MINUTES OF THE NINETY-FIRST MEETING OF THE ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD HELD ON 25 JANUARY 2018 AT 10.00 AM AT THE MANCHESTER CONFERENCE CENTRE, SACKVILLE STREET, MANCHESTER, M1 3BB.

Present

Chair: Prof David McDowell (Acting Chair of ACMSF)

Members: Dr Gary Barker
Dr Roy Betts
Mrs Joy Dobbs
Dr Gauri Godbole
Mrs Emma Hill
Prof Miren Iturriza-Gómara
Mr Alec Kyriakides
Miss Heather Lawson
Dr Gwen Lowe
Dr Rohini Manuel
Prof Peter McClure
Mr David Nuttall
Dr Dan Tucker
Mrs Ann Williams

Departmental representative: Mr Steve Wyllie (Defra)

Secretariat: Dr Paul Cook
Dr Manisha Upadhyay
Mr Adekunle Adeoye
Ms Sarah Butler

Presenters: Prof Sarah O'Brien, Ms Alice Rayner

Members of the public: see Annex 1.

1. Chair's introduction

1.1 The Chair welcomed members of the committee and members of the public to the 91st meeting of the ACMSF. He also welcomed Prof Sarah O'Brien (retired as ACMSF Chair, but still chairing the *Ad Hoc* Group on *Campylobacter*) who would be presenting agenda item 6, and Ms Alice Rayner (Food Standard Agency's Analytics Unit), who would be presenting item 9. Two members were attending their first meeting: Dr Gauri Godbole, appointed for her expertise in medical microbiology, and Mrs Ann Williams, appointed as consumer representative. They introduced themselves to the Committee.

1.2 Papers for the meeting had been made available on the Committee's website, except for ACM/1254a, the draft *Campylobacter* Report, and Annex D of ACM/1255, which were for members' use only.

2. Apologies for absence

2.1 Apologies for absence were received from Prof Bob Adak.

3. Declaration of interests

3.1 The Chair reminded Members to declare any interests they might have before each Agenda item, or during the course of the meeting.

4. Minutes of the 90th meeting (ACM/MIN/90)

4.1 Members approved the minutes of the last meeting as a correct record. The Secretariat would post these on the website.

5. Matters arising

5.1 Paper ACM/1253 provided a summary of actions on matters arising from previous meetings. Dr Paul Cook informed members that the minutes of the 89th meeting had been amended and placed on the website.

5.2 With respect to the item on changes to plant protection product and biocide maximum residue limits: potential impact on food safety (exploring the availability of evidence in relation to microbiological food safety that can be employed by the FSA to underpin its position in its negotiation with other Member States): it was noted that the investigation to consider what types of data could be available that might show that changes are occurring in process hygiene control systems had been unsuccessful . Paul Cook informed members that as this subject is cross cutting (considering both microbiological and chemical risks), a meeting had been proposed between the Chair of the Expert Committee on Pesticides Residues in Food and the ACMSF Acting Chair. A member requested for increased pace in the consideration of this subject because of the challenge these changes are presenting to industry from a microbiological food safety perspective. A member shared that recent material he had seen on this subject revealed that there was competition between chemical and microbiological risk and that chemical risk appears to have been given precedence. Members endorsed the proposed joined-up approach in tackling the complexities of the issues relating to these new and proposed additional rules.

5.3 Epidemiology of Foodborne Infections Group updates: members' request for human data presentations to be accompanied by relevant information that can provide clear understanding was actioned via paper ACM/1267.

6. First Draft of ACMSF Report on *Campylobacter*

6.1 Members had been provided with a copy of the draft report and a cover paper summarising its contents. The Chair invited Prof O'Brien, Chair of the *Ad Hoc* Group on *Campylobacter*, to introduce the draft report (ACM/1254a).

6.2 Prof O'Brien thanked members of the *Ad Hoc* Group who had drafted the report, including several co-opted members; Manisha Upadhyay and Sarah Butler who helped get the draft into a fit state for presentation at the meeting; and Prof McDowell who had created an Endnote library for the references. The focus of the report was on what had happened in the last 10 years since the Committee's last report on *Campylobacter*.

6.3 The following comments were made during the discussion:

- A member suggested that duck, which is traditionally served pink, should be included in the catering section. EHOs were sometimes unsure how to advise food businesses on this practice. Members of the Group responded that pink duck had not featured in outbreak data or sporadic cases, but agreed that it could be acknowledged in the report as a potential risk. One of the ACMSF members was aware of a study on pink duck that was being carried out with PHE, and offered to feed in any relevant information that became available. **Action: Joy Dobbs, David McDowell, Ann Williams to suggest a few lines for this section acknowledging risk associated with eating pink duck. The secretariat to check whether there is information from the PHE study which could be included in the report.**

- A comment was made that a lot of the epidemiology chapter was represented as fact, but the number of people submitting a sample is very variable depending on whether they have access to a GP; follow up of cases is also variable across the UK, and had changed over the last 10 years from face-to-face interview to postal or telephone contact. There needed to be a *caveat* about what had changed in terms of capturing confirmed *Campylobacter* cases and the inherent bias in that, and also "publication bias" because published research tends to focus on the larger outbreaks and smaller ones are not taken into account. Prof O'Brien agreed that surveillance data did not reflect disease in the population. She commented that one of the problems was that a lot of the information on follow-up was anecdotal, and she would welcome information from the member concerned, that could be quoted in the report. **Action: Secretariat to request this information and send to Sarah O'Brien for inclusion in the chapter.**

- There had been a change to more sensitive laboratory testing, which may mean that in future years more cases would be detected. It may be worth mentioning this. **Action: Sarah O'Brien to add a small piece of text in chapter to include this.**

- There were a number of places in the report where heat was mentioned, including recent research which might indicate an increased heat resistance in *Campylobacter* in some circumstances, but elsewhere in the report it mentions various cooking processes and that cooking for 70^{o}C for 2 minutes produces a safe product. It was important that the report did not give 2 contradictory messages: one warning of possible increased heat resistance and another saying that our usual advice of 70^{o}C for 2 minutes was safe. It was noted that the research papers quoted were more in validation of a cooking process rather

than in fundamental work on *D* values of *Campylobacter*. A member of the *Ad Hoc* Group responded that whilst heat resistance needed further exploration there was not sufficient evidence to say that the advice of cooking for 70^{o}C for 2 minutes needed to change. **Action: Secretariat to liaise with the author of the chapter about putting the heat resistance text into context in the report.**

- It was suggested that the data in Chapter 3 should be updated in line with the EFIG paper that had been circulated to members. Prof O'Brien confirmed that the data had not been available when drafting the chapter, but it would be updated along with the data on raw milk. **Action: Sarah O'Brien to include data available in EFIG paper into chapter.**

- A member commented that it would be helpful to include a definition of DALYs and QALYs as a way of measuring illness burden. **Action: Sarah O'Brien.**

- Chapter 7. A member pointed out that the information on raw fruit and vegetables showed there had been a 10% increase in consumption between 2007 and 2015; this was a step-change in consumer behaviour. However, the data in the report mainly pre-dated that change and the data was not from UK-based surveys. This change in behaviour should be highlighted and the Group should consider making a recommendation for further work on this. **Action: Peter McClure.**

- Chapter 9: "how new knowledge influences risk assessment". A member pointed out that from Chapter 2 it was clear that although a vast amount of whole genome sequence (WGS) data on *Campylobacter* had been collected, this did not seem to have influenced risk assessment although it was used in source attribution. He asked whether the full value of research into sequencing *Campylobacter* was being achieved, as it was not evident in chapter 9. Prof O'Brien agreed that no-one really knew how best to use WGS and although there was a lot of activity on source attribution this hadn't fed into quantitative microbiological risk assessment. A research recommendation might be needed on this. **Action: Working group to add this as a general recommendation to chapter 9.** The Chair added that the potential of using WGS had been identified from a previous horizon scanning exercise. Dr Cook agreed that WGS had not had an impact on risk assessment yet, but it is now being used in relation to identifying other types of data eg AMR genes. The FSA was involved in some work at Oxford University focussing on MLST in *Campylobacter* and the sequencing would also provide information on changes on ciprofloxacin resistance in *Campylobacter* over time.
- Another member said they had found Chapter 9 difficult to read and was not sure if the title was the right one. **Action: Working group to review and discuss at next TC/meeting.**

6.4 As a general comment, a member of the *Ad Hoc* Group said that this was the first time she had been involved in contributing to an ACMSF report and she had been struck by the enormous amount of work involved and the time members gave, for which they deserved more credit. She added that when the Scientific Advisory Committees were reviewed, the ACMSF was seen to be fully doing its job including

the production of these reports, and there should be a way of giving more recognition to the reports and the members who had written them.

6.5 In conclusion, the Chair thanked members for their comments which would help the *Ad Hoc* Group in completing their work on the report.

7. ACMSF fixed-term task and finish group on antimicrobial resistance

7.1 The Chair reminded members that they were informed of the proposal to establish a fixed-term task and finish group on antimicrobial resistance to consider specific issues relating to AMR in the food chain at the January 2017 plenary meeting. The group was comprised of the existing ACMSF AMR working group and additional members co-opted for their expertise. It was set up in May 2017 and met a total of five times.

7.2 The Chair, who also chairs the group, introduced the group's report (paper ACM/1255A). He explained that in drafting the above report the group developed a food chain focussed AMR systems map taking into account a wider AMR systems map developed by Department of Health, Public Health England, Department for Environment, Food and Rural Affairs and the Veterinary Medicines Directorate in 2014. This map guided the discussions and activities of the group, and identified eight main reservoirs with a potential AMR impact relevant to FSA, which were subsequently reviewed within the group's report. As part of this review process, the group also received presentations on antibiotic usage and AMR from UK food animal production sectors poultry meat, pigs, dairy and beef cattle, sheep). The fish, gamebird and egg sectors were not formally considered by the group.

7.3 The eight main reservoirs of relevance to FSA research questions were identified as:

- Pasture & Crops
- Amendments
- Food Producing Animals
- Animal Feed
- Abattoir & Carcass Processing
- Food Processing
- Human Food
- Humans

7.4 The Chair underlined that given the fixed term nature of this task, the group focussed on identifying research priorities of specific relevance to the FSA, rather than generating another comprehensive literature review of the expanding literature in this area.

7.5 Members were asked to review the report and indicate whether the key areas have been covered by the expert group so that the report can be passed to the FSA Board for consideration.

7.6 Although it was noted that the report was not as in-depth as the *Campylobacter* in the food chain report members commended the fixed term task and finish group for the output of their deliberations as reflected in paper ACM/1255a particularly for being

able produce it in a short space of time. Specific remarks made by members in the ensuing discussions include:

7.7 Section on secondary food processing: drawing attention to the sections of text that specifically refer to the "considerable evidence that secondary food processing environments and activities can support, and at times encourage, the development, persistence and dissemination of AMR bacteria and genes." This statement appears in:

- paragraph 14, where the following sentences refer to a number of different processing steps, including cooking, it was pointed out that this may be interpreted that any of these could contribute to development, persistence and dissemination of AMR bacteria and genes;
- paragraph 65, where following paragraphs describe various forms of secondary processing activities, also including cooking.
- There is no detail provided of the "considerable evidence". This should be included, to help support the statement. **Action: Fixed-Term T&F Group: (If appropriate, the report should cite studies that contribute to this considerable evidence)**

7.8 Amongst the studies constituting this "considerable evidence", it would be anticipated that there may be specific secondary food processing activities that are shown to be more likely to lead to development, persistence and dissemination of AMR bacteria and genes. In paragraph 75, it is recommended that the FSA should commission research on "the impact of currently used sub-lethal food processing technologies….". This was queried as it was pointed out that in theory, this could include a large number of processes. **Action: The Fixed-Term T&F Group to consider appropriate terminology (e.g. define what is meant by "sub-lethal" – sub-lethal to what?) and how the various activities referred to are prioritised.** The member who raised this said, it is important to bear in mind here that most processes implementing "bacteriostatic activity" will have a control step in place for destroying infectious vegetative pathogens such as *Salmonella*, that have a low infectious dose. The bacteriostatic activity is usually targeting sporeformers and/or spoilage organisms, where there are critical levels required before safety or spoilage become a concern. The report refers to situations where the bacteriostatic stresses are reduced or removed, but if this occurs, then foods would spoil or become a safety concern.

7.9 Paragraph 73 refers to the observation that it is becoming increasingly clear that sublethal stresses trigger defence/repair mechanisms and that in foods stored or processed under inadequate bacteriostatic conditions, sublethally damaged populations constitute hotspots in development and dissemination of AMR. The Poole ref cited (Poole, 2012) as evidence for sublethal stresses triggering defence/repair mechanisms also considered whether these stresses are likely to lead to AMR development. **Action: Fixed-Term T&F Group to consider appropriate material in the cited paper that could be reflected in the report.**

7.10 It was suggested that the Amachawadi *et al* (2015) paper refers specifically to use of heavy metals in animal feeds and this could also be mentioned. **Action: Fixed-Term T&F Group.**

7.11 An editing point drawn to the Chair's attention was where the paper mentions there's considerable evidence that secondary process can support AMR (paragraph 14) but later on in section (paragraph 23) stated that there's a considerable lack of data in relation to AMR in UK produced and imported foods. The Chair explained that there is a lot of information relating to problems of slow growth and stress and its effects, but nearly all of it is in clinical terms and health service activities but very little in terms of food processing activities. There is evidence in principle but we haven't really looked in food. **Action Action: Fixed-Term T&F Chair to check and resolve this apparent dichotomy in the paper.**

7.12 A couple of the sentences in the animal feed section appear to be contradictory. Para 36, it says "The sources of such AMR pathogens can be multiple, but animal feed has been identified as an important reservoir". However, in para 37, it says, "There is a paucity of information regarding AMR in animal feed (residues and resistance in bacteria". **Action: Fixed-Term T&F Group to address this apparent inconsistency.**

7.13 A member commented that the ToR mentioned that reducing the uncertainty relating to linkage between various animal and human pathways and AMR is not as simple as breaking up into 8 reservoirs and addressing uncertainty in each of these as this does not necessarily control uncertainty as a whole. The Chair explained that the intention was that the group looked at food focusses rather than complicated/non-complicated maps and the group took a conscious decision to prune out some of the complexity to focus on things that were of importance to the FSA within the timescale they were given. It was pointed out that the food area is hampered by lack of data meaning that some of these gaps need filling before we can look at the issue in broader terms.

7.14 In relation to the above point a member suggested including a bullet point in the "general conclusions and overarching themes identified by group" emphasising the overall complexity of AMR as it interlinks with other areas not directly linked to the food chain**. .** Dr Cook (ACMSF Scientific Secretary) mentioned that the diagram illustrates the interconnection of the all AMR reservoirs and that what the group's paper is seeking to do is to see where the food chain fits into the AMR picture to possibly try to fill the AMR gap in relation to food. **Action: Fixed-Term T&F to include a bullet in overarching themes section to capture the overall complexity of AMR and where food fits in.**

7.15 General observations made on AMR in the food chain include: the FSA has started to address the issue of AMR data gap (one of its surveys that looked at AMR in retail meat, will be published in Spring 2018); recent data from industry is showing a dramatic reduction in the amount of antibiotics used in the livestock industry and sectors in the livestock industry have antibiotics stewardship programmes. It was expressed by the ACMSF Scientific Secretary that the expectation from the fixed-term task and group is for members to identify areas of how to plug data gaps in relation to the food chain to be able to understand the relationship between usage and the consequence in terms of contamination of food. with AMR bacteria.

7.16 In conclusion the Chair thanks the fixed-term task and finish group (particularly the co-opted members) for their hard work and dedication in being able to produce a robust report for the FSA to consider. The Chair indicated to members that once the

suggested amendments has been reflected on the paper and it is finalised it will be passed to the FSA Board for consideration.

8. Raw drinking milk (and certain raw milk products)

8.1 Dr Paul Cook introduced paper (ACM/1256) explaining that this was an interim assessment of whether the microbiological risk from consumption of raw drinking milk (RDM) and certain products, made in the UK, had changed since 2015. In July 2015, following a policy review, the FSA Board had agreed with recommendations to continue with existing controls governing the sale of RDM. The paper reported that in the last 12-18 months there had been a notable increase in the producers of RDM and also a small but notablenumber of outbreaks associated with it.

8.2 Dr Cook explained that the Board had asked for further information on the microbiological evidence, economic information about the market sector, social science aspects on the types of products and perceptions on RDM, to inform further discussions they would be having on this subject in March. The FSA's Microbiological Risk Assessment Branch had gathered information, contained in the paper, on consumption of RDM and certain products made from it, focussing on newly registered producers to see if they may be more likely to produce unsafe products than more established producers, whether there has been a change in the profile of vulnerable groups becoming ill and whether there have been any changes in the pathogens involved in infections associated with drinking RDM. Dr Cook emphasised that this was still work in progress and there would be further information still being gathered, which would be incorporated into the paper in due course. He summarised the main points in the paper and asked Members for their views on the key issues and whether they could suggest any other types of data analysis that might help with the assessment.

8.3 Members welcomed the paper and made the following comments.

8.4 The paper would benefit from a concise summary to include the most important points. Suggestions for points that should be highlighted were:

- There has been an increase in sales and a 10-fold increase in the volume produced, so there has been an increase in exposure, including vulnerable consumers, especially children. The majority of outbreaks involve children, some under the age of 5. This needs to come out more strongly in the paper.

- The hygiene ratings are not a good indicator of the safety of the milk. It would be helpful to know the hygiene rating of premises at the time of outbreaks. One of the outbreaks was in Wales (Gwen Lowe declared an interest here) where from the OCT it was learned that the premises had the highest level of hygiene rating and this had given cases a false sense of security because they interpreted it as an indication of the safety of the raw milk that was being consumed rather than about the cleanliness of the premises.

- There have been 10 incidents of actual or potential cause of harm to humans in the last year alone – this is a sea change.

- In the section on vending machines and internet sales, another uncontrolled, unregulated step that could be highlighted was the additional time delay in getting the milk to the producer. It would be helpful to have a comment about how long bacterial survival of *Campylobacter*, *E. coli* O157 or STECs and *Salmonella* in milk in order to understand the implications of the data.

- 59% of milk samples were satisfactory, but that leaves 41% *not* satisfactory and 1% of those were known to be harmful. The emphasis should be on the latter 2 figures.

8.5 Members were not surprised that the increase in sales and consumption has led to increased outbreaks. Is there anything else that has happened in the last few years from a processing perspective that has led to an increased risk of contamination?

8.6 Several members commented on the dis-connect between routine process hygiene monitoring and the consequences that were being seen. Testing does not provide the relevant information. It was mentioned that in the report of an outbreak in the US in 2014, inspectors went into the premises during the outbreak and found nothing, gave the certificate back to the producer to re-start manufacturing, but the outbreak continued. Is the routine sampling being done at the right point in time relative to point of sale? What is the shelf life of products and is there lack of regulation on this? Has there been a change in the dairy hygiene inspection visits? Are the things considered in the inspection process the correct ones? Were there any other risk markers that may be associated with these outbreaks other than the microbiological sampling? Dr Cook confirmed that further information had been sought from the Dairy Hygiene Inspectors.

8.7 A member commented that a typical small dairy would produce about 100,000 litres a year whereas the biggest dairies would produce several hundred, million litres. One of the safety factors for small scale dairies is pooling: the more milk you mix the less likely it is to have significant contamination, so one area of data collection would be to ask what is the size of the bulk tank, because the pooling factor from the tank might be a significant piece of information.

8.8 One of the changes that was missing in the paper was mention of the increase of the overt promotion of raw milk advocating the health benefits of consumption. A member commented that the under-5's don't buy milk: their parents do. They may think there are health benefits, but if it was labelled "this may contain poo" they might think differently! The cleanliness of the dairy is not the point, it is the actual raw milk that is the issue. If you are buying it as a health product, to help your child, when you find out how contaminated it is, most people would not take that risk.

8.9 Members agreed that there was a need to do some sort of social study to understand why some people choose to drink raw drinking milk. The Food and You study may be including raw milk as a new category, but there needs to be more focussed work among people who *are* drinking it. In terms of what the Board is going to do, should they be taking a stronger line than they have in the past? A member had found a piece in The Telegraph which stated that "there have been no reported outbreaks since 2002". He stressed that the FSA needed to publicise the true picture.

8.10 A member asked about labelling of raw milk products in terms of shelf life and whether it was safe to freeze, and was informed that the FSA was consulting on

possible changes to the wording of the health warning on labels. Members recognised that even if the labelling is clear, there is a consumer group who is making a lifestyle choice and there needs to be a way of communicating the risk to these groups using different kinds of messaging rather than the standard advice given in the past. However, it was also pointed out that raw milk may be drunk by a range of people, including people who encountered it at shows who would not normally have chosen to drink it if they had been given more information. Another group to be considered were immune-suppressed patients who in the past may have been given special diets. As most of the foods produced in this country are now deemed to be safe for these patients, this may need to be looked at again.

8.11 A member asked how many of the producers quoted in the Willis paper were new producers. Dr Cook said he did not know but would follow this up. It was pointed out that a lot of the data doesn't get reported to PHE, so the data might be skewed.

8.12 Looked at in one dimension it could be said that the risk is the same but the exposure has changed, but looked at using a matrix in 2 dimensions, eg comparing frequency with severity, there would clearly be a difference between 2017 and 2014.

8.13 In summing up the discussion, the Chair said that it was noted that there have been qualitative and quantitative changes in the system. It was hoped that members' suggestions would be of use in the next stages of the paper. He commented that this was an example of where the committee could feed in useful comments when it is consulted at an appropriately early stage.

8.14 Dr Cook thanked members for their useful suggestions. The paper would be developed further and it may be that members would be asked for further information when this had been done. **Action: FSA to revise the paper for the next meeting.**

9. Food and You Survey: Findings from Wave 4

9.1 Following the presentation the Committee received at its January 2015 meeting on the findings of Wave 3 of the FSA's Food and You survey (FSA's flagship social survey of consumers' reported behaviours, attitudes and knowledge and relating to food safety and other associated topics), members asked to be updated on Wave 4. Alice Rayner (FSA SSRU) was invited to present the findings of Food and You Wave 4. She reminded the Committee that the survey uses a random-probability sampling methodology to provide a robust representation of the UK population (excluding Scotland) aged 16 and above living in private households.

9.2 The specific objectives of Food and You Wave 4 were to:

- Explore public understanding of, and engagement with, the FSA's aim of improving food safety
- Identify specific target groups for future interventions (e.g. those most at risk or those among whom FSA policies and initiatives are likely to have the greatest impact)
- Describe the public attitudes towards food production and the food system
- Monitor changes over time (compared with data from Waves 1-3 or from other sources) of reported attitudes and behaviour
- Broaden the evidence base and develop indicators to assess progress in fulfilling the FSA's strategic plans, aims and targets

9.3 This survey involved 3118 interviews across England, Wales and Northern Ireland, conducted from May to September 2016, among a representative sample of adults aged 16 and over in the combined country report. The topics it covered: household information, eating habits, shopping, food safety, food issues, health, healthy eating (in Northern Ireland only) and general demographic information. It was underlined that although efforts have been made to maintain continuity in the questions asked across the waves, the survey has evolved with the changing responsibilities and priorities of the FSA.

9.4 Cooking, shopping and eating: the majority of respondents (88%) reported having at least some responsibility for cooking or preparing food in the home, with half (49%) saying they were responsible for all or most of this. Women were more likely than men to have all the responsibility (67% compared with 30%). Women were also more likely to cook for themselves or others at least five days a week (80% compared with 52% of men). Nine per cent of men and 2% of women said they cooked less than once a month or never.

9.5 The majority of respondents (58%) reported eating all breakfast and main evening meals at home in the last seven days. There was greater variability in the proportion of respondents reporting eating lunch at home, with 30% having eaten it at home on all days in the past week and 37% reporting having eaten lunch at home twice or less. The frequency of eating each meal at home was similar to that reported in the previous waves.

9.6 Allergy and intolerance: respondents who had experienced an adverse reaction or avoided foods due to the reaction they might cause were asked if they had experienced a reaction to a list of 14 foods. These 14 foods are allergens listed in the EU Food Information for Consumers Regulation, which must always be labelled in pre-packed and non-prepacked foods when used as an ingredient or processing aid. Of those who reported an adverse reaction or avoided certain foods, the most common foods that people reported having an adverse reaction to were cows' milk and cows' milk products (22%), cereals containing gluten (13%) and molluscs e.g. mussels, oysters (11%). Forty-three per cent reported having an adverse reaction to 'other' (not listed) foods.

9.7 Food security: 'Food security' explained to mean having access at all times to enough food that is both sufficiently varied and culturally appropriate to sustain an active and healthy life. The majority (83%) of respondents reported that their household had never worried in the last 12 months about running out of food before there was money to buy more. 89% said that in the last 12 months they had never experienced food running out and they did not have money to get more. A third (33%) of respondents aged 16 to 24 said they often or sometimes worried that the household food would run out before there was money to buy more compared with 6-7% of those aged 65 and over. A similar proportion (34%) of those in the lowest income quartile said they often or sometimes worried about running out of food before there was money to buy more, compared with 7% of those in the highest quartile. A higher proportion of respondents who were unemployed (47%) or categorised as having an 'other working status' 14 (34%) worried that the household food would run out before there was money to buy more compared with those who were in work (16%) or retired

(7%). Similar patterns were seen with reported instances of food running out and being able to afford balanced meals.

9.8 Levels of food security varied across other subgroups. Sixteen per cent of those aged 16 to 24 and 11% of those aged 25 to 34 lived in food insecure households compared with 1%–2% of those aged 65 and over. A quarter (23%) of those in the lowest income quartile lived in food insecure households compared with 3% in the highest quartile. Similarly, 35% of respondents who were unemployed and 18% with an 'other' working status14 lived in food insecure households compared with 7% of those in work and 2% of those who had retired.

9.9 Food safety at in the home (focussed on the index recommended practice (the 4 Cs): respondents in Northern Ireland had the highest average IRP score (72) compared with England (67) and Wales (69). Chilling food 58% reported that they defrosted meat/fish by leaving it at room temperature, not in line with FSA recommendations. Respondents were asked where in the fridge they stored raw meat and poultry. 60% reported that they stored this type of food on the bottom shelf of the fridge.

9.10 Eating outside of home (eating out in the last month): 67% had eaten at a restaurant; 55% had eaten takeaway; 41% had eaten in a café or coffee shop. Respondents in Northern Ireland were less likely to report eating in a pub, bar or nightclub in the past month compared with England and Wales (18% vs 39% and 36%).

9.11 Recognition of Food Hygiene Rating Scheme (FHRS): recognition by country Northern Ireland and Wales 89% and 82% England. Recognition was associated with age: 93% of those age 16 to 34 recognised the images compared with 43% of those aged 75 and over. Recognition of FHRS sticker has increased 34 % in 2012; 68% in 2014 and 83% in 2016.

9.12 Food poisoning: 44% claimed to have ever had food poisoning. Men were more likely than women to report having had food poisoning (47% compared 43%).

9.13 Food production and the food system (food authenticity): confident that food is what it says it is on the label or menu (always 34%; most of the time 52%; rarely/never 3%). Action taken in the past when not confident food was what it said it was on the menu or label.

9.14 Chemicals in food: respondents have low level of understanding about chemicals in food. Almost two thirds (62%) of respondents agreed that they would like more information about what they can personally do to limit the presence of chemicals in food.

9.15 In conclusion, the following points were made:

- Time series data analysis shows changes over time in people's self-reported behaviors and attitudes
- New questions highlight:
  - important insights for FSA's work

  - provide wider insights people's food practices
- Standing questions relating to core parts of the FSA's consumer facing work show a number of good news stories
- However, some questions also point to some areas where future work might be targeted

9.16 It was noted that Wave 5 fieldwork will commence this year, with the report due to be published in 2019.

9.17 A member referring to the non-white ethnicity group (black/Asian/mixed/other) asked if there was a break-down of this grouping. It was confirmed that although data for this group could broken-down, the difficulty with the sample size available for the subsets that make-up this group are so small that is why data has been lumped together (in all the Food and You Surveys) and presented as non-white ethnicity. It was explained that although a small indication could be obtained from the broken-down data the resulting information would be unreliable. However, Joy Dobbs (SSRC ex-officio) indicated that as secondary analysis would be carried on these findings these could be broadened to cover all the Food and You Waves where data relating to non-white ethnicity could pulled out and distilled to look at ethnic differences and any significant revelation.

9.18 As the chapter on food poisoning mentioned throwing food away "I always avoid throwing food away (62% compared with 58% in Wave 3, 52% in Wave 2 and 48% in Wave 1)" a member asked if there was any correlation between the 4Cs (chilling, cooking, cleaning and avoiding cross-contamination) and use-by-date. The response remarked that the findings in this section reveal small correlation which may be suggesting a link in food safety behaviour but the data showed no trend.

9.19 Referring to a news story (on the BBC) on best before dates in autumn 2016, a member asked if data collection for the above survey covered the fourth quarter of 2016 when the story was published. It was confirmed that survey was carried out between May and September 2016.

9.20 As it was acknowledged that there are message resistant groups in the population and understanding why they ignore food safety advice would be useful, there was the suggestion if future surveys could consider questions such as "why don't you like to use "use-by dates" or "why do you still wash your chicken". It was agreed that the suggested questions would be appropriate for focus group settings not for surveys.

9.21 A member mentioned that the issue of use-by dates was discussed at the horizon scanning workshop (that was held a day before the meeting) and there were suggestions on what might be driving families to go beyond the use-by dates. It was noted that the FSA was looking at the current guidance on "use-by dates and best before dates".

9.22 In summarising the Chair thanked Alice Rayner for the presentation and underlined the significance of the Food and You surveys. He mentioned that some of the findings from Wave 4 was helpful in the drafting of the *Campylobacter* report. He stated that as the presentation had covered the top-level overview of the survey

members may wish to go into the full report to drill down into detailed findings of the survey.

10. Epidemiology of Foodborne Infections Group

10.1 The Chair invited Dr Paul Cook to present paper ACM/1258 which summarised the main items from the EFIG meeting which was held on 6 June 2017 and provide a verbal update of the meeting that took place on 17 January 2018. The June update covered the trends in animal and human data for 2016 and animal data trend for first quarter 2017. Animal data (provisional) between January and December 2016 showed that reports of *Salmonella* in livestock fell by 5% in comparison to January – December 2015 and by 8% in comparison to January – December 2014. There were seven reports of *S*. Enteritidis compared with nine during the equivalent period of 2015. Reports of *S*. Typhimurium and the monophasic strain *Salmonella* 4,5,12:i:- increased (by 12% and 18% respectively) during January – December 2016 compared with the equivalent period of 2015, but reports of *Salmonella* 4,12:i:- decreased by 44%. The most commonly reported phage types of *S*. Typhimurium were DT2, DT104 and U288 whilst phage type DT193 was the most commonly reported phage type for both *Salmonella* 4,5,12:i:- and *Salmonella* 4,12:i:-. During January – March 2017 reports of *Salmonella* in livestock increased by 25% compared with January – March 2016 and by 17% compared with the equivalent period of 2015. The increase since 2016 was largely due to an increase in reports from ducks and non-statutory species.

10.2 Provisional *Salmonella* National Control Programme for 2016 showed the UK is well below the EU target prevalence of below 1% for breeding chickens, laying chickens, broiler chickens, breeding turkeys and fattening turkeys.

10.3 Human infection data (key pathogens for 2016): trend in laboratory reports revealed:

9619 reports of non-typhoidal *Salmonella* in 2016, a small increase (1.3%) from the 9492 reported in 2015. An increase in the reporting rate was seen in all constituent countries. Reports of *S.* Enteritidis decreased in the UK, driven primarily by a decrease in cases reported in England; increases were seen in Wales and Scotland from 2015. An increase in the reporting rate of *S.* Typhimurium was seen in 2016 compared to 2015 with an increase of 75 cases. An increase in reporting rate was seen in England and Northern Ireland for the second year, while the reporting rate in Wales and Scotland decreased. England, Wales and Scotland reported more *S.* Enteritidis cases than any other serovar, while Northern Ireland reported more *S*. Typhimurium cases. Scotland reported the largest proportion of *S.* Enteritidis cases compared to all *Salmonella* spp. reported (43%), compared to 37% in Wales, 27% in England and 25% in Northern Ireland. Together *S.* Enteritidis and *S.* Typhimurium constituted 49% of the non-typhoidal *Salmonella* reported in the United Kingdom. In addition to these, *S.* Infantis and *S.* Agona are within the top 10 most commonly identified serovars in all four countries. The top 10 serovars comprised 63% of all reported *Salmonella* infections in England, 71% in Wales, 77% in Northern Ireland.

10.4 In 2016 the serovars with the highest proportion of cases reporting travel prior to infection were *S.* Kentucky and *S.* Stanley (55% reported travel) In 2015 the serovar with the highest proportion reporting travel was also *S.* Kentucky (56%). A greater

proportion of *S.* Enteritidis cases reported travel than *S.* Typhimurium cases (34% versus 17%). A rise in the number of travel associated cases in 2016 was noted. As the reason for this increase was not clear, PHE agreed to consider feasibility of reporting on travel destination information in future reports.

10.5 The reporting rate for *Campylobacter* has decreased in the UK from 96.9 per 100,000 population in 2015 to 90.5 per 100,000 in 2016. The rate of reported *Campylobacter* infections in England over the last decade has decreased to the lowest rate reported since 2008, and remains below the rate observed in Wales and Scotland. Northern Ireland continues to report rates lower than the rest of the United Kingdom (67.9 cases per 100,000 population). It was reported that in England the region with the highest number of reported cases of *Campylobacter* in 2016 was the South East with just over 9000 cases. More male *Campylobacter* cases were reported than female cases (55% vs 45%) in England in 2016.

10.6 Although there was an increase in the number of reported *Listeria monocytogenes* infections in 2016 (15 more cases compared to 2015), the significance of this is difficult to assess because of the small numbers involved.

10.7 Reports of STEC O157 in the UK increased by 84 cases in 2016 compared to 2015 with half of these cases being in England. Increases were seen in all countries other than Scotland, with the largest increase in reporting rate in Northern Ireland where nearly two times more cases were reported in 2016 compared to 2015. Members noted the number of cases detected with the 10 most commonly detected STEC serotypes across the UK in 2016. Serotype O157 is the most common. It was underlined that population incidence was not calculated as serotypes other than O157 are likely to have been under-detected due to current laboratory testing methods. Serotype O26 is the most commonly detected non-O157 serotype in the UK. There was discussion on the number of labs testing for O157 and non-O157.

10.8 In 2016, 48 foodborne outbreaks were reported to eFOSS in England and Wales and to Health Protection Scotland. There were no reported outbreaks in Northern Ireland in 2016. There were 901 laboratory confirmed cases and 117 reported hospitalisations. Eleven national outbreaks were reported. The same number of *Salmonella* outbreaks was reported in 2016 as in 2015, and there were reductions in the number of *Campylobacter* and *C. perfringens* outbreaks. *Salmonella* was the most commonly implicated pathogen (12/48, 25%), however other/unknown pathogens comprised more outbreaks (13/48, 27%). These include ten norovirus outbreaks, one *Staphylococcus aureus* outbreak, one Enteroinvasive *E. coli* outbreak and one outbreak of unknown aetiology. In relation to outbreaks linked to *Campylobacter* it was noted that chicken liver pâté is still an issue. The majority of foodborne outbreaks occurred in the food service sector (34/48, 71%), followed by community (6/48, 13%). Of the food service sector outbreaks, the majority of these occurred in restaurants, pubs and takeaways (25/34, 74%).

10.9 On the outcome of the January 2017 meeting confirmed 7722 reports of non-typhoidal *Salmonella* reported in the first three quarters of 2017, an increase from the 7063 reported in quarters 1-3 2016. The reporting rate for *Campylobacter* increased in the UK from 89.1 per 100,000 population in quarters 1-3 of 2016 to 93.3 per 100,000 in quarters 1-3 in 2017. Every country reported more cases in Q1 – 3 of 2017 than in

the same period for 2016, with the largest increase in reporting rate in Scotland. Members noted trends in England as highlighted in paper ACM/1267 – *Campylobacter* trends England 2017. The breakdown revealed the region with the highest number of reported cases of *Campylobacter* in 2017 was the South East with just over 10,000 cases. The highest reporting rate was also in the South East with 129 cases per 100,000. The second highest reporting rate was in the North East with 125 cases per 100,000 population. The report showed a wide variation in the regions.

10.10 A member queried the number of *Salmonella* cases that have been dropping in previous years which now appears to be on the increase. Although there was a suggestion that the reduction in the number of cases in previous years might have been due to the impact of the NCP there were no clear insight was provided on why the number of cases were increasing. It was agreed that there was merit in teasing out the reasons for these increases.

10.11 The issue of outbreaks in relation to those who had long term illness was raised. Dr Cook stated that the outbreaks mentioned in his update (which originated from PHE) did not include long term sequelae cases. He explained such cases are usually covered in bespoke studies as standalone reports and not routinely considered by EFIG.

10.12 Members noted that a written update for the January 2018 EFIG meeting would be provided to the Committee at the next plenary meeting.

11. Output from horizon scanning workshop

11.1 Members had engaged in a horizon scanning workshop on the previous day and the Secretariat had produced a PowerPoint summary of the main points from the discussions. The Chair explained that there had not been time to rank the topics, but the summary would be worked into a paper which would be circulated to members to seek further comments. **Action: Secretariat**

12. Dates of future meetings

Members were informed that it was likely that the next meeting of the committee, provisionally set at 28 June, would be moved to May. The Secretariat would let them know as soon as possible if a new date could be found. **Action: Secretariat**

13. Any other business

There was none.

14. Public Questions and Answers

14.1 Fiona Brookes, independent consultant, commented that in the discussion on raw drinking milk the question had been posed as to whether other markers other than the process hygiene indicators should be looked at. She said that presumably if there is a prevalence of STEC in cattle faeces of a dairy herd that is producing raw milk, that is going to increase the chances of getting STEC in the raw drinking milk.

14.2 The Chair replied that even if a herd was tested and found to be negative it didn't mean they were not infected. Dr Tucker agreed that shedding within a herd was often intermittent and detection was not always reliable.

14.3 Brigitte Clarke, from Bakkavor, stressed the urgency of the meeting between the pesticides residue committee (PRIF) and ACMSF because the industry had been talking about the issue for 2 years now and were finding it difficult to carry out various things in a factory setting such as trying to segregate allergens, and to prevent cross-contamination of meat species, because preservatives and other substances such as disinfectants could not now be used.

14.4 The Chair said that her comment was valid and a number of members of the committee shared her concern. Dr Cook added that it was hoped that the meeting would soon take place and that it would be possible to provide an update at the next meeting.

Annex 1

Observers to ACMSF meeting, 25 January 2018

Alison Aitchison	Morrisons
Fiona Brookes	Independent Consultant
Bridgette Clarke	Bakkavor
Martin Lewis	Concept Life Sciences
Jane Horne	Food Standards Scotland
Kasia Kazimierczak	Food Standards Scotland
Eric Samuels	Pall GeneDisc Technologies

Annex 2

ACMSF Horizon Scanning Workshop 2018

- This annual workshop was held so that the committee can help the FSA to identify and respond to emerging risks associated with microbiological food safety.
- The Committee worked through 5 questions related to horizon scanning and identified key issues.

Emerging issues that might present a risk to the public

- **Emerging issues resulting from real changes in behaviour**

- reduction in packaging and a move away from plastics
- Increased raw fruit and veg consumption and outbreaks associated with fresh fruit and veg and bagged salads
- Access to food via uncontrolled channels e.g. Internet shopping
- How populations/providers interact with the ageing population e.g. meals on wheels for the elderly produced in a pub
- Risks associated with increasing use of raw pet food

Information that needs to be brought to the FSA's attention to help consumers make choices based on current evidence?

- Many choice issues should be accommodated into the risky foods framework
- Redouble efforts to remove cross-government inconsistency in safety messages
- Redouble efforts to connect choices with science/evidence
- Joined up effort needed on areas of waste and food safety

Are there risk/opportunities associated with emerging technologies not already considered by ACMSF?

- New technologies introduce new interaction with existing risks
- Understanding the microbiological risks of new packaging
- *Sous vide* was viewed to still be a problem
- High Pressure Processing was viewed as an opportunity but may be increased or decreased risk depending on the application

Main issues, risks and opportunities following UK exit from the EU

- ACMSF support the FSA approach summarised in yesterday's presentation
- Possible changes in *modus operandi* for SACs including ACMSF in terms of resources and expertise and possible need to respond to an increasing number of fast paced issues
- Being out of the EU network "no UK voice of reason"
- Loss of technical expertise/skill base and EU National reference labs disappearing

Anything else to bring to the FSA's attention?

- Do ACMSF assessments have a life span e.g. non-proteolytic *C. botulinum* in chilled foods?
- Is it time to introduce a 2-dimensional framework for food risks? Set up a sub group to revisit how risk is assessed and expressed.
- Genomics risk assessment subgroup could be set up

Next steps

- The Committee will prioritise these and other responses for the FSA following this meeting and a summary paper will be produced by the secretariat.