MINUTES OF THE MEETING OF THE ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD (ACMSF) HELD VIA MICROSOFT TEAMS ON 21 OCTOBER 2021 (NINETY-NINTH MEETING)

Present

Chair: Prof Bill Keevil

Members:
Dr Gary Barker
Dr Gauri Godbole
Dr Rohini Manuel
Prof Peter McClure
Mr Alec Kyriakides
Dr Dan Tucker
Dr Gwen Lowe
Mrs Ann Williams
Miss Heather Lawson
Mrs Emma Hill
Dr Jane Gibbens
Prof Francis Butler
Dr Nicol Janecko
Prof Linda Scobie
Dr Edward Fox
Mr Martin Briggs

Departmental representative: Dr Stephen Wyllie (Defra)
Dr Paul Cook (FSA, Risk Assessment Unit)

FSA Science Council: Prof Jonathan Wastling

Secretariat: Dr Anthony Wilson
Mr Adekunle Adeoye
Ms Azuka Aghadiuno

Presenters:
Dr Lesley Larkin
Miss Ayla Ibrahimi Jarchlo
Dr Lucy King
Miss Victoria Cohen
Mr Allan Shivembe
Miss Ana Sanchez
Miss Narriman Looch

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 99th meeting of the ACMSF. He also welcomed Dr Lesley Larkin (Surveillance Lead, Gastrointestinal Infections and Food Safety (One Health) UK Health Security Agency) who gave a presentation under agenda item 8 (EFIG) on how UKHSA use whole genome sequencing for human GI pathogen surveillance, Ayla Ibrahimi Jarchlo and Lucy King (FSA, Analytics Unit) who presented agenda item 9 (Food and You 2 – Wave 1), Allan Shivembe and Ana Sanchez (FSA, Foodborne Disease Control Team) who presented agenda item 14 (Foodborne Disease Policy Framework) and the various teams from the Food Standards Agency and Food Standards Scotland that observed the meeting.

1.2 Before the meeting started the Chair provided an update on changes in the secretariat:

- Paul Cook (who is now on partial retirement) has stepped down as the committee's scientific secretary. Paul will continue to attend ACMSF meetings as departmental assessor for the Risk Assessment Unit.

- Anthony Wilson (Team Leader of the Microbiological Risk Assessment Team) is now the committee's scientific secretary.

- Manisha Upadhyay who was a Senior Scientific Adviser on the secretariat has left the FSA to join UKHSA (Advisory Committee on Dangerous Pathogens secretariat). The Chair expressed the committee's appreciation for Manisha's diligent service to the committee for the years she served on the secretariat.

2. Apologies for absence

2.1 Dr Wayne Anderson.

3. Declaration of interests

3.1 The Chair asked Members if they wished to declare any potential conflicts of interest associated with the agenda items to be discussed.

3.2 No declaration was made.

4. Minutes of the 98th meeting

4.1 Subject to a few typographical corrections, members approved the minutes of the 98th meeting as an accurate record and agreed that they should be posted on the ACMSF website.
ACTION

5. Matters arising

5.1 Paper ACM/1365 provided a summary of actions on matters arising from previous meetings. Dr Anthony Wilson reported that:

- Minutes of the 97th meeting had been posted on the website.

- Literature review on botulism in cattle, sheep and goats: 2006 to 2021: The committee to be provided with an update on how the FSA responded to the research recommendations in the 2006 report on botulism in cattle and 2009 report botulism in sheep and goats. Actioned. Update was provided via paper ACM/1368 (discussed under agenda item 7).

- Literature review to be revised as members suggested. If there is sufficient evidence to suggest a need to revisit the recommendations made in 2006 report, the secretariat will examine this and report back to the committee with the revised literature review and proposals for next steps on the issue. Actioned. Revised Literature review (ACM/1367) was presented to members under agenda item 7.

- Epidemiology of Foodborne Infections Group: Increase of S. Typhimurium in pigs (implications of this increase on process hygiene in relation to abattoirs). Secretariat to liaise with FSA Operations for any advice they may have on this point. Actioned. Members received advice provided by APHA.

- Update on Horizon Scanning workshop: The FSA was encouraged to proactively provide food business operators with comprehensive advice on cleaning and disinfection. Actioned. Member who raised this point provided advice which was passed to the appropriate section in the FSA (Chemical Contaminants and Residues Team).

- Concerning study relating to the survival of infectious SARS-CoV-2 on food surfaces and food packaging materials, FSA to provide clarification on how the study is determining the survival of the virus on those surfaces that are artificially inoculated and then looking at the decline. Actioned. Advice was provided to members.

- In relation to the above study and the list of food and packaging types to be studied. There was surprise that disposable coffee cups were not included as it was underlined that they were one of the most extensively handled items (by servers and consumers). FSA to be asked to look at whether any of the listed items may be of lower priority compared to coffee cups. Actioned. Clarification was provided to members.

- Epidemiology of Foodborne Infections Group: Query on how report on EFIG's activities is presented to ACMSF. Actioned. EFIG Chair used paper

ACM/1370 to respond to the committee's queries. This was discussed under agenda item 8.

- Paragraph 12.1 (April 2021 meeting minutes): a member asked for an update on the response Prof Rick Mumford (FSA Deputy Chief Scientific Adviser) gave to a question on contaminated chicken entering the UK food chain from the EU. Prof Mumford had indicated that there were ongoing discussions with the EU on how to address this issue of poultry products safety. FSA Departmental Assessor (from the Risk Assessment Unit) confirmed that negotiation between and EU on this matter and other issues relating to food were ongoing.

6. Update on the activities of the subgroup on toxin-producing Clostridia in food (ACM/1366)

6.1 The committee at the April 2021 plenary agreed to setup an Ad Hoc Group on toxin-producing Clostridia in food. The Chair invited Dr Gary Barker Chair of the group to introduce paper ACM/1366 that updates the committee on the group's activities. Dr Barker linked the origin of the group to one of the outcomes of a previous horizon scanning workshop, the recommendation of the Ad Hoc Group on non-proteolytic *Clostridium* botulinum and vacuum and modified atmosphere packed foods and the FSA's desire for the committee's 1992 report on Vacuum Packaging and Associated Processes to be updated. This report has been the cornerstone of the FSA's guidance on the issue of vacuum packaging and modified atmosphere packed foods for many years.

6.2 Dr Barker provided an overview on the group's membership, objective and workplan. The committee noted that the group's final statement for its terms of reference emphasises consideration of the risk of botulism and is not dominated by vacuum or modified atmosphere packaging or other processes. The agreed terms of reference are:

- Review the risk posed by toxin-producing Clostridia in foods stored at ≤8C that support growth or toxin production
- A preliminary assessment of the risk posed by toxin-producing Clostridia in food designed to be stored at ambient temperature that support growth or toxin production
- Where appropriate consider other risk related evidence relevant to toxin-producing Clostridia during the lifetime of the group

Dr Barker mentioned that the group agreed a provisional structure and are working towards delivering a report in 2022. He added that the group will seek external expert opinions and advice in the course of its work.

6.3 Dr Barker also reported that in September 2021 the FSA sought advice from the group on the significance of a shortage of gaseous carbon dioxide used in packaging of food, including the impacts on microbiological safety, and setting shelf life. It was noted that the group advised on the use of CO_2 atmospheres to restrict the growth of aerobic spoilage bacteria, and to slow the growth of many moulds and

yeasts (and other post process contamination that causes food spoilage), in large sectors of fresh and cooked foods.

6.4 The group was commended for its revised terms of reference and for the rapid advice it provided the FSA on the concern the food industry had on the issue of shortage of gaseous carbon dioxide used in packaging of food.

7. Botulism in cattle, sheep and goats

7.1 The Chair reminded members that the committee at the April 2021 plenary meeting considered the FSA's revised systematic literature review on botulism in cattle, sheep and goats. Following discussion, the secretariat was asked to consider the comments made by members on the literature review and report back with a revised version. Members also requested for an update on the committee's botulism in cattle, sheep and goats reports recommendations.

7.2 Miss Victoria Cohen was invited to introduce paper ACM/1367 (the revised systematic literature review on botulism in cattle, goats and sheep) which also covered the issue of whether the recommendations in the reports need revisiting. Miss Cohen provided an overview of the revised literature review. She noted that the results of the literature review revealed there were eight recognized toxin types from *C. botulinum* with some *C. botulinum* strains now characterised for mechanisms of virulence such as the mosaic C/D strain.

7.3 It was noted that there have been a small number of instances where human pathogenic strains of C. *botulinum* had been identified from animals outside of the UK and that healthy cattle maybe asymptomatic carriers of C. Botulinum, particularly those within close proximity of existing outbreaks or poultry farms.

7.4 Members noted that there have been a few recent papers published on the transmission of botulism from animals to food. Miss Cohen mentioned research paper published by Böhnel and Gessler 2013 that has information on public health advice and the risk to human health from botulinum toxins in milk/ meat products. The paper mentioned cow's milk as the food product. It was underlined that the above-mentioned paper continues to support the safety recommendations contained in the 2006 and 2009 and ACMSF report.

7.5 The Chair invited members to consider if they are content with the revised literature review, if the comments from the April 2021 meeting have been addressed, and if this review can be signed off.

7.6 The following comments were made in the ensuing discussion:

- Revised literature has very much improved but there are a few points that needs addressing but it can be signed off.

- Concerning the point linked to Böhnel and Gessler 2013, clarification was requested whether they were talking about the presence of botulinum toxin in the milk of asymptomatic cows or symptomatic cows. Also, it was unclear

which toxin types. Obviously if there were toxin present in the milk of asymptomatic cows, that would be quite significant particularly if that toxin were of the types A, B or E. Miss Cohen to provide clarification. **ACTION**

- On the use of the term “strains” in the review in some cases, is this referring to serotypes (the eight different serotypes that are being considered)? In some cases it is talking about strains, in other cases it is talking about subtypes like the CD mosaic subtype. Miss Cohen was asked to search through the document where the term strain or strains to check whether it's the appropriate term to use or not. **ACTION**

- Point on “heat resistant”, it still says type B spores are more heat resistant (bottom of page 29). The paragraph talks about type B spores are more heat resistant than type A spores and gives a reference but that study looked at the heat resistance of the toxin not spores. Correction to be made. **ACTION**

- Page 30 (Line 778): “From the literature identified, it is not clear exactly how C. botulinum spores get into milk….” It was suggested that a good reference for this point is the book written by Alec Kyriakides on controlling *Clostridium botulinum* in food discussed the ways that spores can contaminate milk coming from faecal material cross contamination. **ACTION**

7.7 Miss Cohen was thanked for the revised literature. Subject to the highlighted amendments that will be made and identified typos that will be corrected, members approved the literature review.

7.8 Mr Adekunle Adeoye was invited to introduce paper ACM/1368 which provided an update on progress made on the botulism in cattle, sheep and goats recommendations. Mr Adeoye reported that recommendations in the reports were for the Food Standards Agency and UK Agriculture Departments. He went through the responses provided to the respective recommendations.

7.9 The following comments were made by members:

- Recommendation 8.7 (Samples collected during clinical investigations should be archived to assist with the development of further assay systems). Members felt that Animal and Plant Health Agency’s (APHA) response “samples are collected from clinical investigation as they do not get many cases in a year and the samples are only kept for a very limited time and so there is no archive of samples” was unacceptable. As the committee recommended samples to be archived, if this is not possible, there should be reasons why this is not done. Secretariat to convey ACMSF’s remark to APHA. **ACTION**

- On the issue of guidance (recommendations 8.10 and 8.11 refers), it was observed that majority of the available information are on archived websites. It was pointed out that if the FSA is taking responsibility on this subject there should be a place on the FSA website which inform stakeholders where to go if they want advice on botulism. It was felt guidance/messages on the use and disposal of poultry litter and messages to broiler farmers with respect to

biosecurity (recommendations 8.10 and 8.11) should be on prominent locations on the appropriate government departments website for easy access for interested parties. Secretariat to convey ACMSF's comment to the relevant government departments. **ACTION**

- Response to recommendation 8.15 was queried. This response stated that there's little evidence of other toxins causing botulism in the UK and there is watching brief on botulism. The committee asked how the current regime that doesn't require reporting works in practice. It was felt that if an outbreak occurs it doesn't look like identification of toxin happens automatically because if there's a reasonable assumption that it's caused by poultry litter, how much evidence is being collected on the other types of toxin that are causing botulism? The monitoring system was flagged to be deficient in terms of not following up some of the small number of outbreaks that are reported. Secretariat to seek clarification from APHA. **ACTION**

7.10 The secretariat agreed to convey the committee's points to APHA and the FSA.

8. Epidemiology of Foodborne Infections Group

8.1 The Chair informed members of the three issues under this agenda item: Update on the outcome of the 9 June 2021 EFIG meeting, Response to comments made by members on EFIG reports and UKHSA's presentation on Use of Whole Genome Sequencing (WGS) for gastrointestinal pathogen routine surveillance and outbreak detection and investigation.

8.2 Dr Paul Cook was invited to update the committee on the outcome of the EFIG meeting held on 9 June 2021 (ACM/1369). Dr Cook mentioned that a summary has been provided in front of the report as requested by members. He outlined the key points from the discussion on *Salmonella* in Livestock Production (January - December 2020 and January – March 2021) and *Salmonella* in National Control Plan results 2020 and 2021 (January – June) noting that the incidents of *Salmonella* serovars in livestock in GB by year (Jan – Mar 2017 to 2021 incl.) – excluding chickens and turkeys. S. Enteritidis, S Typhimurium (incl. mST) and other serovars showed little change. In terms of the human data members noted the drop in the reports of non-typhoidal *Salmonella* (5353 reports in the UK in 2020, a decrease from 9723 reported in 2019 [provisional data]) and *Campylobacter* infections (decreased in the UK from 67,872 in 2019 to 53,538 in 2020 [provisional data]). Dr Cook's update covered the Burger Watch: Report on excess burger consumption amongst STEC cases in England, food surveillance in England and Scotland and findings of the FSA's survey of infectious intestinal disease in the UK (study commissioned to collect data to estimate the impact of the pandemic on IID and foodborne disease).

8.3 The committee made the following comments in discussion:

- A member observed that the cases of campylobacteriosis (in the report of human infection data quarters 1-4 2020) has dramatically decreased.

Comparing the numbers with the drop in salmonellosis cases he pointed out that this shift is much more significant in salmonellosis than it is in campylobacteriosis. He asked if EFIG discussed the possible reasons for this trend? Although it was confirmed that EFIG did not discuss this observation in detail as analysis of the data was ongoing, members attention was drawn to the caveat attached to the human data section of the EFIG update that highlighted that there were lots of factors considered to have the reporting of these cases. Dr Larkin discussed the multi-factorial reasons impacting human infections during the Covid-19 pandemic. Dr Larkin mentioned a study that contrasted the drop in norovirus with the *Campylobacter* levels during the pandemic period stating that the committee would find the study findings interesting. She agreed to send the secretariat details of the study for members to consider. **ACTION**

- The committee raised the issue of recent reports of norovirus cases increasing quite markedly. As it was acknowledged that the mode of transmission for norovirus is similar to coronavirus, the discussion touched on the effect of the current enhanced hygiene measures such as handwashing and reduced social contact on norovirus cases. Members noted the possible reasons why cases were rising and UKHSA's approach in proactive communications publicising good hygiene (to the various sectors/settings) such as hand washing.

- The summary that was included at the beginning of the report was welcomed but it was felt it did not bring out the significant issues discussed by EFIG. Examples highlighted were the increasing number of *Salmonella* incidents reported in dogs some of which may be associated with the use raw pet food and *Salmonella* Infantis isolated from a broiler breeder flock. The source of infection was suspected to be a dog which was fed raw pet food. The member wanted the EFIG report to outline the actions EFIG and government departments were taking to address these matters. Members noted that UK health agencies and APHA had an ongoing project to collate whole genome sequencing data for *Salmonella* spp. isolations from dogs in a joint project. Details of the ongoing collaborations were not included in the EFIG update. It was added that dogs were added to the list of statutory species in relation to *Salmonella* in 2021.

- Excluding graphs that illustrate the trend in human infections because of the impact of the pandemic on surveillance was queried as it was pointed out they are always informative when presenting human infection data. It was underlined that seeing information highlighting the drops/increases in the 4 UK countries was relevant for ACMSF. UKHSA commented that they excluded the human infection graph trends in its report as they felt data in relation to Covid needed to be presented with the necessary data caveats and contextualised. Presentation of only the annual reporting rate trends was not sufficient for example but presentation against a 5-year rolling average as a minimum because of the seasonality of the pathogens they monitor was required. This data (including graph trends) is expected to be put together and presented at the next EFIG meeting. It was underlined that due to pressure on resource health agencies did not have the time to properly validate the limited

data presented at the last EFIG meeting. UKHSA also commented that care was needed in interpreting the data. The impact of the pandemic on gastrointestinal pathogen surveillance is considered to be multi-factorial and likely related in part to the introduction of non-pharmaceutical interventions to control the pandemic, but also to changes in health care seeking behaviour (impacting on the number of samples tested) and changes in laboratory testing practices.

- A member commented that a huge amount of insight could be drawn from the changes in the data collected during the Covid-19 pandemic. Drawing attention to the campylobacteriosis cases, he was surprised that cases did not go up dramatically (it dropped by 10 -15%). He explained that if studies on *Campylobacter* infections suggest that most campylobacteriosis infections occurs in homes and caused by poultry, consumption of poultry went up by 30% in 2020 and information presented to committee indicates that cases dropped. He added that this may be suggesting consideration of whether home consumption of poultry was a key driver for campylobacteriosis cases.

- Further to the above comment, a member highlighted the merit of employing a process known as causal discovery to look back on data and come up with ideas of what happened. He explained that this technical approach was a robust way of reviewing past events/data.

- There was discussion on why PHE (now UKHSA) decided that the algorithm developed for Burger Watch (a tool developed by PHE to detect potential increased reports of consumption of raw/under-cooked burgers derived from the STEC enhanced surveillance system) had not proved to be a robust tool to address the FSA's policy objectives. PHE assessed that the underlying epidemiological data on which the algorithm outputs relied was the limitation. Members noted that EFIG has agreed to setup a small group to come up with a revised approach that could potentially address the FSA's objective.

- The reasoning behind the FSA's Survey of infectious intestinal disease in the UK carried out by Ipsos MORI was questioned as it was felt it was not a comprehensive approach in collecting data compared to the previous IID studies and the forthcoming IID3. The FSA confirmed that this study was commissioned to collect data to estimate the impact of the pandemic on IID and foodborne disease and that the outcome of these studies will be presented to the committee for discussion after the FSA's Analytics Team have considered the findings. **ACTION**

- A member drew the committee attention to *Salmonella* Typhimurium and pigs pointing out that 24% of human isolates were S Typhimurium. Members also noted the incident rate in pigs (first quarter of 2021 had 21 incidents compared to 18 incidents in 2020 and below 10 in previous years) which reveals a picture of continuous increasing incidents of S Typhimurium. It was highlighted that the *Salmonella* in Livestock report in 2020 also suggests that there has been a greater than 10% increase in overall *Salmonella* incidents in pigs over that period of time. These comments were raised as a concern for

the relevant department (APHA) to address. When a similar query was raised at the last committee meeting APHA attributed the increases to the system used to collect data (diagnosis submissions) and remarked they were considering a more structured survey of *Salmonella* prevalence across the pig industry. Dr Wyllie agreed to seek up to date advice on this matter for the committee. **ACTION**

- Members also noted the recent the problems with the supply chain holding back of pigs on farms to greater ages in less-than-ideal conditions (overcrowding) which is a risk factor for *Salmonella*.

8.4 Dr Cook introduced paper ACM/1370 (EFIG Updates for ACMSF) and ACM/1370 Annex 1(Response to ACMSF comments on the EFIG reports and presentation of surveillance data). Dr Cook explained that the objective of this item was to try and address some of the issues that have been raised over recent meetings concerning the reports from EFIG and suggestions for enhancement of these reports. He explained that EFIG has reflected on its role in the past and has received feedback from ACMSF referring to discussions the committee had on EFIG's role in 2013 which included discussions on the challenge of having denominator data for the human and animal data presented to the committee. Dr Cook thanked UKHSA and APHA for their contributions in drafting paper ACM/1370 annex 1. The table attached to the paper summarises/contains UKHSA's responses to specific points raised on the human surveillance data by the committee and includes input from other public health agencies and APHA and FSA.
Members are invited to:

a) Comment on the responses to the points raised in recent meetings.
b) Suggest any areas where the EFIG summaries could be more helpful to the committee and its work whilst recognising the limitations in the data.

8.5 The following comments were made:

- A member who has been seeking change in the way EFIG updates are provided welcomed the responses in paper ACM/1370 annex 1.

- Test for trend or testing for statistical significance: for the committee to be able to comment on infection data it is useful to have some sort of indication of whether trends are significant.

- The need to have analytical options in data attached to EFIG reports was echoed as it was highlighted that this enables coming to conclusions with less difficulty.

- On EFIG updates having summaries, these should be short summaries at the front of the report highlighting the points in the report that are of note to EFIG for ACMSF to see.

- It would be nice to have links to the incident reports or references within the EFIG report that would lead to how issues have been tackled and the

committee would be able to follow progress on particular incidents or outbreaks.

- Response provided to the query on comparing human infection with other countries, a member stated if it is not possible to have international comparisons it would be good to see the changes occurring in the 4 UK countries. Some form of indication from the figures whether they matter in order to understand what is going on. UKHSA confirmed that providing the trend line for the 4 UK countries was already happening and this can be improved with annotations and explanations to give a clearer picture. It was confirmed that although the UK monitors what is happening in the international space due to a number of reasons particularly unavailability of live/real time data, it would not be possible for EFIG reports to have trend lines that includes non-UK countries. UKHSA also noted that comparison of surveillance data between EU countries and with the UK was not recommended as surveillance systems differ making only comparison of within country trends over time robust. It was also noted that resource burden needed to be considered but it was added that UKHSA are presently attempting to automate a lot of the reports they produce in relation to clusters and their surveillance reports. They aim to share these with EFIG members once available.

- There was discussion on how the EU presents Member States foodborne infections data and the clear annotations that are attached to the reports for those who may want to do country comparisons. It was suggested that UK health agencies/EFIG may want to look at the EU's approach for useful pointers as a way forward in reviewing how data is presented in EFIG reports.

- Holistic trends including outbreak data is important for ACMSF as it provides an important insight into the overall management of microbiological risks and informs the committee whether the overall food safety policy and management systems are working at their top level in terms of reducing the burden of foodborne disease.

8.6 In relation to how data is collected on foodborne human infections, Dr Lesley Larkin (UKHSA) gave a presentation on "Use of Whole Genome Sequencing for gastrointestinal pathogen routine surveillance and outbreak detection and investigation. The talk covered the following areas:

- How UKHSA delivers its role
- Detecting and characterising outbreaks with WGS
- WGS capabilities (understanding pathogen populations, high-definition case ascertainment and transmission and source attribution)
- Challenges and opportunities with integration of WGS into routine surveillance
- Focus in future
- Summary and experience to date

8.7 Following the presentation, there was discussion on:

- Some food manufacturing companies approach to detecting and characterising outbreaks.

- Threshold of five Single Nucleotide Polymorphisms (SNPs) used for the outbreak of S Typhimurium mentioned in the presentation. Reference was made to a recent outbreak in the US (two outbreaks linked to breakfast cereal) during which the organism was identified as the same strain the causative agent linked up over a period of years. The SNP differences were somewhere between 10 and maybe 15 over a period of years. UKHSA noted that single linkage hierarchical clustering is used by the UK public health agencies so diversity over time taken account of wider SNP thresholds are also considered when defining an outbreak and case definitions.

- Whether the surveillance system picks up high risk subtypes such as *Listeria monocytogenes* sequence type 6

- The need to engage the UK food industry with the advances WGS has brought to carrying out advanced pathogen characterization while improving trace back investigations to determine the source of foodborne illness during outbreaks.

8.8 In conclusion the Chair acknowledged that the presentation was excellent which helpfully highlighted the present advantages but also limitations of WGS and what we need to do in the future to advance where we can take these techniques forward both within the country and at the international level. To understand how pathogens mutate or arise in other countries will require everyone sharing their databases.

9. **Food and You 2 – Wave 1 (ACM/1371**)

9.1 ACMSF is usually presented with findings from the FSA's Food and You Surveys. The last update received by the committee was in January 2020. Miss Ayla Ibrahimi Jarchlo presented the findings from Food and You 2 wave one and two. Wave 1 of Food and You 2 fieldwork was conducted by Ipsos MORI and took place between July and October 2020. The total achieved sample size was 9,319 (5,140 in England, 2,100 in Wales and 2,079 in Northern Ireland), with a response rate of 30%.
Wave 2 of Food and You 2 fieldwork was conducted by Ipsos MORI and took place between November 2020 and January 2021. The total achieved sample size was 5,900 (2,968 in England, 1,366 in Wales and 1,566 in Northern Ireland), a response rate of 28%.

9.2 The presentation covered the following areas: Research background, Waves 1 and 2 findings and How are the findings used.

9.3 Key findings on food safety covered:
- Cleanliness
- Cooking and reheating food
- Chilling and defrosting food
- Cross-contamination

9.4 Members noted how the survey findings are used such as helping the FSA monitor progress against the FSA strategic outcomes and support the FSA's annual and quarterly reporting, including the joint FSA FSS report on Food Standards, informing policy decision making, and identifying key or emerging issues where further research may be required (e.g., further analysis on ethnic minorities and food insecurity) and Inform content of public awareness campaigns.

9.5 It was highlighted the wave 3 is due to be published early next year and the FSA is currently conducting a key driver analysis exploring what is driving certain food safety behaviours. For example, what factors are driving hand washing or washing raw chicken? The FSA has also conducted a separate piece on the FHRS and the findings are expected to be published later in 2021.

9.6 The following comments were made in the ensuing discussion:

- It's always difficult to compare previous survey rounds, what's your impression of how people have responded during the Covid lockdown? Has their hygiene with food improved? Members noted that the FSA have been running a separate tracker survey throughout the pandemic to monitor behaviours more closely during the pandemic. Findings of this survey will be shared with ACMSF. **ACTION**

- Clarification was requested on the point made on “confidence in different types of food business”. Is that confidence that the food is safe or that it's transported in a correct temperature or it's contaminated in some way? It was stated that this related to food safety. Overall, 77% had confidence in the food supply chain and then within that the different actors in the food supply chain. The highest level of confidence in the safety of food was for farmers and shops and supermarkets, and then less so for takeaways and food delivery services. It was added that the question was framed to capture how confident consumers were that the food they buy is safe.

- There was discussion on the merit of moving away from doing face to face interviews or live telephone interviews to online surveys when the interviewee is not facing the researcher. It was noted that the FSA’s social science team is also running a separate study Kitchen Life 2 that is going to be an observational study, observing consumer behaviours in kitchens through cameras.

- A possible gap in the questionnaire on food safety related to spore formers and cooling times and holding times for foods that have been boiled or cooked for some time was pointed out. This was in relation to *Clostridium perfringens*-related foodborne illness cases. There are no questions (in the surveys) that seem to relate to this which is a significant cause of foodborne illness in the UK. Could this be considered to try and get some information on consumer understanding of holding times and cooling times to find out there is an appreciation of what should be used and what shouldn't be used. Although the FSA responded that there was a question in the survey on what do you do with leftovers? How soon do you put these in the fridge? It was explained

(ACMSF member) that the question did not fully cover the query about cooling and the effect of some spore formers that can grow very quickly after they've been boiled. FSA social science to consider the point on cooling time and holding times for foods in future waves.

9.7 The Chair thanked Miss Ayla Ibrahimi Jarchlo for the presentation.

10. Committee update

Emerging Pathogens Working Group

10.1 Dr Tucker reported that the FSA asked the group to comment on its microbiological hazard identification process for Prohibited and Restricted goods (minced meat and meat preparations). Request originated from the DEFRA market access team who commissioned the FSA to assess the risk to public health from imported chilled meat preparations (all species), chilled minced meat (bovine, porcine, ovine and caprine) and minced meat (poultry). The group was asked to specifically comment on the following points:

a) Is the process followed to identify the hazards, including the criteria used, fit for purpose?
b) Are the shortlisted hazards appropriate given the scope of the project?

c) If data on the shortlisted hazards are not adequate to complete a risk assessment, *Salmonella* and STEC are tied for next position. Which is more appropriate to include?

10.2 Members individual comments were used to inform the FSA's risk assessment.

Antimicrobial Resistance and Surveillance Working Groups

10.3 The Chair updated members on the activities of the AMR and Surveillance Working Groups. Members noted that in September 2021 both groups commented on the FSA's Project FS102121: Year 5 and 6 (2018 to 2020) Final Report: A survey of the levels of *Campylobacter* spp. contamination and prevalence of selected antimicrobial resistance determinants in fresh whole UK-produced chilled chickens at retail sale (non-major retailers).

10.4 Members also noted that the AMR Working Group met on 6 October 2021. Key issues they considered include:

- Discussing the findings of two FSA projects: FS307036: Assessing the impact of heat treatment on antimicrobial genes and their potential uptake by other "live" bacteria and FS301050: Burden of AMR in RTE Foods
- Commenting on the FSA's Risk assessment for colistin resistant *E. coli* carrying the mcr-1 and mcr-3 genes in fresh retail turkey meat purchased in the UK.

- Reviewing progress made by the FSA in addressing high priority recommendations in the ACMSF AMR task and finish report

11 Dates of future meetings (ACM/1372)

11.1 The Chair drew members attention to paper ACM/1372 that outlined dates for 2022 meetings. Members noted that the meeting scheduled for 27 January 2022 will be moved to February 2022. The June and October meeting dates remain unchanged.
The Chair sought views from members if they were happy to return to in-person meetings or would like the secretariat to explore the possibility of hybrid meetings in 2022. Following discussion, the chair proposed a virtual meeting due to the Covid-19 uncertainty.

12 Any other business

12.1 The Chair drew members attention to the circulated information papers.

13 Public Questions and Answers

13.1 There were no questions from members of the public.

14. Food Standard Agency's Foodborne Disease Policy Framework (ACM/1373) Reserved business (Not for the website)

14.1 The FSA's Foodborne Disease Policy Framework was presented to the committee via paper ACM/1373 and slides. Presentation was provided by Miss Ana Sanchez and Mr Allan Shivembe (supported by Miss Narriman Looch: Head of foodborne disease and animal feed within the policy directorate at the FSA).

14.2 This item was discussed in closed session.

Annex 1
List of observers

Name	Organisation
Roy Betts	Campden BRI
Kaarin Goodburn	Chilled Foods Association
Gary McMahon	MoyPack
Andrea Petronida	FDF
Stella Ntachampre	APHA
Rachelle Avigad	APHA
Marianne James	FSS
Karen Pearson	FSS
Emma French	FSA
Lawrence Ginn	FSA
James Donarski	FSA
Erica Kintz	FSA
Beth Armstrong	FSA
Rhoda Aminu	FSA