25 reports; 23% of total *S*. Typhimurium reports), DT104 (19 reports; 17% of total *S*. Typhimurium reports) and U288 (16 reports; 15% of total S. Typhimurium reports).

9. Reports of *Salmonella* 4,5,12:i:- increased by 27% (38 vs.30 incidents) compared with January – December 2017 but fell by 14% compared with the equivalent period of 2017 (44 reports). There was an increase of 68% in the number of reports of *Salmonella* 4,12:i: (62 vs. 37 incidents) compared with January – December 2018 and a 22% increase compared with the equivalent period of 2017 (51 incidents). Eighty-four of the monophasic incidents (84%) reported during January – December 2019 were phage type DT193.

10. The total APHA/SRUC (Scotland's Rural College) submissions to the Veterinary Investigation Diagnosis Database (VIDA) between January and December 2019 were 47,586. This is 4% fewer than during 2018 (49,397 submissions) and 17% fewer than during 2017 (57,444 submissions). Relative to 2018, there was a decline in cattle (6%) and sheep (9%) submissions, and a 14% increase in the number of pig submissions. The number of submissions for avian species (7,397 vs. 7,323 submissions) and miscellaneous species (9,352 vs. 9,460 submissions) remained similar compared to the equivalent period in 2018 .

Animal *Salmonella* data January – June 2020 (provisional data)

11. Between January and June 2020, there were 417 reports of *Salmonella* from livestock, which is 22% lower than during January – June 2019 (538 reports) and 10% lower than during the equivalent period of 2018 (461 reports).

12. There were five reports of *S.* Enteritidis during January – June 2020 from horses and non-statutory species.

13. Reports of *S.* Typhimurium were almost identical to January – June 2019 (51 vs. 52 reports) but 11% higher than the equivalent period of 2018 (46 reports). The most common phage types were U288 (17 reports; 33% of total *S*. Typhimurium reports), DT193 (13 reports; 25% of total *S*. Typhimurium reports) and DT104 (10 reports; 20% of total S. Typhimurium reports).

14. Reports of *Salmonella* 4,5,12:i:- fell slightly (16 vs.18 incidents) compared with January – June 2019 but increased compared with the equivalent period of 2018 (14 reports). There was a decrease of 59% in the number of reports of *Salmonella* 4,12:i: (9 vs. 22 incidents) compared with January – June 2019 and a 47% increase compared with the equivalent period of 2018 (17 incidents).

Nineteen of the monophasic incidents (86%) reported during January – June 2020 were phage type DT193.

15. There were fewer APHA/SRUC submissions to VIDA between January – June 2020 (18,522), than in the first half of both 2019 (23,056; 20% lower) and 2018 (26,234; 29% lower). Relative to 2019, there was a decline in the number of submissions from sheep (3,232 vs. 4,308 submissions; 30%), cattle (7,825 vs. 9,585 submissions; 26%), miscellaneous (3,563 vs. 4,613 submissions; 24%), pigs (1,111 vs. 1,247; 11%) and birds (2,791 vs. 3,303 submissions).

Salmonella National Control Programme (NCP) results 2019 and 2020 (January – June 2020)

16. An overview of the *Salmonella* NCP results for the above period was provided to the group.

17. NCP testing continues to provide a good indication of the *Salmonella* status of chicken and turkey flocks in the NCP.

18. *Salmonella* Typhimurium was identified in a chicken breeding flock. This is the first isolation of a regulated serovar since 2016 in this sector. APHA are working with the company to improve biosecurity.

19. APHA continue to see layer flocks with *Salmonella* Enteritidis (4) in 2020 but fewer than last year (16). Three of the 4 SE flocks were identified by risk-based sampling of flocks with links to premises identified in 2019 and whole genome sequencing (WGS) of the isolates have shown that they are in the same cluster.

20. There have been fewer broiler flocks with regulated serovars so far this year (2: Jan -June 2020; 17 Jan-Dec 2019). However, flocks with non-regulated serovars continue to increase (1084: Jan- June 2020; 1455: Jan-Dec 2019). These are largely feed-related serovars and this is probably due to the EU ban on the use of formaldehyde in feed early in 2018 and that industry has not improved controls to reduce cross-contamination of feed after processing.

21. So far it does not appear that monophasic *Salmonella* Typhimurium associated with dust from pig farms has been a problem in 2020 as it was in 2018. As in 2019, this may be because dust from pig farms was not such a problem in 2020 and also because industry has used *Salmonella* vaccines more widely.

22. Isolates from fattening turkeys are expected at this time of the year (October) as slaughtering for Christmas normally starts at the end of November for organic flocks and in the first week of December for conventional flocks.

Human Infection Data – Summary of key pathogens for 2019

Trend in laboratory reports

Data sources (human infection data)

Data are provisional and provided from numerous sources; caution is required in interpreting trends over time and differences between countries.
Data from 2010-2018 for England, Wales and Scotland were extracted from the previous annual EFIG report. Data from 2010-2017 for Northern Ireland were extracted from the previous annual EFIG report; updates to 2018 data for *Salmonella, Campylobacter*, and *Cryptosporidium* were provided directly from PHANI.

England data for *Salmonella, Campylobacter* and *Cryptosporidium* spp were extracted from the laboratory surveillance system SGSS, the laboratory reporting system implemented in 2015. *Listeria* data are from the enhanced *Listeria* surveillance database, STEC data are from the enhanced STEC surveillance database (England only), and foodborne outbreak data are from the enhanced foodborne outbreaks surveillance system (electronic Foodborne and non-foodborne gastrointestinal Outbreak Surveillance System, or eFOSS), all of which are Public Health England databases.

Data for Scotland for 2019 were provided by Public Health Scotland.

Data for Wales for 2019 were provided by Public Health Wales.

Data for Northern Ireland for 2019 were provided by Public Health Agency Northern Ireland.

Data are all provisional and subject to change.

Population data

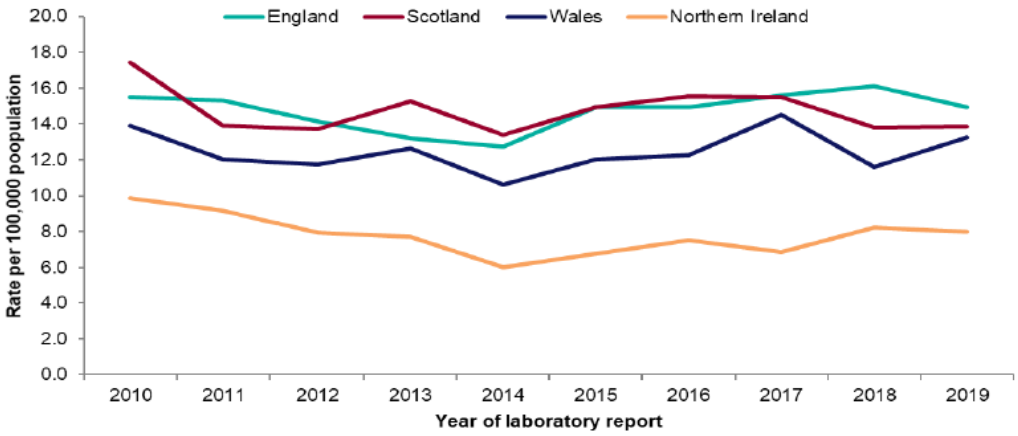
Population data are ONS mid-year estimates. For the 2019 data mid-year estimates were those for the calendar year, however for previous years, the year prior may have been used due to the timing of the EFIG meeting pre-dating the availability of the data for that calendar year. Therefore, the rates for previous years may change slightly when new population data is applied

Report of annual human infection data for 2019

All non-typhoidal *Salmonella* infections

23. There were 9,723 reports of non-typhoidal *Salmonella* in the UK in 2019, a decrease on the 10,298 reported in 2018, decreasing the overall UK reporting rate from 15.5 in 2018 to 14.6 in 2019. A decrease in the reporting rate was seen in England and Northern Ireland, the reporting rate in Scotland remained the same and an increase was seen in Wales.

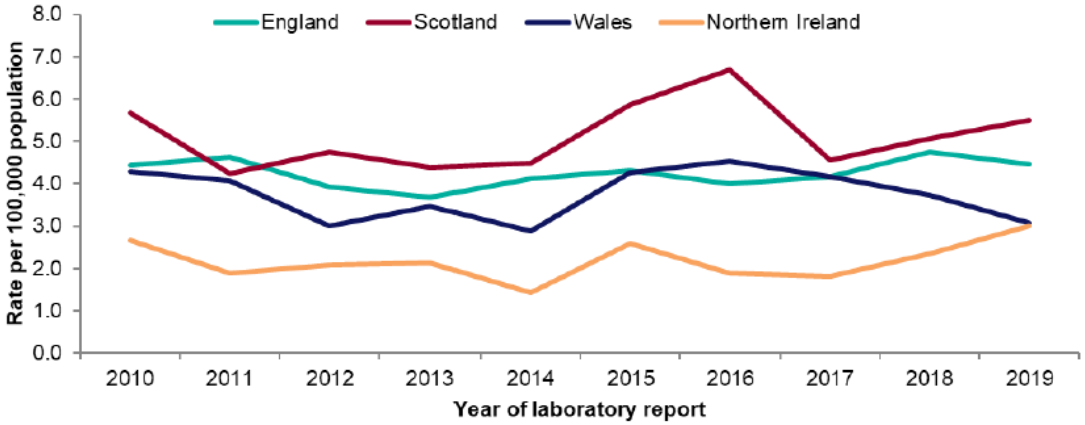
Figure 1: Rate of reported non-typhoidal *Salmonella* infections by country per 100,000 population, 2010-2019



Salmonella servovars

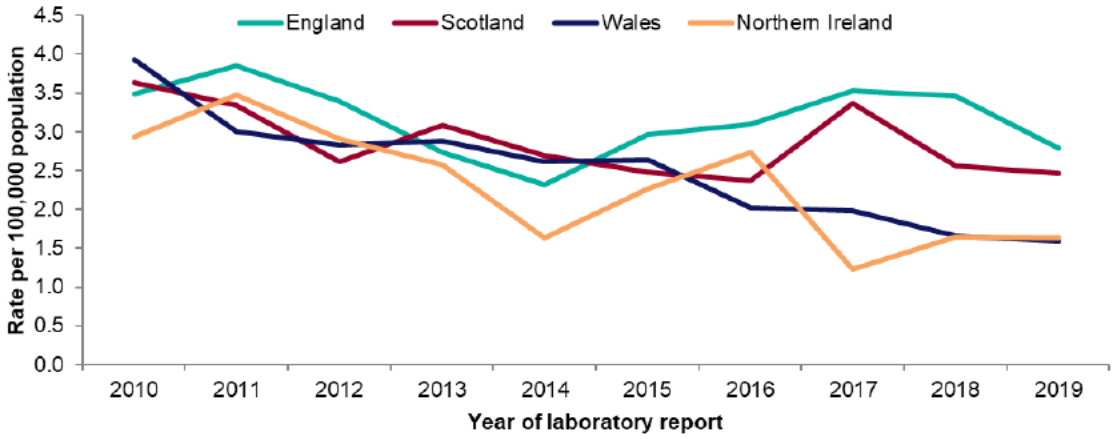
24. Reports of *S.* Enteritidis decreased in the UK in 2019 compared to 2018; with a decrease of 131 cases. Decreases were seen in England and Wales and increases were seen in Scotland and Northern Ireland. The UK reporting rate decreased from 4.7 to 4.4 cases per 100,000 population.

Figure 2: Rate of reported *Salmonella* Enteritidis infections in the United Kingdom and by nation per 100,000 population, 2010-2019



25. A decrease in the reporting rate of *S.* Typhimurium was seen in 2019 compared to 2018 with a decrease of 375 cases. A decrease in reporting rate was seen in England, Wales and Scotland while the reporting rate remained the same in Northern Ireland.

Figure 3: Rate of reported *Salmonella* Typhimurium infections by country per 100,000 population, 2010-2019



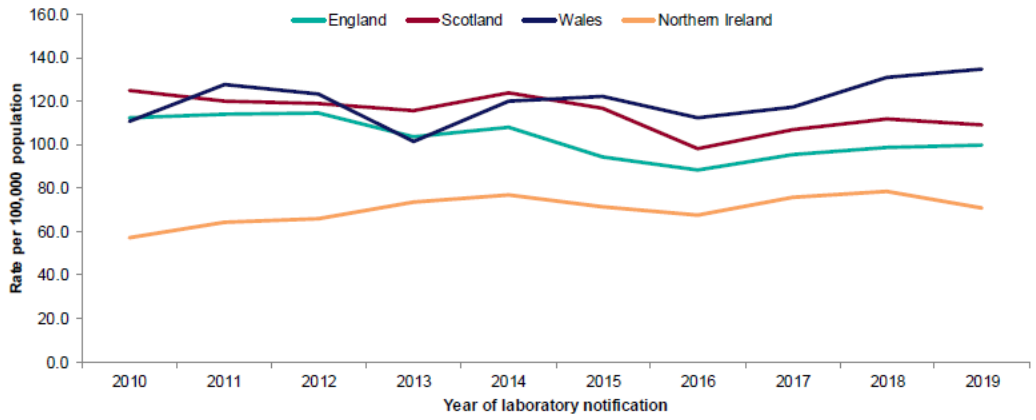
26. *S.* Enteritidis was the most commonly reported serovar across all constituent countries, comprising 31% of all reported *Salmonella* cases in the UK. Scotland reported a slightly larger proportion of *S.* Enteritidis cases compared to all *Salmonella* spp. reported (40%), compared to 23% in Wales, 30% in England and 38% in Northern Ireland. *S.* Typhimurium comprises 18% of all reported *Salmonella* cases in the UK, with proportions within constituent countries ranging from 12% in Wales to 21% in Northern Ireland. Together *S.* Enteritidis and *S.* Typhimurium constitute 49% of all non-typhoidal Salmonellae reported in the United Kingdom.

27. In addition to *S.* Enteritidis and *S.* Typhimurium, *S.* Infantis was also within the top 10 most commonly identified serovars in all four countries in 2019. Additionally, *S.* Newport, *S.* Java and *S.* Virchow were within the top 10 most commonly identified serovars in England, Wales and Scotland. The top serovars in 2019 comprise 64% of all reported *Salmonella* infections in England, 46% in Wales, 74% in Scotland and 72% in Northern Ireland.

Campylobacter Infections

28. The reporting rate for *Campylobacter* in the UK in 2019 of 99.8 per 100,000 was similar to that reported in 2018 of 99.0 per 100,000. The rate of reported *Campylobacter* infections in England and Wales has increased for a third year in a row. The rate decreased in Scotland in 2019. Northern Ireland continues to report rates lower than the rest of the United Kingdom (71.7 cases per 100,000 population).

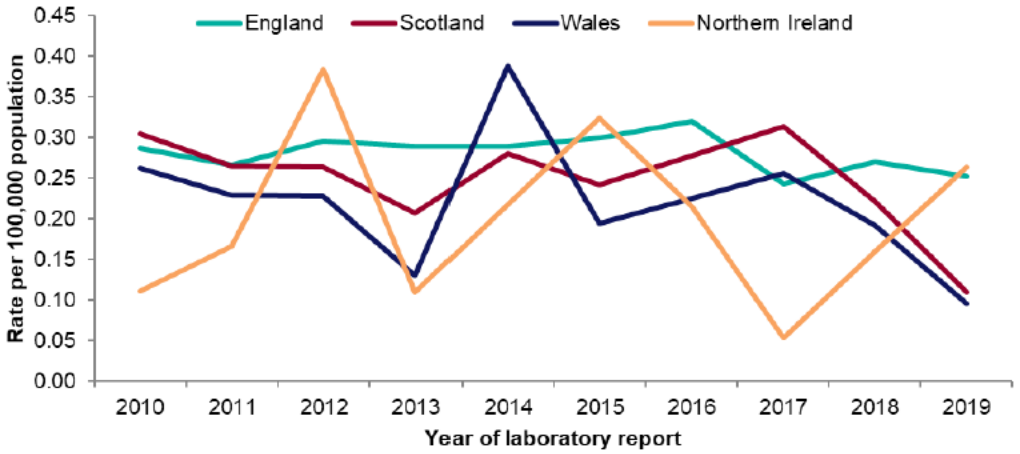
Figure 4. Rate of reported *Campylobacter* infections by country per 100,000 population, 2010-2019



Listeria infections

29. There was a decrease in the number of reported *Listeria monocytogenes* infections in 2019 by 16 cases compared to 2018, after a small increase in 2018 from 2017, however small numbers limit meaningful trend interpretation.

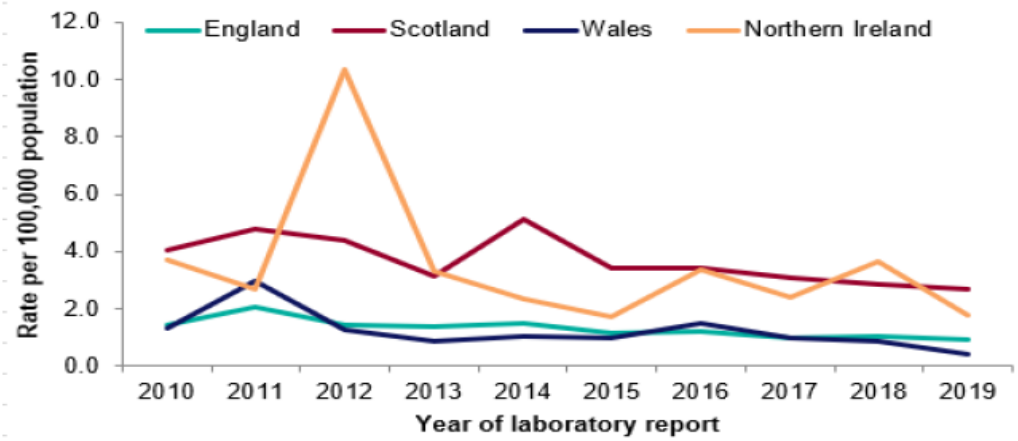
Figure 5. Rate of reported *Listeria monocytogenes* infections by country per 100,000 population, 2010-2019



STEC Infections

30. Reports of STEC O157 in the UK decreased from a rate of 1.3 cases per 100,000 population in 2018 to 1.1 cases per 100,000 population in 2019. Decreases were reported across all four countries. The overall decreasing trend in reporting rate since 2015 compared to previous years has continued. In 2019, 1574 cases of non-O157 STEC were reported in the UK. Serogroups other than O157 are under-reported due to current frontline testing methods which do not detect all STEC serogroups. Testing for non-O157 STEC infections varies by laboratory therefore laboratory reports collated annually do not represent the prevalence of infections in the population. Serotype O26 is usually the most commonly reported non-O157 serogroup in the UK and was the most common in England and Northern Ireland in 2019 with 127 reports.

Figure 6. Rate of reported STEC O157 infections by country per 100,000 population, 2010-2019



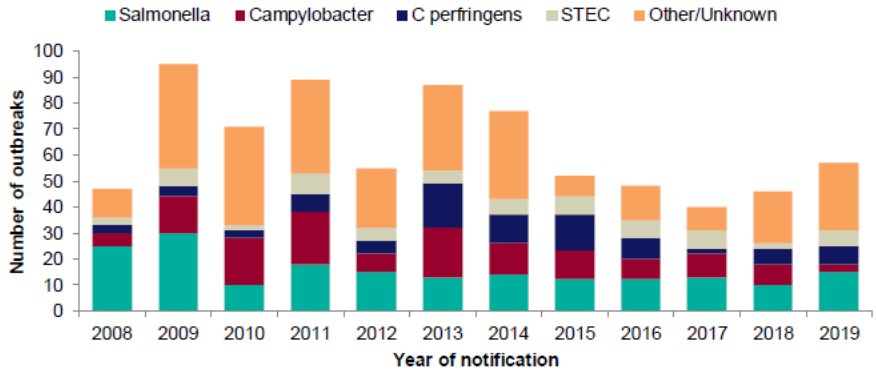
Cryptosporidium infections

31. As seen in 2018, the highest rates reported in 2019 were in Northern Ireland, followed by Wales. The reason for this difference requires further investigation but may be as a result of the introduction of PCR, changes to diagnostic testing protocols or differential exposure to risk factors for infection. It should also be noted that numbers of laboratory reports show distinct inter-year variation and a bimodal seasonality that is species specific.

Foodborne outbreaks

32. In 2019, 57 foodborne outbreaks were reported in the UK compared to 49 reported in 2018. There were 1,440 affected individuals, 989 of which were laboratory confirmed, and 84 reported hospitalisations. There were 15 reported deaths, two associated with *Salmonella* outbreaks, one associated with a VTEC O157 outbreak and 12 with three *Listeria monocytogenes* outbreaks. Norovirus was the most commonly reported causative pathogen (16/57 reported outbreaks, 28%) followed by *Salmonella* (15/57, 26%). The majority of foodborne outbreaks occurred in the food service sector (31/57, 54%), followed by community (18/57, 32%).

Figure 7. Number of outbreaks attributed to specific pathogens reported in the UK, 2008-2019



Food Surveillance

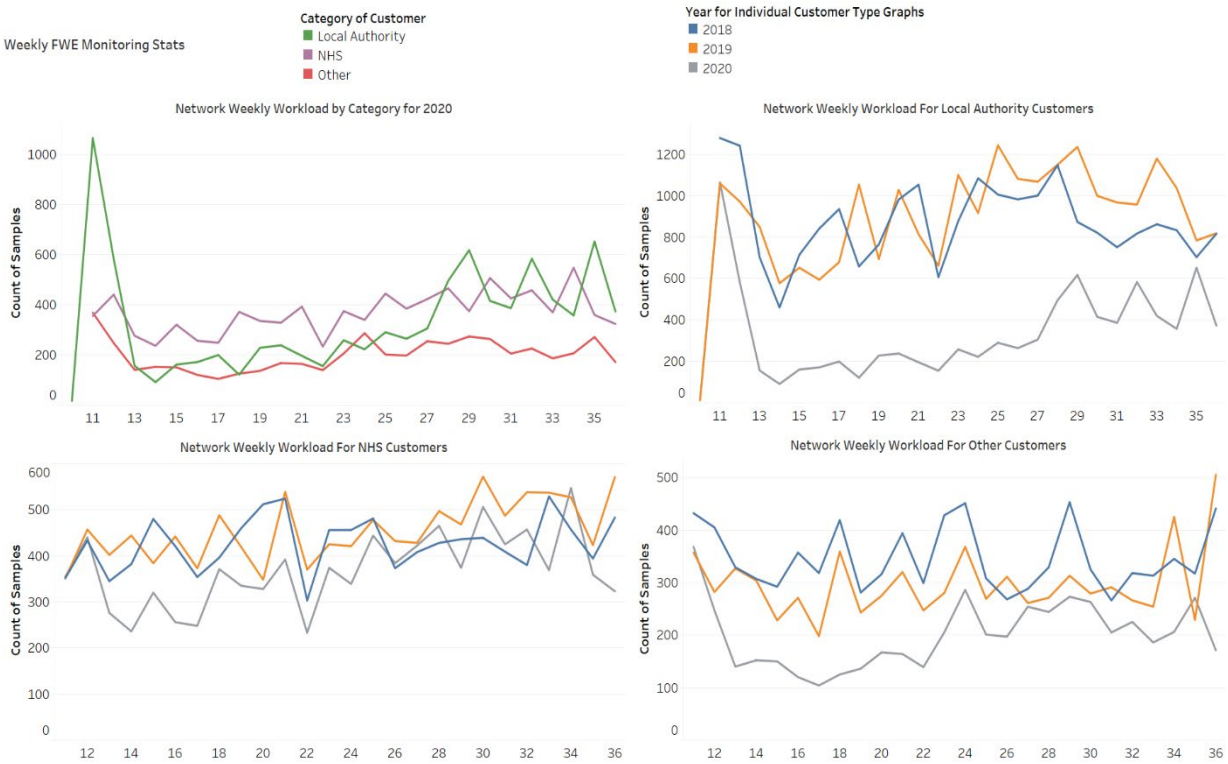
33. Members agreed to hold a separate meeting to discuss future food surveillance activities particularly following the end of EU transition. Public Health England updated the group on the activities of their Food, Water and Environment (FWE) Microbiology Services. This covered the following areas:

Effect of COVID-19 pandemic on PHE FWE workload

34. Figure 8 PHE FWE microbiology services workload during 2020. The group noted the dramatic decline in the number of samples received for testing from Local Authorities (LA) from week 13 (week beginning 23 March). It was highlighted that surveillance activities have picked up to about 60% of

monitoring/testing that took place before the pandemic. The group recognized that routine sampling has been seriously affected by Local Authority resources that has been diverted to Covid-19 related work (this has had a direct effect the routine surveillance carried out on listeria in the food chain). It was reported that majority of LA work are presently in direct response to public health incidents. Other specific issues highlighted as a result of Covid-19 include significant reduction in face to face inspection because of the need to be compliant with social distancing rules and an increase in legionnaire's disease.

Figure 8. PHE Food, Water and Environment microbiology services workload during 2020



35. It was reported that a PHE coordinated study in relation to water systems carried out as the UK moved out of lockdown revealed that a significant number of food business operators and other businesses do not have water safety management systems capable to mitigate against Legionella.

National Food Studies

36. Members noted that PHE are currently carrying out 2 national studies on: bagged salad and reformulated chicken.

37. The group noted the findings of the following studies carried out by PHE.

(a) Study 64: Ready-to-eat pastry-based foods from catering and retail premises.

38. This study was performed in 2018 aimed to assess the microbiological safety of foods that had been associated with *Listeria monocytogenes* contamination (pies), and to assess the overall quality of pastry-based products. Samples were from catering and retail premises and were ready-to-eat (RTE) pastry-based foods that were either hot held, stored in chilled cabinets or at ambient.

39. Overall, only 58 (2.6%) out of the 2,240 samples tested were found to be unsatisfactory. Unsatisfactory results were obtained from 23 samples due to high levels of *Enterobacteriaceae,* eight due to *Escherichia coli,* ten due to *Bacillus cereus* and the remaining 17 due to high aerobic colony counts. *Listeria monocytogenes* was detected in 17 (0.8%) samples and other *Listeria* species in 25 (1%) all at low levels (detected in 25g but at <20 cfu/g

(b) Study 67: Vacuum/Modified atmosphere packed RTE food and swabs

40. This study aimed to assess the microbiological quality of vacuum packed/modified atmosphere packed foods, as well as swabs from processing areas and equipment. Previous studies covered their use for RTE sliced meats only and therefore this study aimed to look at all types of RTE foods that are packed in this way including swab data from the machines themselves

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41. 518 ready-to-eat (RTE) vacuum packed/modified atmosphere foods and 551 swabs were taken between April 2019 and March 2020. Amongst the foods, 40% were collected from butchers, 6% from other retail establishments, 18% from catering and the remaining 36% from other establishments including manufacturing. Fifty two percent of the foods were cooked meats. For the swabs, 41% were collected from butchers, 6% from other retail establishments, 25% from catering and the remaining 28% from other establishments including manufacturing. Using the HPA ready-to-eat guidelines (2009), 77 (15%) of the food samples were interpreted as unsatisfactory due to elevated levels of indicator organisms (*E. coli*, Enterobactereaceae, *Listeria* species or aerobic colony counts): no unsatisfactory levels of pathogens were detected. Amongst the swabs, 17% were interpreted as giving unsatisfactory results due to the presence of coagulase positive staphylococci or *C. perfringens* (2 and 5 samples respectively), *E. coli* (2 samples) or Enterobacteriaceae (95 samples).

(c) Study 68: An Assessment of the Microbiological Safety and Quality of Raw Milk Cheese

42. Cheese is generally considered a safe and nutritious food. However, foodborne illnesses have been linked to cheese consumption in many countries, particularly raw milk cheeses with high moisture content. The safety of raw milk cheese is dependent upon a range of hurdles that influence the presence, growth, survival and inactivation of pathogenic microorganisms. The aim of this study was therefore to gain further data on the prevalence of pathogens and bacterial indicators of poor hygiene in raw milk cheese in order to inform future risk assessments.

43. In total, 629 cheese samples were collected by Environmental Health Practitioners between April 2019 and March 2020 from retailers (513 samples), catering premises (49), wholesalers (11) and manufacturers (56). These included 304 samples described as hard cheese, 212 soft, 77 blue, 20 semi-hard, 9 semi-soft, 5 fresh and 2 not specified. The majority were made using cow's milk (502; 80%), with 86 (14%) made from sheep's milk, 31 (5%) from goat's and the remainder from mixed milk types (5), buffalo (1) or not specified (5). Samples included 18 different countries of origin, with the majority of samples originating from either the UK (252; 40%) or France (222; 35%).

44. Ten samples (2%) gave positive results for the presence of *stx* genes (two blue, four hard and four soft cheeses, all made from cow's milk), but STEC was only isolated from one of these. This was an *E. coli* O181 (*stx* 1a/2a; *eae* negative), and was isolated from a hard cheese collected from a retailer. Another sample of the same brand of cheese, collected at the producer, gave a positive *stx* result by PCR but STEC was not isolated. In this sample, the indicator *E. coli* level was elevated (6,900 cfu/g) which may have made isolation more difficult. *Salmonella* was not detected in any samples. *Listeria monocytogenes* was present at an unsatisfactory / potentially hazardous level of greater than 100 cfu/g as specified as unsatisfactory in EC regulation no. 2073/2005 in one sample (a hard goat's cheese). *L. monocytogenes* was detected at levels of <100 cfu/g in two further cheeses, a blue cow's milk cheese and a blue sheep's milk cheese. Other *Listeria* species were detected in 17 samples (3%), of which 5 cheeses had levels of >100 cfu/g (with counts ranging from 140 to 1.7×10^6 cfu/g). Coagulase-positive staphylococci (CPS) were detected at levels of >20 cfu/g in 7 samples (1%), with two of these (a Double Gloucester and Single Gloucester, both from the same producer) giving counts of $>1.0 \times 10^4$ cfu/g. No samples had CPS levels above 1.0×10^5 cfu/g (the upper limit, or M-value, specified in EC regulation no. 2073/2005). Indicator *E. coli* were at levels of <20 cfu/g in 531 samples (84%); between 20 and 1.0×10^3 cfu/g in 50 samples (8%); 1.0×10^3 to 1.0×10^4 in 30 samples (5%); and greater than 1.0×10^4 cfu/g in 21 samples (3%).

45. These data indicate that 78% of raw milk cheeses were of satisfactory microbiological quality, with unsatisfactory levels of pathogens (*L. monocytogenes*) detected in only one sample. The presence of *stx* genes in a small proportion of samples is a concern and requires further investigation to fully understand the significance of these findings.

(d) Study 69 Flour from Retail, Catering and Manufacturing premises

52. Study 69 ran for 3 months from January to April 2020. During this time 846 samples were collected. The samples were tested for the enumeration of *E. coli*, and the presence/absence of both STEC and *Salmonella* in 25 g.

53. The study was curtailed due to the COVID-19 pandemic because of lack of availability of flour at retail and stopping of routine sampling by local authorities. However, useful data which has been hitherto unavailable was obtained. Samples were obtained from 40 different countries, as well as 252 which did not specify a country. STEC were detected by PCR in 10 (1%) samples, and this group of bacteria were isolates in seven of these, one of which was an O26 which can be highly pathogenic and capable of causing haemolytic uraemic syndrome. Four (0.5%) samples showed levels of *E. coli* at >100 cfu/g and *Salmonella enterica* serovar Newport was isolated from one sample. WGS showed that the *S*. Newport was of the same type as that isolated from a clinical case of salmonellosis earlier in 2020: no genetic matches to patient isolates were detected in any of the STEC isolates.

Papers published/submitted to peer reviewed journals including data on food monitoring/surveillance and/or outbreaks of foodborne disease

54. EFIG was provided with an overview of papers published/submitted for peer review. See Annex A.

Food Surveillance in Scotland

Co-ordinated Food Sampling Programme in Scotland 2020/21

55. The group noted that in 2020 Food Standards Scotland (FSS) is again funding the sampling of food on retail sale to test for microbiological and chemical priorities in their Local Authority sampling grants programme for 2020/21. The sampling will be undertaken by Local Authorities from July/August 2020 until 31 March 2021. However, it was reported that there has been a lack of sampling across Scotland due to Local Authority resources directed to the Covid response. The 14 priority areas being targeted are outlined at Annex A.

Survey of minced meat at retail

56. The group were updated on FSS's ongoing survey of minced meat (a one-year microbiological survey of minced beef on retail sale in Scotland) that started January 2019. This project is contracted to Scotland's Rural College to undertake a survey to generate baseline data on pathogens and hygiene indicator organisms present in beef mince on retail sale in Scotland.

57. A total of 1009 minced beef samples were collected from randomly selected retailers across a range of geographic locations in Scotland. These samples

were analysed for a range of microbiological pathogens (STEC (including *E. coli* O157 and non-O157), *Campylobacter* and *Salmonella*) and hygiene indicator organisms (ACC and generic *E. coli*).

58. Covid-19 has delayed the completion of this project. Report is expected to be published at the end of 2020.

Food Surveillance in Wales

59. Public Health Wales food surveillance activities have been affected by Covid-19. It was reported that majority of Environmental Health Officers and food laboratory personnel have been moved to Covid-19 related roles.

Impact of COVID-19 on the food chain and food surveillance figures

60. EFIG had a general discussion on the impact of Covid-19 on the food chain and food surveillance. Public Health Scotland remarked that the number of gastro-intestinal infections in Scotland dropped dramatically in Scotland during lockdown. However, a change was observed after lockdown particularly in the summer months with the improved weather condition. It was reported that the drop in *E.coli* figures was not significant although a slight change in the distribution in O157 and non O157 was highlighted. Non O157 figures have been higher than in previously years. Public Health Wales confirmed that the situation in Wales is similar to Scotland. It was noted that sample submissions went down considerably during lockdown and are now increasing although these are not yet at normal levels.

61. PHE confirmed that the situation in England concerning number of submissions was similar to Scotland and Wales. The significant drop in reported *Salmonella* infections was highlighted. It was suggested that drastic reduction in travel related cases may be one of the reasons. Although this is now picking up with travel associated cases (*S.* Enteritdis) linked to travel to Turkey. Extremely low levels of reported norovirus cases was also underlined. It was recognised that resources diverted to Covid-19 has had a significant impact on food surveillance figures (see Figure 8).

Estimating the burden of gastrointestinal disease in Scotland (*Salmonella* linkage data)

62. EFIG received a presentation on the provisional findings of the above study in relation to *Salmonella.* The overall aim of the study is to link laboratory data (including demographic information) for all confirmed cases of *Campylobacter, Salmonella,* STEC*, Shigella, Listeria,* Hepatitis E*,* Hepatitis A*, Cryptosporidium* & *Giardia* to deprivation, hospitalisation, mortality, cancer and prescribing data to estimate the burden of IID by pathogen, and determine risk factors & clinical outcomes.

Antimicrobial resistance

63. The group noted the update on AMR provided by the FSA (information paper ACM/1343 refers) which includes information on the FSA's surveillance and research activities in this area.

Action

64. ACMSF Members are invited to comment on the recent trends in animal and human data and other subjects discussed by EFIG at their October 2020 meeting.

Secretariat
October 2020

Annex A

Papers published/submitted to peer reviewed journals including data on food monitoring/surveillance and/or outbreaks of foodborne disease.

- Babacan O, Harris SA, Pinho RM, Hedges A, Jørgensen F, Corry JEL. Factors Affecting the Species of Campylobacter Colonizing Chickens Reared for Meat. J Appl Microbiol 2020. Online ahead of print. DOI: 10.1111/jam.14651
- Byrne L, Kaindama L, Bentley M, Jenkins C, Aird H, Oliver I, Paranthaman K, Incident Management Team. Investigation into a national outbreak of STEC O157:H7 associated with frozen beef burgers, UK, 2017. Epidemiol Infect. 2020 Jul 16:1-23. Online ahead of print. doi: 10.1017/S0950268820001582.
- Kenyon J, Inns T, Aird H, Swift C, Astbury J, Forester E, Decraene V. *Campylobacter* outbreak associated with raw drinking milk, North West England, 2016. *Epidemiol Infect*. 2020;148:e13. doi:10.1017/S0950268820000096.
- McLauchlin J, Grant KA, Amar CFL. A review of human foodborne listeriosis in England and Wales, 1981 to 2015. Epidemiol Infect 2020; 148: e54, 1-14. doi: 10.1017/S0950268820000473
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Annex B

Co-ordinated Food Sampling Programme in Scotland 2020/21

Food Standards Scotland sampling of food on retail sale to test for microbiological and chemical priorities. Sampling undertaken by Local Authorities from July/August 2020 until 31 March 2021. The 14 priority areas being targeted are:

Priority	Description	Analysis Required
1	Dried spices and spice mixes	Salmonella
2	Ready-to-eat charcuterie meat products	Salmonella and Listeria monocytogenes
3	Packaged leafy greens	Salmonella, E.coli STEC
4	Chilled, whole chicken	Campylobacter enumeration
5	Eggs	Salmonella
6	Ready to eat meals	Hygiene indicators, E. coli, Listeria monocytogenes, Salmonella, S. aureus, B. cereus
7	Oat products	Fusarium mycotoxins –T2 & HT2
8	Grain-based ‘milks’	Fusarium mycotoxins – DON, ZON, T2 & HT2
9	Tree-nut based ‘milks’	Aflatoxins B1, B2, G1, & G2 and cyanide
10	Dry spices and spice mixes	Aflatoxin B1, B2, G1, & G2
11	Lamb dishes	Meat Speciation
12	Fish dishes	Fish Speciation
13	Gluten-free cereal and cereal bar products and cakes	Gluten
14	Dairy-free plant-based ‘milk’ drink products	Milk proteins (casein)
15	Dairy-free meals	Milk proteins (casein)