Advisory Committee on the Microbiological Safety of Food

Annual Report 2014

Advises the Food Standards Agency on the Microbiological Safety of Food

Contents

The Advisory Committee on the Microbiological Safety of Food (ACMSF) was established in 1990 to provide the Government with independent expert advice on the microbiological safety of food.

The Committee's terms of reference are:-

to assess the risk to humans from microorganisms which are used, or occur, in or on food, and to advise the Food Standards Agency (FSA) on any matters relating to the microbiological safety of food.

The various issues addressed by the Committee since its inception are detailed in this and previous Annual Reports[1-22] and in a series of subject-specific reports.[23-38]

Foreword

1. It is a pleasure to present the twenty-third annual report of the Advisory Committee on the Microbiological Safety of Food (ACMSF), covering 1 January to 31 December 2014. I hope you will find this report and the information it contains useful in finding out about the work of the Committee.

2. In January the *Ad Hoc* Group on Foodborne Viral Infections presented its revised draft report on viruses in the food chain to the Committee seeking approval for public consultation. Following consideration we agreed for the report to be issued for consultation which was held between March and May 2014. Helpful comments received were incorporated into the report.

3. Public Health England (PHE) updated the Committee on the Epidemiology of Listeriosis in England and Wales between 2008 and 2013. It was reported that nothing much has changed between 2011 and 2013. We noted that the North East had the highest rate of listeriosis when compared with other regions in England and Wales. A high proportion of cases were in the older age groups and these are mostly those who have underlying medical conditions.

4. We reviewed the Food Standards Agency's (FSA) relative risk ranking of ready-to eat foods proposal for listeriosis and vulnerable groups. As part of its strategic plan the FSA has underlined the need to tackle those pathogens which contribute most cases or deaths to the burden of foodborne disease. Although we were cautious in treating the outcome of the ranking exercise as robust evidence due to a number of factors provided, we recognised the approach gave useful information. We felt a key consideration for the FSA was how their proposal might be used by people who were not aware of the limitations identified. We considered the results could be used for targeted advice for specific groups of people in specific circumstances rather than general advice for the whole population.

5. The Committee was briefed on the findings from the outbreak of *Salmonella* Agona PT40 and other gastrointestinal pathogens associated with raw curry leaves in North East England in early 2013. We commended the creativity of the Outbreak Control Team (OCT) in dealing with a complex investigation and highlighted that the lessons learnt from the investigation should be useful for dealing with future outbreaks. We noted that novel means of communication such as social media may be useful in contacting diffuse groups involved in festivals and similar types of events.

6. Following a presentation on the key findings of a foodborne disease attribution study build on the findings of the second Infectious

Intestinal Disease study, The Committee welcomed the findings of the study and noted that work had put the UK in a unique position in the amount of timely evidence available on which to base future research and surveillance and in prioritising effective interventions to reduce food poisoning.

7. The Committee received a progress report on the actions taken in response to the recommendations in the Committee's report "Risk Profile in Relation to *Toxoplasma* in the Food Chain". The FSA outlined some of the ways the recommendations in the report, especially relating to data gaps were being addressed. We welcomed the update and emphasised the significance of receiving feedback on what happens to the Committee's advice to the FSA.

8. We were provided with the findings from the FSA's Social Science Research Kitchen Life Study (insight into foodborne disease risk from domestic kitchen practices). We were grateful for the presentation as it provided useful insight into how the domestic kitchen functions.

9. The Committee was briefed by the Animal Health and Veterinary Laboratories Agency (now Animal and Plant Health Agency) on the findings of the baseline survey of pigs at slaughter. The survey was a monitoring programme of *Salmonella*, *Toxoplasma*, Hepatitis E virus, *Yersinia*, Porcine Reproductive and Respiratory Syndrome virus, *Campylobacter* and Antimicrobial Resistance and Extended Spectrum Beta Lactamase *E. coli* in UK pigs at slaughter. While noting the valuable data provided by the study we acknowledged that it would also be useful information for future risk assessment.

10. The Committee was updated on the outcome of the Epidemiology of Foodborne Infections Group (EFIG) meetings. EFIG updates covered a number of topics which included: reports of *Salmonella* from livestock species not subject to *Salmonella* National Control Plans and Trends in laboratory reports for *Salmonella*, *Campylobacter*, *Listeria monocytogenes* and *E.coli* 0157 in humans.

11. Looking to the future, the Committee will ensure the work of the *Ad Hoc* Group on Foodborne Viral Infections is published early in 2015 and will observe how the Agency responds to the report's recommendations. We will continue to monitor closely developments regarding antimicrobial resistance (AMR) and the food chain via the working group on AMR. The Committee will ensure that it receives regular updates from the Working Group and publishes them on the website. In 2015 we will ensure the Committee has a horizon scanning workshop so as to identify potential future microbiological risks.

12. I should like to thank Members of the Committee and its Working and *Ad Hoc* Groups, without whom the ACMSF would not operate effectively and to the many other individuals and organisations that

have helped the Committee with its work this year. As ever, I am also extremely grateful for the support of the Secretariat whose efforts in ensuring the efficient and effective conduct of Committee business is invaluable.

Professor Sarah O'Brien
Chair

Introduction

1. This is the twenty-third Annual Report of the Advisory Committee on the Microbiological Safety of Food and covers the calendar year 2014.

Chapter 1: Administrative Matters

Membership

Appointments

2. Appointments to the ACMSF are made by the FSA, after consultation with United Kingdom Health Ministers (i.e. the "Appropriate Authorities") in compliance with Paragraph 3(1) of Schedule 2 to the Food Standards Act 1999. The Agency has resolved that appointments to the ACMSF should be made in accordance with Nolan Principles[41], the guidance issued by the Office of the Commissioner for Public Appointments (OCPA)[42] and the Government Office for Science Code of Practice for Scientific Advisory Committees[43]. The FSA is not bound to follow OCPA guidance, as ACMSF appointments do not come within the remit of the Commissioner for Appointments and the guidance applies only to appointments made by Ministers. However, although ACMSF appointments are not made by Ministers, the Agency has decided that it would nevertheless be right to comply with OCPA guidance as best practice.

Periods of appointment

3. To ensure continuity, appointments to the ACMSF are staggered (usually for periods of 2, 3 or 4 years) so that only a small proportion of Members require to be appointed, re-appointed or retire each year.

Spread of expertise

4. A wide spectrum of skills and expertise is available to the ACMSF through its Members. They are currently drawn from commercial catering, environmental health, food microbiology, food processing, food research, food retailing, human epidemiology, medical microbiology, public health medicine, veterinary medicine, and virology. The Committee also has one consumer Member.

5. Members are appointed on an individual basis, for their personal expertise and experience, not to represent a particular interest group.

Re-appointments in 2014

6. The periods of appointments for Professor David McDowell (ACMSF Deputy Chair), Mr David Nuttall and Mrs Rosie Glazebrook expired on 31 March 2014. Prof David McDowell was re-appointed for a further 4 years from 1 April 2014 until 31 March 2018. Mr Nuttall and Mrs Glazebrook were reappointed for a further 3 years from 1 April 2014 until 31 March 2017.[44]

Committee and Sub-Group meetings

7. The full Committee met twice in 2014 - on 30 January and 26 June. All the meetings were chaired by Professor Sarah O'Brien and were open to members of the public.

8. The Working Group on Antimicrobial Resistance (Chair: Professor David McDowell) met four times in 2014. Outline of the meetings are at paragraphs 100 to 101.

9. The *Ad Hoc* Group on Foodborne Viral Infections (Chair: Professor Sarah O'Brien) met twice in 2014. The meetings were used to consider comments received from the public consultation on the An update on viruses in the food chain report (see paragraphs 102 to 103).

Current membership and Declarations of Interests

10. Full details of the membership of the Committee and its Working and *Ad Hoc* Groups are given in Annex III. A Register of Members' Interests is at Annex IV. In addition to the interests notified to the Secretariat and recorded at Annex IV, Members are required to declare any direct commercial interest in matters under discussion at each meeting, in accordance with the ACMSF's Code of Practice[45]. Declarations made are recorded in the minutes of each meeting.

Personal liability

11. In 1999, the Secretary of State for Health undertook to indemnify ACMSF Members against all liability in respect of any action or claim brought against them individually or collectively by reason of the performance of their duties as Members (Annual Report 1999[8] paragraph 6 and Annex III). In 2002, the Secretariat asked the FSA to review this undertaking, given the fact that, since 2000, the ACMSF had reported to the FSA where previously it had reported to UK Health Ministers. In March 2004 the Food Standards Agency gave a new undertaking of indemnification in its name, which superseded the earlier undertaking given by the Secretary of State (see Annex IV of 2004 Annual Report[14]).

Openness

Improving public access

12. The ACMSF is committed to opening its work to greater public scrutiny. The agendas, minutes and papers (subject to rare exceptions on grounds of commercial or other sensitivity) for the full Committee's meetings are publicly available and are posted on the ACMSF website.

Also, on the Committee's website are summaries of meetings of the Working and *Ad Hoc* groups. ACMSF's website can be found at:

http://acmsf.food.gov.uk/

13. The Committee also has an e-mail address:

acmsf@foodstandards.gsi.gov.uk

14. In accordance with the Freedom of Information Act 2000, ACMSF has adopted the model publication scheme which sets out information about the Committee's publications and policies.

Open meetings

15. Following the recommendations flowing from the FSA's Review of Scientific Committees[46], the ACMSF decided that from 2003 onwards all of its full Committee meetings should be held in public.

16. All of the 2014 Committee meetings were held in Aviation House, the FSA's London Headquarters.

17. All of these open meetings follow a common format. Time is set aside following the day's business for members of the public and others present to make statements and to ask questions about the ACMSF's work. The names of participants, the organisations they represent, and details of any statements made, questions asked and the Committee's response, are recorded in the minutes of the meeting.

Work of the other advisory committees and cross-membership

18. The Secretariat provided Members with regular reports of the work of other Scientific Advisory Committees advising the FSA in 2014. Mrs Rosie Glazebrook ACMSF consumer representative is a member of the Advisory Committees on Carcinogenicity (COC) and Mutagenicity (COM) and a member the FSA Consumer Advisory panel. The ACMSF Chair (Professor Sarah O'Brien) is a member of the General Advisory Committee on Science (GACS) and the National Expert Panel on New and Emerging Infections (NEPNEI).

Chapter 2: The Committee's Work in 2014

An update on viruses in the food chain

19. A revised version of the above report was presented to the Committee in January[47]. An earlier draft was considered by the Committee in October 2013. The report was scheduled for publication in November 2013 but this was rescheduled due to the delay in the publication of Defra's pig abattoir survey report which had some information that was included in the ACMSF report. Members carried out further work on prioritisation of the recommendations which were grouped into 2 categories: those which related to risk assessment, and those that would have an impact on risk management.

20. The ACMSF's first report on foodborne viral infections (FVI) was published in 1998 (ISBN 0-11-322254-8). This report considered viral foodborne illness, sources, occurrence, detection, contamination and routes of transmission. The report also discussed the prevention and control measures for foodborne viruses which manifest in humans as gastroenteritis or viral hepatitis.

21. Since the publication of the 1998 ACMSF report on FVI, with the exception of minor risk assessment work carried out on hepatitis E (in 2005) and avian influenza (in 2003), no formal review has been undertaken on foodborne viruses. Therefore, at the March 2010 ACMSF meeting members agreed that an *Ad Hoc* Group should be set up to revisit the issue of foodborne viruses in light of the significant developments in this area, so that an up-dated risk profile could be produced based on the findings. Although all foodborne viruses, including new and emerging viral pathogens, were considered in the update, the *Ad Hoc* Group identified that the most important viruses associated with foodborne infection were norovirus, hepatitis A virus and hepatitis E virus. These viruses are the focus of the group's report which concentrates mainly on viral foodborne infections in the UK. The report also gives consideration to two recent comprehensive reviews of viruses in food that have been published by the WHO (2008) and EFSA (2011). The report provides key information which will be used to inform Risk Assessment and Risk Management on foodborne viruses across government.

22. Following discussion the Committee agreed for the report to go to public consultation. It was noted that the final draft of the report including any amendments made as a result of the consultation, would return to the Committee at a future meeting before being submitted to the FSA.

Listeriosis in England and Wales

23. In January Public Health England (PHE) updated the Committee on the Epidemiology of listeriosis in England and Wales between 2008 and 2013[48]. It was reported that nothing much has changed between 2011 and 2013 in relation to the number of listeriosis cases in England and Wales. Members were informed that a total of 1017 cases were reported to the enhanced *Listeria* surveillance system between 2008 and 2013. Of these, 12.7% (129/1017) were pregnancy related. The numbers of pregnancy related cases are below levels seen in recent years, while the numbers of non-pregnancy related cases are within levels seen in recent years for the same time period (up to week 50).

24. In the six year period, 17 outbreaks/clusters were investigated involving a total of 83 cases. Regardless of what year the clusters were investigated, the cases tend to span across several years. This means that a cluster or outbreak identified and investigated in 2013 may include cases from 2008 and 2009 that were previously thought to be sporadic. Despite the low numbers of cases reported between 2010 and 2012, the proportion of clustered/outbreak cases was 13.2%, 15.5% and 13.3% respectively for each year. This shows the effectiveness of the enhance *Listeria* surveillance system, established in 2009, in detecting clusters of cases.

25. Fifty four per cent of cases were males (549/1017) and 64.7% (659/1017) were over 60 years of age. The age pyramid in Figure 2 of ACM/1135 shows the majority of the cases to be clustered at the bottom as the incidence of listeriosis is higher in the elderly. A substantial proportion of the cases were adult males aged 50 years and above. In cases aged between 20 and 39 years, 78% were females which can be explained by pregnancy associated listeriosis.

26. Cases presenting with bacteraemia accounted for 79% (742/941) of all cases with known clinical presentation. In the first half of the reporting period, the proportion of cases above 60 years presenting with bacteraemia decreased and subsequently increased in 2012 and 2013, although the numbers are still much lower than what was reported in 2008. Between 2008 and 2010, the proportion of cases presenting with CNS symptoms were similar for both age groups (<60 and 60+). However, from 2011, there has been an increase the proportion of cases over 60 years presenting with CNS symptoms. The reason for this increase is currently unknown and is being investigated.

27. PHE explained that a high proportion of cases are in the older age group and these are mostly those who have underlying medical conditions. It was pointed out that although there were no obvious regional differences in listeriosis, the North East has the highest rate of listeriosis when compared with other regions in England and Wales in the reporting period 2008 to 2013.

Relative risk ranking of ready-to-eat foods for vulnerable groups

28. The FSA via paper ACM/1136 briefed the Committee on its relative risk ranking of ready-to-eat foods proposal for vulnerable groups[49]. It was reported that the FSA as part of its strategic plan had indicated the need to tackle those pathogens which contribute most cases or deaths to the burden of foodborne disease. Whilst *Campylobacter* was responsible for most cases, *Listeria monocytogenes* was important in terms of the number of deaths. The FSA has developed a *Listeria* risk management programme which has 3 strands: consumer focussed activities; procurement/provision of foodstuffs; and industry compliance/enforcement.

29. Members noted that following a rise in listeriosis during the past 10 years, the FSA had issued advice to vulnerable groups about avoiding certain foods and similar advice had been issued in other countries (as detailed in the ACMSF report on the increased incidence of listeriosis published in 2007). Before issuing any further advice, as part of the consumer work stream, the FSA wanted to have robust, evidence-based information to be able to rank the relative risk of listeriosis associated with a variety of ready-to-eat foods.

30. The FSA outlined 2 approaches to risk ranking, described in paper ACM/1136: using a statistical source attribution model, and using collated data from food surveillance studies, incidents reported to the FSA, and general outbreaks of listeriosis. The paper compared these approaches. Members' attention was drawn to a number of caveats taken into account when considering the rankings: the timespans for the data sources were not the same, and the way foods were categorised varied between studies. However, even taking these into account there was some correlation between the 2 approaches in terms of the main food categories associated with listeriosis, with ready-to-eat meats, pre-packed sandwiches and prepared salads (composite foods) and fish and shellfish being the main categories.

31. Members were asked to comment on the approach and outcome of the ranking exercise and whether they considered the information gained was sufficiently robust for the FSA to use in its risk management programme. Members expressed caution in treating the results as robust evidence due to a number of factors, including:

- varying ways of categorising food items. In foodborne outbreaks it was difficult to pinpoint the exact source but this could often be attributed to a dish rather than individual ingredients, hence the use of the term "multi-component products." It was noted that the

description “prepared salads” covers a very large area which could be just green leafy vegetables or those containing various sorts of protein;

- people’s behaviour changes at various points in their life, e.g. women may change their diet when pregnant;
- disaggregation of both pathogens and people: when categories are divided into smaller and smaller groups it poses a problem for risk assessment generally;
- there may be other factors involved, for example, the amount of time the food has been stored which are not apparent from the data;
- in the case of *L. monocytogenes* contamination the amount of data is always small and as it is not strictly a foodborne zoonosis it cannot be traced back to an animal source. The term “source attribution” really refers to an animal reservoir so is not really relevant in the context of a pathogen widely distributed in the environment.

32. Members noted that pre-prepared sandwiches featured near the top of ranking in Table 2. It was pointed out that most of the known outbreaks were associated with sandwiches procured for use in hospitals rather than those sold in the retail sector. A member commented that risk assessment should include weighing the risk of harm against the benefits, so although there may be a potential risk, say of using sandwiches for elderly patients in hospital, this may be outweighed by benefits such as ease of preparation, relatively low cost, high calorie intake etc.

33. It was suggested that food that came near the top of Table 2 could be used to indicate those food groups where there was a need for further research, either by surveillance, or studying people’s behaviours.

34. Although Members felt the approaches gave useful information, a key consideration was how that information might be used by people who were not aware of the limitations identified. They considered the results could be used for targeted advice to specific groups of people in specific circumstances rather than general advice for the whole population. This might include advice to vulnerable groups on being careful with certain foods, for example, by observing use-by dates. Joy Dobbs commented that risk ranking helped to clarify broad patterns that are reasonably reliable, which might help to highlight any new areas where current consumer advice was lacking.

35. Members suggested that using sensitivity analyses and multiple dose response relationships would improve the risk ranking approaches. A semi-quantitative risk assessment tool (Risk Ranger) which uses point estimates might be worth considering. Members were also aware that

other organisations were engaged in similar work: EFSA are producing a risk ranking toolbox and WHO are doing some work using expert elicitation. The Committee attention was drawn to a paper being drafted (by a member) for the FAO on risk ranking approaches which was recommended for the committee to consider when it becomes available.

Street Spice Outbreak

36. The Committee was briefed on the findings from the outbreak of *Salmonella* Agona PT40 and other GI pathogens associated with raw curry leaves in North East England in early 2013[50]. This was done via a presentation provided by Dr Kirsty Foster (Consultant in Health Protection, Public Health England), Dr Russell Gorton (Consultant Epidemiologist, Public Health England) and Dr Claire Jenkins (from PHE Gastrointestinal Bacteria Reference Unit). Dr Foster reported that the outbreak occurred at a popular charity event held in Newcastle upon Tyne between 28 February and 2 March 2013 attended by approximately 12,000 people. Newcastle City Council Environmental Health Team (EHT) and the event organisers started to receive reports of illness from event attendees from 4 March 2013 (about 15 to 20 people) with numbers increasing sharply over the following days (around 400 people reported between 7 to 10 days). She explained that the need for case finding was reduced as there was a lot of discussion on social media sites (Twitter and Facebook) linked to the event, people going to their Family Doctor and reports made to the Council's EHT. The outbreak investigation was coordinated through a multi-agency outbreak control team (OCT).

37. Members were informed that further cases were identified through an on-line cohort study (messages distributed via Twitter and Facebook). Investigations revealed there was common exposure to a particular stall and specific food items from the stall catered by a guest chef. Key foods were dosas, uttaphums and vadas (pancake style foods with vegetarian fillings). Coconut chutney was served as accompaniment with the above dishes. Stool samples were collected from those who reported illness who were symptomatic and these were tested for standard bacterial pathogens (*Salmonella*, *Campylobacter*, *E.coli* O157, and *Shigella*), *Cryptosporidium*, Norovirus, *Clostridium perfringens* and *Bacillus cereus*. Later on in the investigations multiplex PCR was employed specifically for the bacterial pathogens.

38. Dr Foster described the case definition as a person with diarrhoea who became ill between 12 hours and 5 days after attending the food festival. Total number of cases reported was 592 with those affected being mostly young healthy adults mainly aged 20-49 years (52.5% females). From the routine culture carried out it was reported that of 104 stool samples submitted there were 29 cases of confirmed *Salmonella* (25 were a new strain of *Salmonella* Agona Phage Type 40

not seen before in the UK either in food or humans; other *Salmonella* serovars were *S*. Cerro, *S*. Hadar, *S*. Typhimurium and an untyped *Salmonella*). *Salmonella* Agona PT 40 was isolated from a batch of curry leaves used at the event. As there was concern on the low positivity rate for *Salmonella* amongst cases, the OCT arranged for multiplex PCR for bacterial pathogens to be undertaken at the Public Health Laboratory for London. A nested case control study was used to confirm the clinical significance of the PCR and culture results.

39. Concerning the conclusions Dr Foster highlighted that:

- Contaminated curry leaves in an uncooked coconut chutney were the source of illness among people who consumed the product at the street spice festival. Further work was recommended in order to understand levels of contamination and effective control methods.

- Food operators did not understand the risks associated with the use of raw curry leaves, and were uncertain about guidance for their use. It was recommended that knowledge and training of food operators should be addressed.

- Lessons learnt included:

    - the need to use consistent methods for microbiological investigations of human and food /environmental specimens.

    - that mixed pathogen outbreaks may be more common than previously recognised, meaning that detection of a single pathogen should not necessarily halt wider microbiological investigation using new technologies to identify mixed infections.

40. The Committee made the following comments in discussion:

- A Member after declaring his interest concerning the enteric pathogens multiplex PCR which he said was developed by his colleagues at the London Public Health Laboratory pointed out that the assay, had been developed for the 2012 Olympics, and was accredited for outbreak investigations of affected populations but not yet fully validated for the diagnosis of individual patients. He explained that multiplex PCR results must be interpreted with caution, and subjected to appropriate statistical analysis. It was acknowledged that multiplex PCR could be a powerful tool in future investigations.

- The issue of communication between people affected by the outbreak and the OCT during the investigation period was raised. It was confirmed that letters were sent to everyone the OCT was

aware of being affected by the outbreak. The OCT ensured that everyone concerned was kept updated via letters and through social media. It was added that the food festival organisers' twitter account was immensely helpful in disseminating information during the investigation.

- The finding in relation to *Shigella* was queried. It was explained that the PCR used for *Shigella* is very sensitive and the organism is difficult to culture in comparison with other organisms such as *Salmonella.* It was noted that laboratories often focus their testing activities on the most likely target organisms. As *Shigella* has become rarer since the 1990s it now receives less investigative efforts than *Salmonella* and VTEC.

- Discussion included the effectiveness of the detection method, and raised the possibility of wider use of multiplex PCR. It was suggested that future investigations could consider the methodology used for testing/analysing animal samples. Dr Foster commented that although adequate samples were not available from all the people who were ill, the consensus view was that a proportion of the ill people had a mixed pathogen infection associated with consumption of a product contaminated with mixed animal and human faecal waste.

- The Committee queried recommendations for further research on the prevalence of contamination on curry leaves, and the growth/control of pathogens in uncooked food dishes. It was suggested some of these risks are already well recognised, and that further primary research may be unnecessary. It was, however, agreed that relevant information should be collated to inform risk assessment.

- A Member suggested there were gaps in the microbiological findings, such that other contaminated foods served at the festival may have contributed to the outbreak. It was explained that the OCT's hypothesis (that contaminated curry leaves that were used uncooked in a chutney were the source of illness in people who attended the festival) was supported by the epidemiological and microbiological findings from both human and food samples.

- There was a comment concerning the twitter streams and effectiveness of twitter during the investigation and a question as to whether this medium could be used again in the future. Dr Foster confirmed that the twitter streams were filtered and that twitter

provides an additional means of communicating with the public on food safety issues.

- A Member sought clarification on the conclusion that indicated that the use of contaminated raw curry leaves used uncooked in the preparation of coconut chutney by a guest chef was the source of illness in the people who consumed the chutney. It was confirmed that microbiological tests were carried out on other leaves sold locally (in Newcastle) and the results were negative.

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- It was observed that although the FSA provides advice on relevant control measures (how to use raw leaves including curry leaves); it was not unknown for fresh herbs and spices to be contaminated with *Salmonella*. It was suggested that the Committee may wish to consider if the current guidance is adequate.

- A Member commended the creativity of the OCT in dealing with a difficult and complex investigation, and highlighted that the lessons learned from the investigation should be useful for dealing with future outbreaks. He noted that novel means of communication such as social media may be useful in contacting diffuse groups involved in festivals and similar types of events.

41. The ACMSF Chair echoed the members' thanks for the excellent presentation acknowledging that it provided food for thought in relation to the forthcoming ACMSF horizon scanning exercise.

Infectious Intestinal Disease 2: foodborne disease attribution study

42. In June the Committee was briefed by Prof O'Brien in her role as the lead contractor from the University of Liverpool on the findings of research which was an extension of the IID2 Study[51]. It had incorporated contemporary data from that study with outbreak data together with findings from a systematic literature review.

43. Prof O'Brien informed members that although the study had not yet appeared in any peer reviewed literature, it had been through 12 international reviewers during the course of the research.

44. The IID2 study published in 2011 had estimated the burden of illness from infectious intestinal disease in the community in the UK as affecting around 1 in 4 of the population each year. The objective of the extension study was to determine the amount of diarrhoeal illness that was foodborne, and that had been acquired in the UK. The study

also estimated the burden of disease caused by contaminated food commodities using a point-of-consumption attribution model.

45. Prof O'Brien outlined the data sources and modelling approaches used in the study. The first stage had been a systematic review of peer-reviewed literature over 10 years including studies that reported the proportion of human cases attributable to different risk factors, and studies that attempted to attribute human cases to different sources/food vehicles, for example expert elicitation, use of outbreak data, and molecular methods. Additional sources of data were the IID1 and IID2 studies, and outbreak data.

46. Two modelling approaches were used: Monte Carlo simulation and a Bayesian approach. There was correlation between the 2 methods, although Prof O'Brien stressed that for all the pathogens statistical confidence intervals were wide, particularly for *E. coli* O157. She explained that the study was confined to 13 known foodborne pathogens.

47. Prof O'Brien gave an overview of the key results of the study. In the community *Campylobacter* was the most common foodborne pathogen (approximately 280,000 cases) followed by *Clostridium perfringens* (approximately 80,000 cases) and norovirus (74,000 cases).

48. In primary care *Campylobacter* was the most important cause of GP consultations. *Salmonella* and *E. coli* O157 were found to be the most important cause of hospital admissions.

49. In order to estimate the burden of foodborne disease caused by contaminated food commodities 3 data sources were used: attribution studies identified from the systematic literature review, outbreak datasets from national surveillance centres and consumption data from the National Diet and Nutrition Survey. The method published by John Painter in the USA was used to classify the food commodities. Prof O'Brien explained that "complex foods" was a category used for dishes containing several ingredients which could have been a cause of illness.

50. She highlighted the findings of this part of the study which estimated that 51% of cases of foodborne illness in the community were attributed to poultry, 10% to complex and other foods, 10% to produce and 6% to seafood. For hospital admission cases 32% were attributed to eggs. Using consumption data, the estimated rate (per 1,000/year) of foodborne illness was calculated for cases in the community, primary care, and hospital admissions.

51. Prof O'Brien clarified the strengths and the limitations of the study which included the fact that it was not possible to distinguish between illness resulting from consumption of foods and subsequent person-to-person spread. It was also not possible to distinguish between UK and imported food, or between food prepared at home and food eaten out.

However, even taking into account the various uncertainties, *Campylobacter* remained the most common foodborne pathogen in the UK, followed by *Clostridium perfringens,* norovirus and *Salmonella.* As far as food commodities were concerned, contaminated poultry was found to be the most common contributor of foodborne illness but other important food vehicles included beef, lamb, eggs, seafood and produce. "Produce" included salad vegetables, cooked vegetables, fruit, nuts, seeds (including sprouting seeds), produce dishes, almonds, halva, nuts/dry fruits, peanut butter, peanuts, sesame seed and tahini.

52. Members were invited to comment on the attribution study.

53. Members commented that as the study confirmed *Campylobacter* in chicken as the main foodborne challenge. It was acknowledged that chicken came in different forms such as processed, chilled, frozen, and was used in various types of dish and this merited further investigation as well as being able to distinguish between UK and imported chicken. There was also a lack of information on how much illness was caused by behaviours in the home and attributable to food eaten away from home.

54. In answer to a question about direct hospital admissions as opposed to people going to their GP in the first place, Prof O'Brien confirmed that the further work was being done on hospital episode statistics by the FSA.

55. A member asked if there was further information that could be collected when outbreaks were investigated which would help in this kind of study. Prof O'Brien said there were ways that data capture could be improved and one of these would be if there was a standard way of reporting outbreaks and sporadic illness on a national basis.

56. Members commented that the levels of illness attributed to *Clostridium perfringens* were higher than expected. Prof O'Brien replied that this pathogen had been looked for systematically in the IID2 study using both traditional and molecular methods and she surmised that it may not feature in national surveillance data because it does not commonly present to primary care.

57. A member commented on the possibility of comparing the results of the study with the prevalence of pathogens in animals at the food production level. Another member said that it was surprising that despite the levels of *Salmonella* found in pigs there were not more cases of *Salmonella* in pork although cases of illness had increased with the advent of hog roasts.

58. Prof O'Brien was thanked for her presentation. The Committee noted that the study has put the UK in a unique position in the amount of timely evidence available on which to base future research and surveillance and in prioritising effective interventions to reduce food poisoning.

Risk profile in relation to *Toxoplasma* in the food chain

59. In September 2012, the Committee published its report 'Risk Profile in Relation to *Toxoplasma* in the Food Chain'[1]. In this report the Committee reviewed the evidence on toxoplasmosis in humans and animals in the UK to produce a risk profile for *Toxoplasma* in the food chain.

60. The report followed a request from the FSA to consider whether current evidence indicated a food safety issue that needed to be addressed, which food sources were most likely to present a significant risk and what further investigations may be necessary to obtain robust data on UK prevalence and foodborne sources of toxoplasmosis.

61. Under the Framework for iteration and dialogue between the Food Standards Agency and the Scientific Advisory Committees (SACs)[2] it states:

62. The objectives and boundaries for iteration and dialogue between FSA and SACs are in 'Feedback and Review':

- to ensure SACs are informed in a timely manner on how their advice and recommendations (including on risk assessment or research needs) have been acted on, or not, and the reasons behind this, and that SACs can comment on this, especially when the action deviates from any explicit advice provided by SACs.

- to provide feedback for both sides to help to improve procedures and practices.

63. In June the Committee was updated on the actions taken in response to the recommendations in the Committee's *Toxoplasma* report[52].

64. The FSA outlined some of the ways the recommendations in the report, especially relating to data gaps, were being addressed:

- In relation to human disease, work to develop a pilot study to identify the risk factors for acute infection with *T. gondii* England and Wales had started. Public Health England had undertaken interviews with participants and collected some information, but analysis of the data had not yet begun. Members were also informed that there would be a paper published in the August edition of the journal "Epidemiology and Infection" on enhanced surveillance of toxoplasmosis in England and Wales 2008-2012,

[1] http://multimedia.food.gov.uk/multimedia/pdfs/committee/acmsfrtaxopasm.pdf
[2] http://www.food.gov.uk/science/sci-gov/commswork/sac-dialogue

which should also provide more up-to-date data than that which was available to the *Ad Hoc* Group.

- In relation to animal data, there was an EFSA project on the relationship between seroprevalence in livestock and the presence of *T. gondii* in meat involving a number of European countries. In the UK FSA is working with the Royal Veterinary College and Moredun Institute on UK input to this project which includes experimental studies in cattle, an abattoir study in cattle involving serological testing and identification of viable cysts and a study of pigs raised under outdoor conditions to identify risk factors for infection. Participation in this project will allow access to data from Europe and comparison with the situation in the UK. The approach is to undertake literature reviews, with a synthesis of this to inform experimental design, followed by abattoir studies, serological and tissue testing and other experimental studies. The project is expected to be completed by 2015 and the Committee would be updated on progress in due course.
- As part of the AHVLA pig abattoir survey, presented under another agenda item, data was collected from the testing of carcases in 14 slaughterhouses. This found the antibody seroprevalence to *T. gondii* was 7.4% (95% CI 5.3-9.5).

65. It was also outlined how the FSA had addressed the recommendations relating to advice given to immune-compromised groups in relation to *Toxoplasma*. The paper gave details of the advice to pregnant women and other vulnerable groups, on the NHS Choices website, which had been revised in February 2014 to include stronger emphasis on how to reduce the risk, for example the option to freeze cold cured/fermented meats. The FSA pointed out that this advice was part of a package of general hygiene advice including contact with environmental sources of *Toxoplasma*.

66. As members were invited to comment on the progress made to date on the FSA's response to the ACMSF's recommendations, the Chair of the *Ad Hoc* Group Vulnerable Groups stated that it was important for the Committee to receive feedback on what had happened to their advice, especially since some of those who had been part of the subgroup were not members of the main ACMSF. A member asked if any further work was planned on the subject of heat destruction of *Toxoplasma* cysts, bearing in mind the trend towards low temperature cooking of meat. The FSA's response was that some of the animal studies may help increase knowledge concerning the prevalence and numbers of *Toxoplasma* cysts in meat, but there were no immediate plans for any specific work in this area.

Domestic Kitchen Practices: Findings from the Kitchen Life Study

67. The Committee periodically receive updates on the findings of social science research which may have a bearing on the assessment of microbiological food safety risks.

68. The Committee at its October 2013 meeting requested a presentation on the outcome of the Kitchen Life Study (insight into foodborne disease risk from domestic kitchen practices). At the June 2014 ACMSF meeting Helen Atkinson (FSA SSRU) and Dr Wendy Wills (University of Hertfordshire) presented the findings of the above Study[53]. Helen provided background to the work. She reported that Kitchen Life is part of a package of the FSA's research on domestic practice that has its roots in the work ACMSF and SSRC had carried out on the increased incidence of listeriosis in the UK. Members were informed that SSRC was happy to present the Committee with the findings of the other studies being carried out under the FSA's research on domestic practices.

69. Dr Wendy Wills (project lead for Kitchen life) presented the findings of the study. She reported that work was commissioned by the FSA in 2011 to examine food-safety behaviours in the home, focusing on actual rather than reported behaviours and to complement the findings from other studies. It involved a team of social scientists with various backgrounds from University of Hertfordshire. The objectives of the study were outlined. The study employed a qualitative methodology using an ethnographic approach. 20 households (respondents from the 2010 Food and You Survey) were recruited as case studies to investigate the kitchen lives of ordinary people. The case study households were from across the UK (10 including people aged 60+ years; 10 including people <60 years).

70. The study revealed that the kitchen was not a neatly bounded space or room reserved exclusively for practices relating to food work. Kitchens in the study were spaces in which different aspects of domestic life took place.

71. Dr Wills reported that food-related and non-food related elements of kitchen practices were entangled; practices incorporated multiple activities, things, people and places inside and outside the home and these flowed flawlessly together.

72. Members were informed that the study came up with the phrase 'logics and principles' as a term relating to the 'rules of thumb' drawn on by participants. Households employed 'rules of thumb' about 'how things are done' and these were inconsistently drawn on by participants in the study, particularly in relation to washing meat, poultry and fish; and salad and vegetables.

73. Dr Wills summarised the findings by explaining that bringing to life contemporary kitchens, through a 'close-up' examination of practices, the Kitchen Life project provides insights that could be useful in the FSA's efforts to support effective food safety practices in the home. A key finding from the study suggested that older people, in particular, might be at risk of harm from foodborne illness because there are more factors working against them than in other household types. She added that the study together with evidence from other FSA funded research suggests some new ways of thinking about risk and about the failure of consumers to adhere to recommended practices.

74. The Committee made the following remarks on the presentation.

75. A member queried the robustness of the study's observations highlighting that a sample size of 20 households was not representative of the UK population. It was pointed out that there may be significant differences in the study's findings if other factors (such as geography, ethnicity, social economic class etc.) which were not looked at when the 20 households were selected are considered. Dr Wills confirmed that although the above factors should be taken into account when carrying out qualitative studies, the work was not designed to be representative of the UK population or representative of a subset of the population. She explained that the small sample size used provides valuable insight on the kitchen practices of ordinary households in the UK. Dr Wills agreed that there was the possibility of getting a different outcome if an identical study was carried out on another set of ordinary households.

76. Concerning findings of the study in relation to events that can trigger training/ education on good kitchen practices, a member asked if there would be opportunities for training children. Dr Wills commented that the report recognised that kitchens were often not under the control of one person and acknowledged the importance of getting the message across/influencing children from a very young age. The report findings suggested that children often start to develop differentiated practices from a very young age.

77. There was a request for additional information on the subject of house logics and principles, in particular on where the households learnt their "rules of thumb" in relation to food safety. Dr Wills explained that it was difficult to unpack what influences people's "rules of thumb" as the findings showed how these were inconsistently drawn on by households, particularly in relation to washing meat, poultry, fish, salad and vegetables. Dr Wills added that the study report listed the various sources of information households indicated they go to for advice.

78. A member drew attention to one of the objectives of the study "What relationships exist between what people do and say and the kitchen space/place?" and asked if the study was able gauge how much the participants were willing say compared to what they actually did. Dr Wills replied that the study noted that there were a few inconsistencies

in some responses when questions that had been previously asked were reworded and asked again.

79. As the ACMSF report on *Listeria* in part triggered the study, had it identified practices by the elderly contributing to the increased incidence of listeriosis? Dr Wills responded that it was a shifting way of life in the over 60s that may expose them to foodborne infections e.g. a man who had done no cooking all his life having to take responsibility for feeding himself in the absence of his wife.

80. There was discussion on how the kitchen was cleaned. Dr Wills remarked that the study noted the various methods used for cleaning the kitchen, which included using wet cloths, wet cloths with antibacterial material and dry kitchen roll. The study revealed that most people used a wet cloth and no antibacterial material.

81. The ACMSF Chair read out Joy Dobbs (SSRC Deputy Chair and ACMSF ex-officio) written comments on this study. Joy Dobbs indicated that the study was interesting because of the real life case studies and the enlightening interaction between pets and households.

82. The Committee welcomed the presentation and agreed that it provided useful insight into how the domestic kitchen functions. Members accepted Miss Atkinson's offer to present Wave 3 of the Food and You Survey results at a future meeting.

Salmonella, *Toxoplasma*, Hepatitis E virus, *Yersinia*, Porcine Reproductive and Respiratory Syndrome virus, *Campylobacter* and Antimicrobial Resistance and ESBL *E. coli* in UK pigs at slaughter

83. The Committee was briefed by the Animal Health and Veterinary Laboratories Agency (Miss Tanya Cheney) on the findings of the baseline survey of pigs at slaughter[54]. The survey was a monitoring programme of *Salmonella*, *Toxoplasma*, Hepatitis E virus (HEV), *Yersinia*, Porcine Reproductive and Respiratory Syndrome virus (PRRSv), *Campylobacter* and Antimicrobial Resistance (AMR) and Extended Spectrum Beta Lactamase (ESBL) producing *E. coli* in UK pigs at slaughter. The study was a collaborative and multi-funded project involving Defra, Veterinary Medicines Directorate (VMD), FSA, Public Health England (PHE), Public Health Wales (PHW), Scottish and Welsh Governments, Department of Agriculture and Rural Development Northern Ireland and the British Pig Executive. Miss Cheney reported that a total of 645 pig carcases were randomly selected and sampled for the above target organisms at the fourteen largest capacity slaughterhouses in the UK. Sampling was between January and May 2013. Study design was consistent with previous baseline surveys (Commission Decision 2006/668/EC).

Salmonella

84. Prevalence of *Salmonella* in the caecal samples was 30.5% (a statistically significant rise from 22% in the 2006/7 UK baseline survey), prevalence in the carcase swab samples was 9.6% (a statistically significant decrease from 15% in 2006/7 survey) and levels in rectal swab was 24% in comparison with the 2006/7 survey. The emerging serovars which may partly be responsible for the overall increase in *Salmonella* prevalence were highlighted.

Toxoplasma

85. Seroprevalence of *Toxoplasma* was 7.4%. This was the first UK-wide seropositive estimate for *Toxoplasma* in pigs and was similar to other EU countries. Heart and tongue tissues were retained by Public Health Wales.

***Yersinia* spp.**

86. Prevalence of *Yersinia* was 32.9% for tonsil samples, and the prevalence in the carcase swab samples was 1.9%. More than a quarter of pigs were found to carry *Y. enterocolitica* but there was a low level of carcase contamination of 1.9% which suggests a small risk to consumers. This was the first UK wide survey for *Yersinia* in pigs.

Hepatitis E

87. Seroprevalence of Hepatitis E virus was 92.8%. Prevalence of infection defined by the presence of detectable plasma HEV RNA was 5.8% (with around 1% of pigs being significantly viraemic). Active infections and those occurring early in life were almost all HEV group 1 of genotype 3. Miss Cheney mentioned that PHE were in the process of testing the caecal sample collected so additional results are expected on HEV.

Extended Spectrum Beta Lactamase (ESBL) producing *E. coli*

88. Overall prevalence of ESBL *E. coli* was 23.4% with test method being capable of detecting very low numbers of ESBL *E. coli*. 22% of pig caecal samples were positive for CTX-M *E. coli.* 85% of CTX-M *E. coli* from pigs were sequence type CTX-M1. 2.2% of pig caecal samples were positive for SHV-12 *E.coli*. The ESBL enzymes which were detected in *E.coli* from pigs were mostly of types which were different from those causing human infections in the UK.

Antimicrobial Resistance in *Campylobacter coli*

89. 153 *C. coli* isolates were tested for their *in vitro* susceptibility to seven antimicrobials. The greatest levels of resistance were observed against tetracyclines (77.8%) and streptomycin (66.0%). There was also a moderate level of resistance against erythromycin (27.5%),

nalidixic acid (17.0%) and ciprofloxacin (12.4%). No resistance was observed for either chloramphenicol or gentamicin.

90. As EU Member States (MSs) use similar test methods, findings are comparable to results in other MSs and this reveals that resistance levels in *C. coli* in pigs are generally similar to or better than those occurring in other MSs with similar pig husbandry, with the exception of the Nordic MSs which report low or very low levels of resistance to some antimicrobials.

Porcine reproductive and respiratory syndrome virus (PRRSv)

91. The study provided the first UK-wide seroprevalence estimate of 58.3% with the highest seroprevalence being in dense pig farming areas of England. It was highlighted that because the vaccination status of the pigs was unknown it is possible that the findings are an overestimate of field infection.

92. Miss Cheney concluded her presentation by outlining the benefits of the survey which include: opportunity for the UK to fulfil statutory requirements and plug data gaps in multiple areas. The survey was highly cost effective and was a multi-funded study that demonstrated good collaborative working. The study revealed a consistently lower prevalence of target bacteria found on the carcases compared with carriage of the same microorganisms in the animal. This demonstrates the effectiveness of the dressing procedures in the abattoir to limit the contamination of pig carcasses and therefore control the risk of exposure of consumers to harmful pathogens.

93. The following points were discussed by Members on the findings of the study:

- Concerning the sequencing of the HEV RNA, it was queried whether there were group 1 and group 2 comparable studies in Europe and in particular whether genotype 3 was present in pigs and humans and non-travel genotype 3 group 1 and genotype 3 group 2 viruses of human as the latter appear to be on the increase. Miss Cheney responded that she was unaware of work being done in other MSs. However, it was confirmed that PHE were leading on issues relating to HEV infections in the UK and they together with interested agencies were presently gathering and analysing data on HEV. Miss Cheney stated that PHE have various ongoing studies on HEV which they would report on in the future. These studies would be used to build on the findings from this survey. She added that the findings from this study on HEV were incomplete as the caecal sample results were not yet available.

- It was noted that there was evidence from South East Asia that particular strains of PRRSv could lead to an increase of *Streptococcus suis,* an important swine pathogen that also carries

zoonotic risk. Members were informed that AHVLA intend to continue to analyse the survey data to assess whether the combination of infections could result in the shedding of other pathogens.

- It was asked if there were plans for other work on *Toxoplasma* particularly testing for infectivity. It was noted that the *Toxoplasma* Reference Unit, Public Health Wales have retained heart and tongue tissue and it was plausible that testing for infectivity could be done in the future.

- Members welcomed the working together of Government Departments across the 4 UK countries on this collaborative and multi-funded project which is unprecedented. It was noted that the project provided the opportunity to fulfil statutory requirements and plug data gaps. Cost of sample collection and testing shared amongst the project partners and impressive turnaround time were also mentioned as a plus for this project.

- Reference was made to the 2006/07 baseline study and a question asked on the key differences in the number of samples and methodologies used that might contribute to the variations in the outcome of the above survey. It was confirmed that in the 2006 study only finishing pigs were sampled. In the above study the target population was all pigs that came for slaughter (finishers and cull sows and boars). 90% of the pigs sampled were aged under 1 year old. Also it was stated that the 2006 study was for 12 months while the current study was for 4 months. Both surveys revealed no seasonal variation in *Salmonella* levels.

- Members thanked Miss Cheney for presenting the findings of the above study and highlighted that it provides useful information for future risk assessment.

Epidemiology of Foodborne Infections Group

94. The FSA updated the Committee on the outcome of the Epidemiology of Foodborne Infections Group meetings[55&56]. It was reported that between January – December 2013, there was a total of 1,168 reports of *Salmonella* from livestock species not subject to *Salmonella* National Control Plans (NCP). This was similar to January – December 2012 (1,153 reports) and a 7% decrease compared to the equivalent period in 2011 (1,251 reports). Provisional data for January to March 2014 revealed a total of 248 reports of *Salmonella* from livestock species not subject to *Salmonella* NCP.

95. Trends in laboratory reports for *Salmonella*, *Campylobacter*, *Listeria monocytogenes* and *E.coli* O157 in humans were reported. The decline in non-typhoidal *Salmonella* infections continued, with the numbers of cases and rates of infection remaining in decline for the past 10 years in UK. The decline in *S.* Enteritidis continued in all countries, and this

was presumed to be as a result of PT4 strains as this phage type continued to decline following interventions in the poultry and egg industries. Infections with *S.* Typhimurium overall were only slightly lower than ten years ago, but would be lower still, were it not for the rise in *S*. Typhimurium Definitive Type 193 (DT 193) that had been seen in all countries in recent years.

96. Reported *Campylobacter* infections continued to decline in England, Wales and Scotland, to levels seen in 2009. Northern Ireland continued to report rates of infection considerably lower than those for the rest of UK and further work is underway to try and identify reasons for the lower rates in Northern Ireland. *Listeria monocytogenes* remained lower than in most recent years, though with small reported numbers the data remained particularly stochastic, with the overall rate of infection in the UK fluctuating from 1.9 cases per million population to 4.1 / million in the past 13 years. The rates of VTEC O157 infection in Scotland and Northern Ireland remained higher than in England and Wales.

97. The number of outbreaks reported in 2013 returned to similar levels as those seen in 2011. Reported outbreaks of *Salmonella* continued to decline against an increasing number of reported *Campylobacter* and *Clostridium perfringens* outbreaks. In 2013 the largest outbreak reported was a *Salmonella* Agona PT40 and other GI pathogens associated with curry leaves used at food festival in the North east in February-March. Other outbreaks of interest included *Salmonella* Goldcoast associated with whelks, *Salmonella* Typhimurium DT120 associated with a hog roast, *E.coli* O157 PT2 linked to watercress and *Salmonella* Mikawasima associated with eating chicken outside the home.

98. Other issues EFIG considered at their meetings include updates on antimicrobial resistance matters, IID2 attribution study and PHE microbiological food studies.

Information papers

99. The ACMSF is routinely provided with information papers on topics which the Secretariat considers may be of interest to Members. This affords them the opportunity to identify particular issues for discussion at future meetings. Among the documents provided for information during 2014 were:

NO. OF PAPER	NAME OF PAPER	MEETING NUMBER	DATE OF MEETING
ACM/1141	Update from other Scientific Advisory Committees	82nd	30 January 2014
ACM/1142	ACMSF Work plan	82nd	30 January 2014
ACM/1143	Items of interest from the literature	82nd	30 January 2014
ACM/1144	Scottish Government VTEC/*E.coli* O157 action plan	82nd	31 January 2014
ACM/1145	FSA *Campylobacter* workshop report	82nd	30 January 2014
ACM/1146	Codex Committee on Food Hygiene	82nd	30 January 2014
ACM/1156	Update from other Scientific Advisory Committees	83rd	26 June 2014
ACM/1157	ACMSF Work plan	83rd	26 June 2014
ACM/1158	Items of interest from the literature	83rd	26 June 2014
ACM/1159	EFSA Opinions on the risk posed by pathogens in food of non-animal origin	83rd	26 June 2014
ACM/1160	Report from the *Ad Hoc* Group on Raw, Rare and Low Temperature Cooked Food	83rd	26 June 2014
ACM/1161	*Campylobacter* Risk Management Programme	83rd	26 June 2014
ACM/1162	Risk assessment for the use of *Mycobacterium bovis* BCG Danish Strain 1331 in Cattle: Risks to public health	83rd	26 June 2014

ACMSF Working and *Ad Hoc* Groups

Antimicrobial Resistance Working Group

100. The Antimicrobial Resistance Working Group met four times in 2014. The issues they considered include:

- Findings of LA-MRSA in turkeys on a farm in East Anglia (LA-MRSA is common in livestock in continental Europe but had not previously been detected in livestock in the UK)
- Research paper which suggested that DNA fragments from food consumed by humans can carry complete genes, without degradation into the human circulatory system
- EFSA's scientific opinion on the public health risks of bacterial strains producing extended-spectrum β-lactamases and/or AmpC β-lactamases in food and food-producing animals.
- AMR aspects of AHVLA's prevalence study of a number of infectious agents in UK pigs at slaughter
- Government's AMR policy in relation to animal health
- Recent changes to EU legislation and the goals of the Government AMR Strategy 2013-2018 which was launched in September 2013.
- EFSA's opinion on Carbapenemase resistance (Carbapenemases are regarded as a potentially emerging problem following reports of carbapenem-resistant bacteria in food-producing animals in some European countries)
- Commission implementing decision on the monitoring and reporting of antimicrobial resistance in zoonotic and commensal bacteria.
- Paper that highlighted the potential gaps in the feed chain through imports of feed from third countries.
- The activities of the Ad hoc AntiMicrobial Expert Group (AMEG) set up by the European Medicines Agency (EMA) to debate certain issues relating to the veterinary use of antimicrobials and AMR.
- The issue of feeding of waste milk to calves
- EU project that is measuring AMR in illegally imported foods

101. Summaries of the above meetings are available on the ACMSF webpage at http://acmsf.food.gov.uk/acmsfsubgroups/amrwg

Ad Hoc Group on Foodborne Viral Infections

102. In January the group presented its draft report to the Committee seeking approval to go to public consultation. Members agreed for the report to be issued for formal consultation and this was carried out between 21 March and 29 May 2014. The purpose of the consultation was to seek stakeholders' views and comments on the review carried out on foodborne viral infections, assessment of the risk to consumers and the highlighting of any research and surveillance gaps.

103. The consultation was issued to over 140 interested parties across the UK as well as being circulated to Local Authorities. Comments and contributions received from stakeholders were considered by the Ad Hoc group and these were used to further inform the group's position and used to revise the report's conclusions and recommendations. Responses were provided to all the comments received.

Outcome and Impact of ACMSF advice

104. Feedback on the outcome of ACMSF recommendations are provided to the Committee through matters arising papers, information papers and oral updates at meetings. In 2014 the Committee considered a range of issues which may have an impact on risk management.

105. The FSA sought the Committee's views on its relative risk ranking of ready-to-eat foods proposal for vulnerable groups in relation to *Listeria monocytogenes*. As part of its strategic plan the Agency had underlined the need to tackle those pathogens which contribute most cases or deaths to the burden of foodborne disease. Although the Committee was cautious in treating the outcome of the ranking exercise as robust evidence due to a number of factors they outlined, they recognised that the approaches provided useful information. The Committee felt a key consideration for the Agency was how information might be used by people who were not aware of the limitations identified. ACMSF considered the results could be used for targeted advice for specific groups of people in specific circumstances rather than general advice for the whole population.

106. Other approaches suggested by the Committee include sensitivity analyses, multiple dose response relationships and a semi-quantitative risk assessment tool which uses point estimates. The FSA's *Listeria* risk management programme (consumer work stream) would take into account the Committee's views in any update material it provides with respect to the risk of listeriosis in vulnerable groups.

107. The Committee's AMR Working Group whose remit is "to assess the risks to humans from foodborne transmission of antimicrobial-resistant microorganisms and provide advice to the FSA" had four meetings in 2014 where they considered a range of issues brought to them by the Agency. The group's views were taken into account by the FSA on the issues highlighted above (see paragraph 100 to 101 above).

Chapter 3: A Forward Look

Future work programme

108. The Committee will keep itself informed of developing trends in relation to foodborne disease through its close links with the FSA and Public Health England. We will continue to respond promptly with advice on the food safety implications of issues referred to the Committee by the FSA.

109. The *Ad Hoc* Group on Foodborne Viral Infections set up to revisit the issue of foodborne viruses in light of the significant developments in this area is working towards publishing its report: An update on viruses in the food chain by Spring 2015.

110. The Committee through its Working Group on Antimicrobial Resistance will consider antimicrobial resistance and food chain issues.

111. The Committee, through its standing Surveillance Working Group, will continue to provide advice as required in connection with the Government's microbiological food surveillance programme and any other surveillance relevant to foodborne disease.

112. The Working Group on emerging pathogens will keep a watching brief on developments concerning the risks to human health from newly emerging or re-emerging pathogens through food chain exposure pathways.

113. The Committee will continue to keep itself informed of Government horizon scanning activities and initiatives, and their potential impact on the ACMSF's future work programme. The Committee's next horizon scanning review is scheduled for early 2015.

114. Details of the Committee's work plan for 2014/15 can be found at Annex II.

Annex I

Papers Considered by ACMSF in 2014

NO. OF PAPER	NAME OF PAPER	MEETING NUMBER	DATE OF MEETING
ACM/1133	Matters arising	82nd	30 January 2014
ACM/1134	Update on viruses in the food chain	82nd	30 January 2014
ACM/1135	Listeriosis in England and Wales	82nd	30 January 2014
ACM/1136	Relative risk ranking of ready-to-eat foods for vulnerable groups	82nd	30 January 2014
ACM/1137	Street Spice outbreak	82nd	30 January 2014
ACM/1138	Epidemiology of Foodborne Infections Group	82nd	30 January 2014
ACM/1139	Antimicrobial Resistance Working Group	82nd	30 January 2014
ACM/1140	Dates of future meetings	82nd	30 January 2014
ACM/1141	Update from other Scientific Advisory Committees	82nd	30 January 2014
ACM/1142	ACMSF Work plan	82nd	30 January 2014
ACM/1143	Items of interest from the literature	82nd	30 January 2014
ACM/1144	Scottish Government VTEC/*E.coli* O157 action plan	82nd	31 January 2014
ACM/1145	FSA *Campylobacter* workshop report	82nd	30 January 2014
ACM/1146	Codex Committee on Food Hygiene	82nd	30 January 2014
ACM/1147	Matters arising	83rd	26 June 2014
ACM/1148	Domestic Kitchen Practices: Findings from the Kitchen Life study	83rd	26 June 2014
ACM/1149	Infectious Intestinal Disease 2 attribution study	83rd	26 June 2014
ACM/1150	*Salmonella*, *Toxoplasma*, Hepatitis E, *Yersinia*, PRRSv,	83rd	26 June 2014

	AMR in *Campylobacter coli* and ESBL *E. coli* in UK pigs at slaughter		

ACM/1151	Risk profile in relation to *Toxoplasma* in the food chain	83rd	26 June 2014
ACM/1152	Epidemiology of Foodborne Infections Group	83rd	26 June 2014
ACM/1153 and 1154	Antimicrobial Resistance Working Group	83rd	26 June 2014
ACM/1155	Dates of future meetings	83rd	26 June 2014
ACM/1156	Update from other Scientific Advisory Committees	83rd	26 June 2014
ACM/1157	ACMSF Work plan	83rd	26 June 2014
ACM/1158	Items of interest from the literature	83rd	26 June 2014
ACM/1159	EFSA Opinions on the risk posed by pathogens in food of non-animal origin	83rd	26 June 2014
ACM/1160	Report from the *Ad Hoc* Group on Raw, Rare and Low Temperature Cooked Food	83rd	26 June 2014
ACM/1161	*Campylobacter* Risk Management Programme	83rd	26 June 2014
ACM/1162	Risk assessment for the use of *Mycobacterium bovis* BCG Danish Strain 1331 in Cattle: Risks to public health	83rd	26 June 2014

Annex II

ACMSF Forward Work Plan 2014/15

This work plan shows the main areas of ACMSF's work over the next 12 to 18 months. It should be noted that the Committee must maintain the flexibility to consider urgent issues that arise unpredicted and discussions scheduled in the work programme may therefore be deferred.

	Topic	Progress	Expected Output
1	**Horizon scanning** The ACMSFs last horizon scanning exercise resulted in the establishment of a subgroup to consider the microbiological risks associated with raw, rare and low temperature cooked foods. The subgroup's paper on this topic was published at the October 2013 ACMSF meeting. Paper was slightly updated and provided to members in June 2014. A new horizon scanning exercise to identify potential topics and emerging microbiological risks will be taken forward.	Horizon scanning activity to be held by January 2015.	Short-listed priorities for horizon scanning topics.
2	**Foodborne Viral Infections**	*The Ad Hoc* Group on Foodborne Viral Infections presented a draft version of their report to the Committee in October 2013.	An ACMSF report on foodborne viral infections highlighting risks to consumers and identifying any research and surveillance gaps.

	Topic	Progress	Expected Output
		Members submitted written comments on the report and the prioritisation of recommendations. The Committee approved the draft final report for public consultation in January 2014. Consultation comments and revised report to be presented to the Committee in October 2014.	Report and recommendations will be forwarded to the FSA.
3	**Newly Emerging Pathogens** The Newly Emerging Pathogens Working Group provides advice on the significance and risk from newly emerging or re-emerging pathogens through food chain exposure pathways.	Continuous.	The Committee to draw the FSA's attention to any risk to human health from newly emerging pathogens via food.
4	**Microbiological Surveillance of food** The Surveillance Working Group provides advice as required in connection with the FSA's microbiological food surveillance programme and any other surveillance relevant to foodborne disease.	Working group activities are continuous. Committee to consider the FSAs survey on *Listeria* in cooked-sliced meat at its October 2014 meeting. Committee to consider results of UK-wide microbiological monitoring of slaughter pigs at the June 2014 meeting.	Surveillance Working Group/Committee comments on survey protocols and survey results for consideration by FSA in their microbiological food surveillance programme.

	Topic	Progress	Expected Output
5	**Developing trends in relation to foodborne disease** The Committee receives updates on research, surveys, investigations, meetings and conferences of interest.	As issues arise EFIG[3] updates will be provided at the January and June 2014 meetings. The results of research to estimate the burden of foodborne disease will be presented to the Committee in June 2014.	ACMSF comments on the updates it receives for the FSA's consider-ation.
6	**International and EU developments on the microbiological safety of food** The Committee is updated on issues of relevance and significant developments at an EU and international level on microbiological food safety, such as EFSA opinions and Codex Committee on Food Hygiene meetings.	As issues arise.	ACMSF to note updates and provide comments if desired.
7	**Microbiological Incidents and outbreaks** The views of the Committee will be sought where necessary and updates provided on	As issues arise.	ACMSF assessment of the risks in relation to significant microbiological outbreaks/incidents.

[3] Epidemiology of Foodborne Infections Group

	Topic	Progress	Expected Output
	outbreaks of significance.		
8	**Antimicrobial resistance** ACMSF published a report on microbial antibiotic resistance in relation to food safety in 1999. Progress on the Committees recommendations was reviewed in 2005 and 2007.	The Committee were updated on developments and emerging issues in relation to antimicrobial resistance in January 2013 and agreed to set up a subgroup to consider antimicrobial resistance and food chain issues in more detail. The subgroup has met four times and summaries of their discussions and recommendations are provided at the subsequent Committee meeting.	ACMSF assessment of the key risks to the food chain which may have consequences for human health and identification of key research or surveillance gaps in relation to the food chain.
9	***Mycobacterium bovis* and possible health risks associated with meat**	The Committee will be asked to review the risk level classification for health risk associated with the consumption of meat from animals with evidence of *M. bovis* infection. Committee to use the *M.bovis* and raw milk risk assessment framework. Uncertainties are to be highlighted before risk classification is considered.	ACMSF assessment of risk to human health in relation to the consumption of meat from animals with evidence of *M.bovis* infection.

10	**Social science research relating to microbiological food safety risks**	The Committee will receive updates on the findings of social science research which may have a bearing on the assessment of microbiological food safety risks. Committee to consider findings from the recent FSA research on domestic kitchen practices at their June 2014 meeting.	ACMSF to note updates and provide comments if desired.
11	**Microbiological risks from shell eggs**	The Committee to assess risks associated with egg consumption at either their October 2014 or January 2015 meeting.	ACMSF's assessment of the risks that may be associated with egg consumption.
12	**Bovine Tuberculosis (TB) vaccination field trials**	AHVLA to carry out a risk assessment on the safety of meat and milk from vaccinated animals participating in the field trial. The Committee will receive information on the proposed risk assessment (at the June 2014 meeting) and will be asked to comment on the risk assessment when it is completed later in 2014.	ACMSF's views will be used to inform a decision on whether meat/milk from vaccinated animals can enter the food chain.

Annex III

Terms of Reference and Membership of the Advisory Committee on the Microbiological Safety of Food, its Working Groups and its *Ad Hoc* Groups

Terms of reference

ACMSF

To assess the risk to humans from microorganisms which are used or occur in or on food and to advise the Food Standards Agency on any matters relating to the microbiological safety of food.

Surveillance Working Group

To facilitate the provision of ACMSF advice to government in connection with its microbiological food surveillance programme and other surveillance relevant to foodborne disease, particularly in relation to the design, methodology, sampling and statistical aspects; and to report back regularly to the ACMSF.

Newly Emerging Pathogens Working Group

To assemble information on the current situation on this topic in order to decide whether there is a potential problem in relation to the microbiological safety of food; and to recommend to the ACMSF whether the Committee needs to undertake further action.

Ad Hoc Group on Foodborne Viral Infections

- Assess the extent of viral foodborne infection in the UK – with particular reference to norovirus and hepatitis E. Including discussion on the issues surrounding emerging risks.

- Describe the epidemiology, sources and mode of transfer of foodborne viral infection.

- Agree a framework outlining the key criteria for assessing the foodborne risks posed by viruses.

- Review the recommendations from the 1998 report and the Governments' responses.

- Identify practical options that might exist, or be developed, for the prevention and control of foodborne transmission. Including communication strategies to target the industry and consumers.

- Assess the implication of new technologies for public health and control of foodborne viruses.

- Identify data gaps and research priorities where it would be valuable to have more information.

- Report on these matters by January 2013.

Ad Hoc Group on Raw, Rare and Low Temperature Cooked Foods

To assess the microbiological risks to consumers associated with:

- the use of low temperature cooking/slow cooking
- foods of animal origin served raw
- foods of the animal origin served rare

and to identify any gaps in the data that would assist in a risk assessment. Scope: any sector that uses low temperature/slow cooking or produces raw and/or rare food.

Antimicrobial Resistance Working Group

- To brief ACMSF on developments in relation to antimicrobial resistance and the food chain and identify evidence that will assist the group in assessing the risks.

- To review key documents and identify the risks for the UK food chain and relevant aspects of the feed chain in relation to antimicrobial resistance which may have consequences for human health.

- To comment on progress in understanding the issue of antimicrobial-resistant microorganisms and the food chain since the ACMSF produced its report in 1999 and subsequent reviews in 2005 and 2007, including the relevance of any outstanding recommendations.

- To highlight key research or surveillance gaps in relation to antimicrobial-resistant microorganisms and the food/feed chain and identify those which are considered a priority.

Membership Tables

		ACMSF	Surveillance Working Group	Newly Emerging Pathogens Working Group
Chair				
Professor S J O'Brien	Professor of Infection Epidemiology and Zoonoses, University of Liverpool, Institute of Infection and Global Health, National centre for Zoonosis Research	✓	✓	✓
Members				
Dr G Adak	Head of Gastrointestinal Infection Surveillance, Department of Gastrointestinal, Emerging & Zoonotic Infections, Health Protection Services Colindale	✓	✓	
Dr G Barker	Senior Research Scientist, Institute of Food Research, Norwich	✓		

		ACMSF	Surveillance Working Group	Newly Emerging Pathogens Working Group
Mr J Bassett[4]	Principal Consultant, John Bassett Consulting Ltd	✓		
Dr R Betts	Head of Food Microbiology, Campden BRI	✓	✓	
Mrs V Buller	Catering Adviser School Food Consultant Service Improvement Consultant	✓		
Professor J Coia[5]	Consultant Microbiologist, NHS Greater Glasgow and Clyde	✓	✓	
Mrs J Dobbs[6]	Member of the Social Science Research Committee	✓		
Mrs R Glazebrook	Consumer representative	✓		

[4] Appointment ended 31 March 2014
[5] Chair of Surveillance Working Group
[6] *Ex officio* Pilot appointment began in 2014

		ACMSF	Surveillance Working Group	Newly Emerging Pathogens Working Group
Professor J Gray	Consultant clinical scientist, Specialist Virology Centre, Norfolk and Norwich University Hospitals	✓		
Professor R E Holliman[7]	PHE Lead Public Health Microbiologist for London. Professor of Public Health Microbiology, St George's, University of London. Consultant in Clinical Microbiology, at St George's, Barts & the Royal London Hospitals.	✓		✓
Ms J Hopwood	Company Microbiologist, Marks & Spencer	✓	✓	

[7] Chair of Newly Emerging Pathogens Group from April 2013

		ACMSF	Surveillance Working Group	Newly Emerging Pathogens Working Group
Professor P McClure[8]	Microbiologist and Microbiology Department Manager, Mondelēz International R&D Ltd	✓		
Professor D McDowell	Professor of Food Studies University of Ulster	✓	✓	✓
Mr P McMullin[9]	Senior Veterinarian & Managing Director, Poultry Health Services	✓		✓
Dr S Millership	Consultant in Communicable Disease Control, Essex Health Protection Unit and Consultant in Microbiology, Princess Alexandra Hospital, Harlow	✓		

[8] Appointed 1 April 2014
[9] Appointment ended 31 March 2014

		ACMSF	Surveillance Working Group	Newly Emerging Pathogens Working Group
Mrs J Morris	Principal Policy Officer (Food), Chartered Institute of Environmental Health	✓		
Mr D Nuttall	Catering Manager Harper Adams University College	✓		
Dr D Tucker	Senior Lecturer in Veterinary Public Health/pig medicine, University of Cambridge	✓		
Departmental Representatives				
Mr S Wyllie	Department for Environment, Food and Rural Affairs	✓		✓
	Food Standards Agency	✓		
Dr Susanne Boyd	Food Standards Agency (Northern Ireland)	✓		
Dr J McElhiney	Food Standards Agency (Scotland)	✓		
	Food Standards	✓		

	Agency (Wales)			
		ACMSF	Surveillance Working Group	Newly Emerging Pathogens Working Group
Secretariat				
Administrative Secretary Ms G Hoad	Food Standards Agency	✓	✓	✓
Scientific Secretary Dr P E Cook	Food Standards Agency	✓		
Administrative Secretariat				
Dr S Rollinson	Food Standards Agency	✓	✓	✓
Mr A Adeoye	Food Standards Agency	✓	✓	✓
Miss S Butler	Food Standards Agency	✓	✓	✓
Scientific Secretariat				
Mr Adam Hardgrave	Food Standards Agency		✓	

		Ad Hoc Group on Foodborne Viral Infections	*Ad Hoc* Group on Raw, Rare and Low Temperature Cooked Foods	Antimicrobial Resistance Working Group
Members				
Mr J Bassett				
Dr R Betts[10]			✓	
Mrs V Buller			✓	
Professor J Coia				✓
Mrs R Glazebrook		✓		
Prof J Gray		✓		
Dr R Holliman				✓
Ms J Hopwood		✓	✓	
Prof D McDowell[11]			✓	✓
Mr P McMullin				✓
Dr S Millership		✓		
Mrs J Morris		✓	✓	
Mr D Nuttall			✓	
Professor S J O'Brien[12]		✓		
Co-opted Members				
Dr D Brown	Public Health England	✓		

[10] Chair of the *Ad Hoc* Group on Raw, Rare and Low Temperature Cooked Foods
[11] Chair of Antimicrobial Resistance Working Group
[12] Chair of *Ad Hoc* Group on Foodborne Viral Infections

		Ad Hoc Group on Foodborne Viral Infections	*Ad Hoc* Group on Raw, Rare and Low Temperature Cooked Foods	Antimicrobial Resistance Working Group
Dr N Cook	Food and Environment Research Agency	✓		
Dr D Lees	Centre for Environment, Fisheries & Aquaculture Science	✓		
Prof S Forsythe				✓
Mr C Teale				✓
Prof J Threlfall				✓
Departmental Representatives				
Mr S Wyllie	Department for Environment, Food and Rural Affairs	✓		✓
Ms S Wellsteed	Department of Health			✓
Administrative Secretariat				
Dr S Rollinson		✓		✓
Mr A Adeoye		✓	✓	✓
Miss S Butler		✓	✓	✓

		Ad Hoc Group on Foodborne Viral Infections	*Ad Hoc* Group on Raw, Rare and Low Temperature Cooked Foods	Antimicrobial Resistance Working Group
Scientific Secretariat				
Dr P Cook				✓
Dr D Cutts		✓		
Dr I Hill			✓	
Ms K Thomas				✓

Annex IV

Advisory Committee on the Microbiological Safety of Food Register of Members' Interests

Member	*Personal interests*		*Non-personal interests*	
	Name of company	**Nature of interest**	**Name of company**	**Nature of interest**
Professor S J O'Brien	None		Various	Research funding in collaboration with industrial partners FSA funded research
Dr G Adak	None		None	
Dr G Barker	None		Various	Research Funding in collaboration with industrial partners
Mr J Bassett	John Bassett Consulting Ltd	Principal Consultant	None	
Dr R Betts	Campden Group Services	Employee	A range of food producers/providers and associated service industries	Work for Campden BRI's members
Mrs V Buller	Local Authorities, Schools & Food Service Organisations LACA (Lead Association for Catering in Education) APSE (Association for Public Service Excellence)	Catering Adviser & Food Service Consultant Honorary Past National Chair Regional Secretary Associate Consultant	Various	Consultancy Interim Project Management

Member	*Personal interests*		*Non-personal interests*	
	Name of company	**Nature of interest**	**Name of company**	**Nature of interest**
Professor J Coia	Tesco UK	Ad Hoc medico-legal work on infection related matters Consultancy work	Various	Funding for research projects
Mrs R Glazebrook	None		None	
Professor J Gray	None		None	
Professor R E Holliman	Public Health England St George's, University of London	Employee Employee	None	
Mr J Hopwood	Marks & Spencer plc BRC Micro Working Group Campden BRI Governance Research Committee	Employee Member Member	None	

Member	*Personal interests*		*Non-personal interests*	
	Name of company	**Nature of interest**	**Name of company**	**Nature of interest**
Professor D McDowell	University of Ulster Agrifood Bioscience Institute	Employee Deputy Chair	Companies in food processing/retail FSA	Consultancy/Research funding with industry Participation in the preparation of a research proposal, in collaboration with Ipsos MORI - Domestic Kitchen Practices FS244026. Consultancy report on reusable plastic bags – in collaboration with British Hospitality Association
Mr P McMullin	Poultry Health Services (PHS) Ltd	Employee and shareholder	Various through PHS Ltd	Consultancy, Veterinary care, Laboratory services
Dr S Millership	None		None	

Member	*Personal interests*		**Non-personal interests**	
	Name of company	**Nature of interest**	**Name of company**	**Nature of interest**
Mrs J Morris	Chartered Institute of Environmental Health Whitbread plc	Employee and Member Shareholder	None	
Mr D Nuttall	Harper Adams University College	Catering Manager	None	
Professor P H Williams	None		None	
***Ad Hoc* Group on Foodborne Viral Infections**				
Dr D Brown	None		Various	PHE industry-funded research and laboratory investigations
Dr N Cook	None		None	
Dr D Lees	None		None	
Antimicrobial Resistance Working Group				
Professor S Forsythe	None			
Mr C Teale	None			
Prof J Threlfall	None			

Annex V

CODE OF PRACTICE FOR MEMBERS OF THE ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD

Public service values

The members of the Advisory Committee on the Microbiological Safety of Food must at all times

- observe the highest standards of **impartiality, integrity and objectivity** in relation to the advice they provide and the management of this Committee;

- be accountable, through the Food Standards Agency (the Agency) and, ultimately, Ministers, to Parliament and the public for the Committee's activities and for the standard of advice it provides.

The Ministers of the sponsoring department (the Agency) are answerable to Parliament for the policies and performance of this Committee, including the policy framework within which it operates.

Standards in public life

All Committee members must:

- follow the Seven Principles of Public Life set out by the Committee on Standards in Public Life (Appendix 1);

- comply with this Code, and ensure they understand their duties, rights and responsibilities, and that they are familiar with the functions and role of this Committee and any relevant statements of Government policy. If necessary, members should consider undertaking relevant training to assist them in carrying out their role;

- not misuse information gained in the course of their public service for personal gain or for political purpose, nor seek to use the opportunity of public service to promote their private interests or those of connected persons, firms, businesses or other organizations; and

- not hold any paid or high-profile unpaid posts in a political party, and not engage in specific political activities on matters directly affecting the work of this Committee. When engaging in other political activities, Committee members should be conscious of their public role and exercise proper discretion. These restrictions do not apply to MPs (in those cases where MPs are eligible to be appointed), to local councillors, or to Peers in relation to their conduct in the House of Lords.

Role of Committee members

Members have collective responsibility for the operation of this Committee. They must:

- engage fully in collective consideration of the issues, taking account of the full range of relevant factors, including any guidance issued by the Agency;

- ensure that they adhere to the Agency's Code of Practice on Openness (including prompt responses to public requests for information); agree an Annual Report; and, where practicable and appropriate, provide suitable opportunities to open up the work of the Committee to public scrutiny;

- follow Agency guidelines on divulging any information provided to the Committee in confidence;

- ensure that an appropriate response is provided to complaints and other correspondence, if necessary with reference to the Agency; and

- ensure that the Committee does not exceed its powers or functions.

Individual members should inform the Chair (or the Secretariat on his behalf) if they are invited to speak in public in their capacity as a Committee member.

Communications between the Committee and the Agency will generally be through the Chair except where the Committee has agreed that an individual member should act on its behalf. Nevertheless, any member has the right of access to the Chair of the Agency on any matter which he or she believes raises important issues relating to his or her duties as a Committee member. In such cases, the agreement of the rest of the Committee should normally be sought.

Individual members can be removed from office by the Chair of the Agency if, in the view of the Chair of the Agency, they fail to carry out the duties of office or are otherwise unable or unfit to carry out those duties.

The role of the Chair

The Chair has particular responsibility for providing effective leadership on the issues above. In addition, the Chair is responsible for:

- ensuring that the Committee meets at appropriate intervals, and that the minutes of meetings and any reports to the Agency accurately record the decisions taken and, where appropriate, the views of individual members;

- representing the views of the Committee to the general public, notifying and, where appropriate, consulting the Agency, in advance where possible; and

- ensuring that new members are briefed on appointment (and their training needs considered), and providing an assessment of their performance, on request, when members are considered for re-appointment to the Committee or for appointment to the board of some other public body.

DEPARTMENTAL ASSESSORS AND THE SECRETARIAT

Departmental assessors

Meetings of the ACMSF and its Groups are attended by Departmental Assessors. The Assessors are currently nominated by, and are drawn from, those with relevant policy interests and responsibilities in the Food Standards Agency (including FSA Scotland and Wales), the Department for Environment, Food and Rural Affairs, and the Agri-Food & Biosciences Institute, Northern Ireland. Assessors are not members of the ACMSF and do not participate in Committee business in the manner of members. The role of the Assessors includes sharing with the secretariat the responsibility of ensuring that information is not unnecessarily withheld from the Committee. Assessors should make the Committee aware of the existence of any information that has been withheld from the Committee on the basis that it is exempt from disclosure under Freedom of Information legislation unless that legislation provides a basis for not doing so. Assessors keep their parent Departments informed about the Committee's work and act as a conduit for the exchange of information; advising the Committee on relevant policy developments and the implications of ACMSF proposals; informing ACMSF work through the provision of information; and being informed by the Committee on matters of mutual interest. Assessors are charged with ensuring that their parent Departments is promptly informed of any matters which may require a response from Government.

The Secretariat

The primary function of the Secretariat is to facilitate the business of the Committee. This includes supporting the Committee by arranging its meetings, assembling and analysing information, and recording conclusions. An important task is ensuring that proceedings of the Committee are properly documented and recorded. The Secretariat is also a source of advice and guidance to members on procedures and processes.

The ACMSF Secretariat is drawn from staff of the Food Standards Agency. However, it is the responsibility of the Secretariat to be an impartial and disinterested reporter and at all times to respect the Committee's independent role. The Secretariat is required to guard against introducing

bias during the preparation of papers, during meetings, or in the reporting of the Committee's deliberations.

Handling conflicts of interest

The purpose of these provisions is to avoid any danger of Committee members being influenced, or appearing to be influenced, by their private interests in the exercise of their public duties. All members should declare any personal or business interest which may, or may be *perceived* (by a reasonable member of the public) to, influence their judgement. A guide to the types of interest which should be declared is at Appendix 2.

(i) Declaration of Interests to the Secretariat

Members of the Committee should inform the Secretariat in writing of their current **personal** and **non-personal** interests (or those of close family members* and of people living in the same household), when they are appointed, including the principal position(s) held. Only the name of the company and the nature of the interest are required; the amount of any salary etc need not be disclosed. Members are asked to inform the Secretariat at any time of any change of their **personal** interests and will be invited to complete a declaration form once a year. It is sufficient if changes in **non-personal** interests are reported in the annual declaration form following the change. (Non-personal interests involving less than £1,000 from a particular company in the previous year need not be declared to the Secretariat).

The register of interests should be kept up-to-date and be open to the public.

(ii) Declaration of Interests and Participation at Meetings

Members of the Committee are required to declare any direct commercial interests, or those of close family members,* and of people living in the same household, in matters under discussion at each meeting. Members should not participate in the discussion or determination of matters in which they have an interest, and should normally withdraw from the meeting (even if held in public) if:-

- their interest is direct and pecuniary; or

- their interest is covered in specific guidance issued by the ACMSF or the Agency which requires them not to participate in, and/or to withdraw from, the meeting.

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* Close family members include personal partners, parents, children, brothers, sisters and the personal partners of any of these.

Personal liability of Committee members

A Committee member may be personally liable if he or she makes a fraudulent or negligent statement which results in a loss to a third party; or may commit a breach of confidence under common law or a criminal offence under insider dealing legislation, if he or she misuses information gained through their position. However, the Government has indicated that individual members who have acted honestly, reasonably, in good faith and without negligence will not have to meet out of their own personal resources any personal civil liability which is incurred in execution or purported execution of their Committee functions.

Appendix 1

THE SEVEN PRINCIPLES OF PUBLIC LIFE

Selflessness

Holders of public office should take decisions solely in terms of the public interest. They should not do so in order to gain financial or other material benefits for themselves, their family, or their friends.

Integrity

Holders of public office should not place themselves under any financial or other obligation to outside individuals or organisations that might influence them in the performance of their official duties.

Objectivity

In carrying out public business, including making public appointments, awarding contracts, or recommending individuals for rewards and benefits, holders of public office should make choices on merit.

Accountability

Holders of public office are accountable for their decisions and actions to the public and must submit themselves to whatever scrutiny is appropriate to their office.

Openness

Holders of public office should be as open as possible about all the decisions and actions that they take. They should give reasons for their decisions and restrict information only when the wider public interest clearly demands.

Honesty

Holders of public office have a duty to declare any private interests relating to their public duties and to take steps to resolve any conflicts arising in a way that protects the public interests.

Leadership

Holders of public office should promote and support these principles by leadership and example.

Appendix 2

DIFFERENT TYPES OF INTEREST

The following is intended as a guide to the kinds of interest which should be declared. Where members are uncertain as to whether an interest should be declared, they should seek guidance from the Secretariat or, where it may concern a particular product which is to be considered at a meeting, from the Chair at that meeting. **If members have interests not specified in these notes, but which they believe could be regarded as influencing their advice, they should declare them.** However, neither the members nor the Secretariat are under any obligation to search out links of which they might *reasonably* not be aware - for example, either through not being aware of all the interests of family members, or of not being aware of links between one company and another.

Personal Interests

A personal interest involves the member personally. The main examples are:

- **Consultancies:** any consultancy, directorship, position in or work for the industry, which attracts regular or occasional payments in cash or kind;

- **Fee-Paid Work:** any work commissioned by industry for which the member is paid in cash or kind;

- **Shareholdings:** any shareholding or other beneficial interest in shares of industry. This does not include shareholdings through unit trusts or similar arrangements where the member has no influence on financial management;

- **Membership or Affiliation** to clubs or organisations with interests relevant to the work of the Committee.

Non-Personal Interests

A non-personal interest involves payment which benefits a department for which a member is responsible, but is not received by the member personally. The main examples are:

- **Fellowships:** the holding of a fellowship endowed by the industry;

- **Support by Industry:** any payment, other support or sponsorship by industry which does not convey any pecuniary or material benefit to a member personally, but which does benefit their position or department e.g.

(i) a grant from a company for the running of a unit or department for which a member is responsible;

(ii) a grant or fellowship or other payment to sponsor a post or a member of staff in the unit for which a member is responsible (this does not include financial assistance to students);

(iii) the commissioning of research or other work by, or advice from, staff who work in a unit for which a member is responsible.

Members are under no obligation to seek out knowledge of work done for, or on behalf of, industry by departments for which they are responsible if they would not normally expect to be informed. Where members are responsible for organisations which receive funds from a large number of companies involved in that industry, the Secretariat can agree with them a summary of non-personal interests rather than draw up a long list of companies.

- **Trusteeships:** any investment in industry held by a charity for which a member is a trustee.

Where a member is a trustee of a charity with investments in industry, the Secretariat can agree with the member a general declaration to cover this interest rather than draw up a detailed portfolio.

DEFINITIONS

For the purpose of the Advisory Committee on the Microbiological Safety of Food, 'industry' means:

- Companies, partnerships or individuals who are involved with the production, manufacture, packaging, sale, advertising, or supply of food or food processes, subject to the Food Safety Act 1990;

- Trade associations representing companies involved with such products;

- Companies, partnerships or individuals who are directly concerned with research, development or marketing of a food product which is being considered by the Committee

In this Code, 'the Secretariat' means the Secretariat of the Advisory Committee on the Microbiological Safety of Food.

Annex VI

GOOD PRACTICE GUIDELINES FOR THE INDEPENDENT SCIENTIFIC ADVISORY COMMITTTEES

PREAMBLE

Guidelines 2000: Scientific Advice and Policy Making[13] set out the basic principles which government departments should follow in assembling and using scientific advice, thus:

- think ahead, identifying the issues where scientific advice is needed at an early stage;
- get a wide range of advice from the best sources, particularly where there is scientific uncertainty; and
- publish the scientific advice they receive and all the relevant papers.

The *Code of Practice for Scientific Advisory Committees*[14] (revised in December 2007) provided more detailed guidance specifically focused on the operation of scientific advisory committees (SACs). The Agency subsequently commissioned a *Report on the Review of Scientific Committees*[15] to ensure that the operation of its various advisory committees was consistent with the remit and values of the Agency, as well as the Code of Practice.

The Food Standards Agency's Board has adopted a **Science Checklist** (Board paper: FSA 06/02/07) to make explicit the points to be considered in the preparation of papers dealing with science-based issues which are either assembled by the Executive or which draw on advice from the Scientific Advisory Committees.

[13] Guidelines on Scientific Analysis in Policy Making, OST, October 2005. Guidelines 2000: Scientific advice and policy-making. OST July 2000
[14] Code of Practice for Scientific Advisory Committees, OST December 2001
[15] Report on the Review of Scientific Committees, FSA, March 2002

The Board welcomed a proposal from the Chairs of the independent SACs to draw up Good Practice Guidelines based on, and complementing, the Science Checklist.

THE GOOD PRACTICE GUIDELINES

These Guidelines have been developed by 9 advisory committees:

Advisory Committee on Animal Feedingstuffs[16]
Advisory Committee on Microbiological Safety of Foods
Advisory Committee on Novel Foods and Processes
Advisory Committee on Research
Committee on Carcinogenicity of Chemicals in Food, Consumer Products and the Environment[17]
Committee on Mutagenicity of Chemicals in Food, Consumer Products and the Environment[18]
Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment[19]
Scientific Advisory Committee on Nutrition[20]
Spongiform Encephalopathy Advisory Committee[21]

These committees share important characteristics. They:

- are independent;
- work in an open and transparent way; and
- are concerned with risk assessment not risk management.

The Guidelines relate primarily to the risk assessment process since this is the committees' purpose. However, the Agency may wish on occasion to ask the independent scientific advisory committees whether a particular risk management option is consistent with their risk assessment.

Twenty seven principles of good practice have been developed. However, the different committees have different duties and discharge those duties in

[16] FSA Secretariat
[17] Joint FSA/HPA Secretariat, HPA lead
[18] Joint FSA/HPA Secretariat, HPA lead
[19] Joint FSA/HPA, FSA lead
[20] Joint FSA/DH Secretariat
[21] Joint Defra/FSA/DH Secretariat

different ways. Therefore, not all of the principles set out below will be applicable to all of the committees, all of the time.

This list of principles will be reconsidered by each committee annually as part of the preparation of its Annual report, and will be attached as an Annex to it.

Principles

Defining the issue

1. The FSA will ensure that the issue to be addressed is clearly defined and takes account of stakeholder expectations. The committee Chair will refer back to the Agency if discussion suggests that a re-definition is necessary.

Seeking input

2. The Secretariat will ensure that stakeholders are consulted at appropriate points in the committee's considerations and, wherever possible, SAC discussions should be held in public.

3. The scope of literature searches made on behalf of the committee will be clearly set out.

4. Steps will be taken to ensure that all available and relevant scientific evidence is rigorously considered by the committee, including consulting external/additional scientific experts who may know of relevant unpublished or pre-publication data.

5. Data from stakeholders will be considered and weighted according to quality by the committee.

6. Consideration by the secretariat and the Chair will be given to whether expertise in other disciplines will be needed.

7. Consideration will be given by the Secretariat or by the committee to whether other scientific advisory committees need to be consulted.

Validation

8. Study design, methods of measurement and the way that analysis of data has been carried out will be assessed by the committee.

9. If qualitative data have been used, they will be assessed by the committee in accordance with the principles of good practice, e.g. set out in guidance from the Government's Chief Social Researcher[22].

10. Formal statistical analyses will be included wherever possible. To support this, each committee will have access to advice on quantitative analysis and modelling as needed.

11. When considering what evidence needs to be collected for assessment, the following points will be considered:
    - the potential for the need for different data for different parts of the UK or the relevance to the UK situation for any data originating outside the UK; and
    - whether stakeholders can provide unpublished data.

12. The list of references will make it clear which references have either not been subject to peer review or where evaluation by the committee itself has conducted the peer review.

Uncertainty

13. When reporting outcomes, committees will make explicit the level and type of uncertainty (both limitations on the quality of the available data and lack of knowledge) associated with their advice.

14. Any assumptions made by the committee will be clearly spelled out, and, in reviews, previous assumptions will be challenged.

[22] There is of guidance issued under the auspices of the Government's Social Research Unit and the Chief Social Researcher's Office (Quality in Qualitative Evaluation: A Framework for assessing research evidence. August 2003. www.strategy.gov.uk/downloads/su/qual/downloads/qqe-rep.pdf and The Magenta Book. www.gsr.gov.uk/professional_guidance/magenta_book/guidance.asp).

15. Data gaps will be identified and their impact on uncertainty assessed by the committee.

16. An indication will be given by the committee about whether the database is changing or static.

Drawing conclusions

17. The committee will be broad-minded, acknowledging where conflicting views exist and considering whether alternative hypotheses fit the same evidence.

18. Where both risks and benefits have been considered, the committee will address each with the same rigour.

19. Committee decisions will include an explanation of where differences of opinion have arisen during discussions, specifically where there are unresolved issues and why conclusions have been reached.

20. The committee's interpretation of results, recommended actions or advice will be consistent with the quantitative and/or qualitative evidence and the degree of uncertainty associated with it.

21. Committees will make recommendations about general issues that may have relevance for other committees.

Communicating committees' conclusions

22. Conclusions will be expressed by the committee in clear, simple terms and use the minimum caveats consistent with accuracy.

23. It will be made clear by the committee where assessments have been based on the work of other bodies and where the committee has started afresh, and there will be a clear statement of how the current conclusions compare with previous assessments.

24. The conclusions will be supported by a statement about their robustness and the extent to which judgement has had to be used.

25. As standard practice, the committee secretariat will publish a full set of references (including the data used as the basis for risk assessment and other committee opinions) at as early a stage as possible to support openness and transparency of decision-making. Where this is not possible, reasons will be clearly set out, explained and a commitment made to future publication wherever possible.

26. The amount of material withheld by the committee or FSA as being confidential will be kept to a minimum. Where it is not possible to release material, the reasons will be clearly set out, explained and a commitment made to future publication wherever possible.

27. Where proposals or papers being considered by the Board rest on scientific evidence, the Chair of the relevant scientific advisory committee (or a nominated expert member) will be invited to the table at Open Board meetings to provide this assurance and to answer Members' questions on the science. To maintain appropriate separation of risk assessment and risk management processes, the role of the Chairs will be limited to providing an independent view on how their committee's advice has been reflected in the relevant policy proposals. The Chairs may also, where appropriate, be invited to provide factual briefing to Board members about particular issues within their committees' remits, in advance of discussion at open Board meetings.

Glossary of Terms

Bacillus cereus A Gram-positive, facultative anaerobic spore forming bacterium. *B.cereus* produces diarrheal and emetic toxins which can cause food poisoning.

Campylobacter: Commonest reported bacterial cause of infectious intestinal disease in England and Wales. Two species account for the majority of infections: *C. jejuni* and *C. coli*. Illness is characterized by severe diarrhoea and abdominal pain.

Clostridium botulinum: A Gram-positive, spore forming, neurotoxin-producing obligate anaerobic bacterium. Associated with infant, wound and foodborne botulism.

Clostridium perfringens: A Gram-positive, anaerobic spore forming, toxin-producing bacterium which can causes food poisoning and tissue infections.

Cryptosporidium: Obligate intracellular parasites (*Toxoplasma gondii*) which causes the disease cryptosporidiosis in humans

Escherichia coli O157*:* A particularly virulent type of *Escherichia coli* bacteria that can cause severe illness.

Ethnographic: Ethnography is the systematic study of people and cultures

Gentamicin: Is an aminoglycoside antibiotic, used to treat many types of bacterial infections, particularly those caused by Gram-negative organisms.

Hepatitis E: A viral hepatitis (inflammation of the liver) caused by the Hepatitis E virus. Hepatitis E is a waterborne disease, and contaminated water or food supplies have been implicated in major outbreaks.

Listeriosis: A rare but potentially life-threatening disease caused by *Listeria monocytogenes* infection. Healthy adults are likely to experience only mild infection, causing flu-like symptoms or gastroenteritis. However, *L. monocytogenes* infection can occasionally lead to severe blood poisoning (septicaemia) or meningitis.

Listeria monocytogenes: Gram-positive pathogenic bacteria that can cause listeriosis in humans.

Listeria spp: Ubiquitous bacteria widely distributed in the environment. Among the seven species of *Listeria*, only *Listeria monocytogenes* is commonly pathogenic for humans. It can cause serious infections such as

meningitis or septicaemia in newborns, immunocompromised patients, and the elderly or lead to abortion.

Norovirus: A group of viruses that are the most common cause of infectious gastroenteritis (diarrhoea and vomiting) in England and Wales. The illness is generally mild and people usually recover fully within 2-3 days; there are no long term effects that result from being infected. Infections can occur at any age because immunity is not long lasting.

Pathogen: An infectious microorganism, bacteria, virus or other agent that can cause disease by infection.

Salmonella: A genus of Gram-negative bacteria which can cause salmonellosis in humans. Specific types of *Salmonella* are normally given a name, for example *Salmonella* Typhimurium has full name *Salmonella enterica* serovar Typhimurium.

Shigella: A genus of Gram-negative bacteria which can cause shigellosis in humans.

Strain: Population within a species or sub-species distinguished by sub-typing.

Toxin: A poison, often a protein produced by some plants, certain animals fungi and pathogenic bacteria, which can be highly toxic for other living organisms.

Tuberculin: Extracts of *Mycobacteria* used in skin testing in animals and humans to identify a tuberculosis infection.

Toxoplasma An obligate intracellular parasite (*Toxoplasma gondii*) which causes the disease toxoplasmosis in humans

Typing: Method used to distinguish between closely related micro-organisms.

VTEC: Vero cytotoxin-producing *Escherichia coli* that characteristically produce powerful toxins that kill a variety of cell types, including Vero cells on which their effects were first demonstrated.

Glossary of Abbreviations

ACMSF: Advisory Committee on the Microbiological Safety of Food

AHVLA: Animal Health and Veterinary Laboratories Agency

AMR: Antimicrobial Resistance

COC: Committee on Carcinogenicity

COM: Committee on Mutagenicity

DNA: Deoxyribonucleic acid

Defra: Department for Environment Food and Rural Affairs

ECDC: European Centre for Disease Prevention and Control

EFIG: Epidemiology of Foodborne Infections Group

EFSA: European Food Safety Authority

EHT: Environmental Health Team

EMA European Medicines Agency

ESBL:Extended Spectrum Beta Lactamase

FAO: Food and Agricultural Organisation

FOI: Freedom of Information

FSA: Food Standards Agency

GACS: General Advisory Committee on Science

HEV: Hepatitis E virus

IID: Infectious Intestinal Disease

LA-MRSA: Livestock-associated Meticillin Resistant *Staphylococcus aureus*

OCPA: Office of the Commissioner for Public Appointments

OCT: Outbreak Control Team

PCR: Polymerase Chain Reaction

PRRSv: Porcine Reproductive and Respiratory Syndrome virus

RNA: Ribonucleic acid

SSRC: Social Science Research Committee

VTEC O157: Vero cytotoxin-producing *Escherischia coli* O157

WHO: World Health Organisation

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