

Advisory Committee on the Microbiological Safety of Food

Annual Report 2007

Advises the Food Standards Agency on the
Microbiological Safety of Food

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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 Reports¹⁻¹⁵ and in a series of subject-specific reports¹⁶⁻²⁹

Foreword

1. I am pleased to present the 2007 Annual Report of the Advisory Committee on the Microbiological Safety of Food (ACMSF).
2. In July 2007 the Committee published its report on safe cooking of burgers following a period of public consultation which took place between July and October 2006. The conclusions and recommendations arising from this work were highlighted in the ACMSF Annual Report 2006.
3. In March 2007 we considered *toxoplasmosis* and food in the UK and other countries. The HPA briefed the Committee on the findings of three major studies carried out in the Netherlands, Europe and the USA and also outlined the routes of *Toxoplasma gondii* transmission. We reviewed the limitations of the three published studies and we identified several data gaps and unknowns with respect to risk factors for *toxoplasmosis* in the UK. We agreed that more information was needed to assess the prevalence of *T. gondii* in the food chain including data on incidence and heat inactivation of the parasite to assess the risk to human health from consumption of undercooked meat. We concluded that, at present, there was insufficient data available to recommend changing cooking advice on whole cuts of meat and referred this issue to the *Ad Hoc* Group on Vulnerable Groups for further consideration.
4. The Food Standards Agency (FSA) asked us to consider the potential risk to human health from food chain issues linked to botulism or suspected botulism in sheep and goats – specifically, whether our recommendation in the Botulism in Cattle Report that there should be no requirement to restrict milk and meat from healthy cattle from farms where there have been suspected cases of botulism could also be applied to meat and milk from healthy sheep and goats on farms where there have been suspected cases of botulism. We recognised that although there were similarities in progression and onset of the disease, we needed to explore issues surrounding epidemiology, route and transmission of the disease in sheep and goats. We reconvened the *Ad Hoc* Group on Botulism in Cattle to examine these issues. The Group completed their deliberations in 2007 and plan to present their report to the Committee in early 2008.
5. We also considered antimicrobial treatment of poultry meat. The Committee had been briefed on an earlier draft of the Commission Regulation laying down proposals for approval and conditions of use of certain antimicrobial substances to remove surface contamination from poultry carcasses in 2005. We examined the impact of the proposed Regulation on

biosecurity measures. We also discussed the labelling of treated products noting that labelling only related to raw products. We acknowledged that the approval process had adopted a precautionary approach and that the revised proposal addressed our previous concerns on product safety raised in 2005.

6. Twice in 2007 the Committee considered the continued high level of reporting of human listeriosis in the United Kingdom. UK data up to the first five months of 2007 had shown a continued increase in cases of human listeriosis compared to levels recognised in the 1990's. We highlighted a range of issues for further consideration including artefacts and diagnosis, typing, case histories, social factors, changes in consumption habits and cumulative risk. We referred this topic to the *Ad Hoc* Group on Vulnerable Groups for further discussion as a priority area for 2007.

7. The Committee was updated on the findings from two avian influenza incidents which occurred in Suffolk in February and November 2007. Members concluded that there was no new scientific evidence to warrant a review of the ACMSF's risk assessment on Avian Influenza.

8. ACMSF considered the safety of cooking times for poultry. The FSA had commissioned a short research study to review the cooking advice for turkeys and other poultry in fan assisted ovens to ensure food safety whilst maintaining the organoleptic qualities of the meat. We concluded that the recommendations in the study focused on quality not safety. We noted that the report demonstrated that there was little need to change much of the existing advice which was already based on an assessment of microbiological safety. Also we highlighted that new information concerning the use of foil, regular basting and piercing skin of goose and duck should be considered as part of development or revision of advice on cooking of poultry.

9. Following the floods over the summer of 2007, ACMSF was asked to consider FSA advice on the safety of fresh produce and agricultural land contaminated by flood water and identify the need for any revision to current advice. We supported several amendments to the current advice including that the FSA's current advice to discard all produce affected by flood water may be over-precautionary.

10. On surveillance, Dr Richard Meldrum (National Public Health Service, Wales) updated us on the survey of *Campylobacter* and *Salmonella* in raw retail chicken available to consumers in Wales and Northern Ireland between November 2001 and December 2006. The Committee also considered a UK wide survey of *Salmonella* contamination in eggs used in catering premises. Following a review of three FSA egg surveys, the Committee discussed current FSA advice on eggs in relation to risk communication to the consumer. We agreed that the practical advice should remain the same although the wording of the communication should be revisited in light of the survey results which indicated a low prevalence of *Salmonella* in eggs available to caterers and

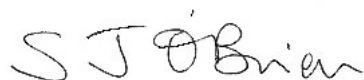
consumers. We also suggested that the FSA should consider revising its advice on eggs to reflect the risks posed by vaccinated and unvaccinated eggs and cross contamination during storage and handling of shell and pooled eggs.

11. The Committee's drive to become publicly accessible has continued in 2007. All of our quarterly meetings continue to be open to the public with a public question and answer session featuring at the end of each agenda. Aside from meetings, we are also accessible via our e-mail address and web pages. During the year the ACMSF website pages were redesigned. The web site can now be accessed directly via <http://acmsf.food.gov.uk>. Our web pages are regularly updated for each meeting, and provide a useful source of information about the Committee and its activities.

12. In 2007, we reviewed our work against the FSA's scientific governance principles for presenting scientific advice. Members agreed that the work of the Committee conformed closely to the requirements FSA's Good Practice Guidelines.

13. Looking to the future, the Committee will continue to monitor closely developments on the increase in listeriosis and will publish the outcome of the work of its *Ad Hoc* Group on Vulnerable Groups. We will also report on the outcome of work to assess the potential risk to human health from botulism in sheep and goats and the risks from ESBL in the food chain. We will also consider the risks posed by *Toxoplasma* in food and revisit the issue of microbiological safety of ready to eat foods.

14. I am indebted to the members of the Committee and its Working and *Ad Hoc* Groups without whose efforts the ACMSF would not operate effectively, and to the many other individuals and organisations who have helped the Committee with its work. 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 sixteenth Annual Report of the Advisory Committee on the Microbiological Safety of Food (ACMSF). It covers the calendar year 2007.

Chapter 1 : Administrative Matters

Membership

Appointments

2. Appointments to the ACMSF are made by the Food Standards Agency (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 Principles³⁰, the guidance issued by the Office of the Commissioner for Public Appointments (OCPA)³¹ and the Government Office for Science Code of Practice for Scientific Advisory Committees³². The FSA is not bound to follow OCPA guidance, as this 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.

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 proportion of Members falls 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 2 lay/consumer Members.

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

Appointments in 2007

6. One Member was appointed to the ACMSF during 2007: Professor John Coia³³. Professor Coia provides the Committee with medical microbiology expertise. His period of appointment runs from 1 April 2007 until 31 March 2010.

Retirements in 2007

7. Professor Laura Piddock retired from the Committee on 31 March 2007 after completing 3 years' service.

8. The Chair expressed her gratitude to Professor Piddock for her contribution to the work of the ACMSF and wished her well for the future.

Committee and Group meetings

9. The full Committee met 4 times in 2007 – on 15 March, 7 June, 27 September and 6 December. All four meetings were chaired by Professor Sarah O'Brien. All full Committee meetings were open to members of the public.

10. The *Ad Hoc* Group on the Safe Cooking of Burgers (Chair: Professor Williams) considered the comments received in response to the public consultation on its draft report in February 2007. The Committee approved the publication of the report in March 2007. The new *Ad Hoc* Group on Vulnerable Groups (Chair: Professor Hunter from April to November 2007, Professor Tom Humphrey from December 2007) met three times. The Group focussed its attention on listeriosis in the elderly as the Committee had identified this as a priority issue as part of its horizon scanning activities. The Committee reconvened the *Ad Hoc* Group on Botulism in Cattle (Chair: Professor Williams). The Group met twice to consider the issue of the potential risk to human health from food chain issues linked to botulism or suspected botulism in sheep and goats. The Group revised its membership and terms of reference to include experts on sheep and goats.

12. The Working Group on Avian Influenza (Chair: Dr David Brown) met once in May to consider the Suffolk outbreak of avian influenza in February 2007 and reviewed whether there was a need to update the ACMSF's current risk assessment. As the FSA raised some questions to improve its understanding of avian influenza in food, the Group also provided its opinion on the issues raised.

13. The Working Group on Surveillance (Chair: Professor Humphrey) met once to consider the FSA surveys on catering eggs and *listeria* in smoked fish. The Group received a presentation on CLASSP (Co-ordinated Local Authority Sentinel Surveillance of Pathogens Part A) results of laboratory audit and 18 month surveillance data from the Health Protection Agency and also received an update on surveillance activities by government agencies in other countries.

14. The Newly-Emerging Pathogens Working Group (Chair: Professor Paul Hunter) met twice to consider risks to human health from CTX-M extended-spectrum beta-lactamase (ESBL) producing *E. coli* in the food chain. The Group concluded its deliberations and expect to present its report to the Committee in March 2008. Key conclusions arising from the Group were that a holistic

approach was required to the consideration of ESBLs; based on current evidence there was no epidemiological evidence to support the view that food was a major risk factor for ESBLs; and that the Group should keep a watching brief on developments.

Current membership and Declarations of Interests

15. Full details of the membership of the Committee and its Working and *Ad Hoc* Groups are given in Annex I. A Register of Members' Interests is at Annex II. In addition to the interests notified to the Secretariat and recorded at Annex II, 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 (see Annex III of 2002 Annual Report).¹¹ Declarations made are recorded in the minutes of each meeting.

Personal liability

16. 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 1999⁸ 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 Food Standards Agency 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 Report¹³).

Openness

Improving public access

17. The ACMSF is committed to continuing to open up its work to greater public scrutiny. The agendas, minutes and papers (subject to rare exceptions on grounds of commercial or other sensitivity) for the Committee's quarterly meetings are publicly available and are posted on the FSA website at:

acmsf.food.gov.uk

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

acmsf@foodstandards.gsi.gov.uk

Open meetings

19. Following the recommendations flowing from the FSA's Review of Scientific Committees,³⁴ the ACMSF decided that, from 2003 onwards, all of its quarterly meetings should be held in public.

20. The March, June and September 2007 meetings of the Committee were held in Aviation House, the Food Standards Agency's London Headquarters. The December meeting was held in Trinity House, Tower Hill, London EC3.

21. 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 concerned.

Work of the other advisory committees and cross-membership

22. The Secretariat provided Members with an annual report of the work of the other expert advisory committees advising the Food Standards Agency³⁵. Professor Gasson continued to serve as a member of the Advisory Committee on Novel Foods and Processes (ACNFP), thereby providing a first-hand link between the 2 committees.

Chapter 2 : The Committee's Work in 2007

Listeria

23. The Health Protection Agency (HPA) briefed the Committee twice in 2007 on the continued high level of reporting of human listeriosis in the United Kingdom. The HPA reminded Members that the Committee was informed of the increase in human listeriosis in England and Wales in September 2005 and that the Committee received updates in June and December 2006 and June and December 2007³⁶⁻³⁷. In June 2007 Members were reminded that an increasing trend in listeriosis in patients over 60 years of age with bacteraemia was reported in England and Wales from 2001-2005 and that a similar trend was reported in Scotland in 2005. The incidence in Northern Ireland, whilst lower than in other countries, had also increased in each of the past four years. The HPA explained that the increase did not occur in patients with invasion of the central nervous system (CNS) or in pregnant women. UK data up to the first five months of 2007 had shown a continued increase in cases of human listeriosis compared to levels recognised in the 1990's. The increase was not artefactual or due to increases in blood cultures taken or improvements in blood culture technology as similar increases had not occurred in the over 60 years age group with *Salmonella* or *Campylobacter* bacteraemia. The HPA outlined trends in listeriosis in other Member States and the US. Members noted that increases in listeriosis had occurred in other Member States over the same period. It was explained that 67% of all cases within the EU were reported from UK, France and Germany. In Germany the increase occurred in similar age groups to that reported in the UK. A change in *listeria* epidemiology in the US since the 1980s had also occurred. The HPA reviewed recent *listeria* contamination incidents occurring in the UK, noting that several of these were linked to sandwich consumption in hospitals. In its deliberations the Committee considered that:

- The change in epidemiology was more likely to be linked to social factors or the food chain such as changes in dietary behaviour/habits, food storage and food production rather than changes in the organism based on conventional typing techniques. More information was needed on sociological information for the over 60 age group.
- The cumulative risk of repeated exposure of elderly vulnerable groups including those in hospital to low levels of *listeria* required consideration and also any changes in medical behaviour linked to care of the over 60 age group.

- *Listeria* was present in food at very low levels today compared with the 1980s and 1990s. Therefore the increase in incidence was more likely to be linked to the susceptibility of vulnerable groups rather than a change in the incidence of the organism in food.
- It was difficult to explain the increase in listeriosis in patients with bacteraemia compared to those with CNS infection. More information was needed to understand why this patient group was vulnerable to listeriosis. However Members recognised the difficulties associated with obtaining food histories from elderly patients.
- Advice aimed at the elderly (including those with cancer and immunocompromised individuals) on how to avoid food poisoning was required. Guidance was also needed on sandwich use in hospitals.
- An EU wide study was needed to investigate changes in *listeria* epidemiology.

24. Members concluded by highlighting a range of issues for consideration including diagnosis, typing, case histories, social factors, changes in consumption habits and cumulative risk. The Committee agreed to refer this issue to the *Ad Hoc* Group on Vulnerable Groups for further discussion as a priority over the summer period. Members of the *Ad Hoc* Group were requested to co-opt Members with appropriate expertise to assist with their deliberations.

25. At its December update the HPA reiterated that the incidence of listeriosis had doubled since 2001 and had occurred in older patients as bacteraemia, in the absence of CNS infection. The HPA confirmed that this increase had continued into 2007. Similar increases had also been reported in other European countries. The HPA pointed out that following the introduction of a standard structured surveillance questionnaire for listeriosis in 2005, sufficient data had been accrued for preliminary analysis. Initial investigations showed significant differences in the exposure histories of patients infected with different subtypes of *Listeria monocytogenes*. Separate analysis of data from routine reference typing of isolates from food indicated associations with the same or similar food types. From these findings it was hypothesised that specific food types gave rise to infection with specific *Listeria monocytogenes* sub types.

26. The HPA outlined the strengths and weaknesses of case/case analysis. It was explained that, for the data-set under discussion, it was not possible to compare the exposure of individuals with a well-defined control group. The HPA also summarised some of the limitations of the risk analysis, noting that the data represented analyses of the initial data only.

27. As the HPA had also produced a detailed document which supported the information presented in this update, this document would be made available for discussion at the ACMSF *Ad Hoc* Group on Vulnerable Groups meeting which was due to take place on 13 December and also circulated to all ACMSF Members.

28. Members considered that:

- The food data may have been subjected to biases due to the nature of the sampling involved. HPA confirmed that samples were collected from Food, Water and Environment (FWE) Laboratories. However the food and clinical data sets were independent;
- It was possible to draw some conclusions from the data presented by HPA. There were multiple strains of *L. monocytogenes* associated with the increased incidence of listeriosis in the over 60 age group. However no specific strain had been linked to the upsurge in cases. Members agreed that there was a sector of the population that was vulnerable to *L. monocytogenes* and suggested strengthening the existing advice for avoiding listeriosis to focus on the over 60 age group. However Members also noted that this age group was also vulnerable to serious underlying medical conditions and taking medication which made it difficult to produce advice for the general population in this age group;
- The at-risk foods associated with the incidence of listeriosis highlighted in the paper were not unusual. Members queried whether repeated exposure to much lower levels of *L. monocytogenes* was a factor, noting the infrequent occurrence of high levels of *listeria* species in a current FSA survey of smoked fish;
- The increase in listeriosis was not artefactual. Members noted that the observed change in quality of blood culture media would be unlikely to have resulted in increased ascertainment as no extra cultures were taken in the over 60 age group. However it was noted that care of the elderly in hospitals had changed as all patients were being treated equally, irrespective of age;
- Retrospective data on food habits and behaviour were not always reliable as patients often tended to report that they followed correct food hygiene and food storage practices;
- More information was needed on the areas of greatest risk from contamination of *listeria* species in the food chain to inform advice on interventions and control measures;
- Rates of food spoilage were slower due to improved hygiene and controls resulting in food being kept for longer prior to consumption.

29. Members expressed their gratitude to the HPA for their presentation and papers which had been produced to support the development of ACMSF advice on listeriosis for the FSA. The *Ad Hoc* Group on Vulnerable Groups was requested to consider in detail the data provided by the HPA including the influence of any potential biases. The Group was also asked to examine other analytical approaches which could address the issues raised.

Botulism in sheep and goats

30. Following the publication of the report on Botulism in Cattle in December 2006²⁸, the FSA in March 2007³⁸ sought the Committee's advice on the potential risk to human health from food chain issues linked to botulism or suspected botulism in sheep and goats. Especially, whether the recommendations from the Botulism in Cattle Report that there should be no requirement to restrict milk and meat from healthy cattle from farms where there have been suspected cases of botulism could also be applied to meat and milk from healthy sheep and goats on farms where there have been suspected cases of botulism. Members recognised that although there were similarities in progression and onset of the disease, the Committee would need to explore issues surrounding epidemiology, route and transmission of the disease in sheep and goats. Members agreed that the *Ad Hoc* Group on Botulism in Cattle should be reconvened to examine these issues in detail. This group met twice in 2007.

31. The Group considered information on the prevalence and reported outbreaks or incidents of suspected botulism in sheep and goats in the UK and other countries. It examined differences in animal husbandry practices, feeding habits and meat and milk production between the two species and in comparison with cattle. The likelihood of active *botulinum* toxin being present in meat and milk was explored, and risk factors associated with the consumption of meat and milk (including raw milk and milk products) from sheep and goats, milk dilution factors, and composting and disposal of poultry litter were examined. The Group also reviewed the susceptibility of humans to the *botulinum* toxin types C and D that are most frequently associated with botulism in animals. The Group excluded buffalo from its deliberations as there was no information available on botulism in buffalo. The Group concluded that the recommendations to lift restrictions applied to cattle should also apply to movement of meat and milk from sheep and goats. A report on the Group's deliberations would be provided to the Committee in March 2008. It was likely that the report would form an addendum to the existing botulism in cattle report, and that the addendum would be subjected to public consultation.

Toxoplasmosis and food

32. Following the briefing the FSA provided Members on *toxoplasmosis* and food in December 2006, the Committee requested that the HPA should present a more comprehensive overview of human *toxoplasmosis* in the UK, US and the Netherlands. In March 2007 Dr Edward Guy (NPHS Wales) presented an overview of human *toxoplasmosis* in the UK and other countries³⁹. He reviewed the findings of three major studies carried out in the Netherlands, Europe and the USA. He also outlined the routes of *Toxoplasma gondii* transmission. These were via the environment (soil, water), and the food chain from crops through insufficient washing of vegetables and from animals (consumption of raw or undercooked meat). He explained that the cat was the definitive host for this organism. Risk factors for acquiring *toxoplasma* infection, incidence of infection and burden of disease in the UK were also discussed and approaches to risk assessment were briefly reviewed.

33. In its deliberations Members

- reviewed the limitations of the three published studies presented noting that the Netherlands study assessed incidence of *toxoplasmosis* based on the assumption that all cases were foodborne, and did not take account of environmental sources of transmission. A European study carried out in 2000 did not gather information on consumption of salads or vegetables and one third of cases could not be attributed to any source. Members queried why there was no risk associated with the cat (definitive source of *T. gondii*) in the EU study and highlighted the difficulties of extrapolating conclusions from work based on cat ownership in other countries to the UK.
- identified several data gaps and unknowns with respect to risk factors for *toxoplasmosis* in the UK. These included the impact of climatic conditions on environmental incidence of the organism, and differences in socioeconomic groups and cultural aspects. Members agreed that more information to assess the prevalence of *T. gondii* in the food chain was needed including data on incidence and heat inactivation of the parasite to assess the risk posed by consumption of undercooked meat. Members agreed that all these factors required investigation. In addition, any commissioned work to assess the incidence of *T. gondii* in food would need to run in parallel with any human epidemiology studies.
- concluded that there was insufficient data available to recommend changing advice on whole cuts of meat.
- considered that any consideration given to increasing surveillance of foods would need to reflect the significance of the risk posed by this disease.

- noted that *T. gondii* cysts spread throughout meat muscle and that they were inactivated by freezing at -20°C. Therefore freezing meat prior to consumption minimised risk of infection.
- noted that historically there was a high risk of *Toxoplasma* re-activation in HIV patients although this was reduced by newer HIV treatments.
- noted that typing work showed that *T. gondii* was very similar to *Cryptosporidium* with types I and II being associated with different levels of pathogenicity.

34. Members concluded that, at the present time, there were insufficient data available to recommend changing cooking advice on whole cuts of meat. Therefore it was agreed that the ACMSF *Ad Hoc* Group on Vulnerable Groups consider the risks posed by *Toxoplasma* in food in more detail. Defra registered an interest in being involved in the discussions. The FSA informed Members that the Agency had work in progress on sampling carcass meat at abattoirs which included work on *Toxoplasma*. The FSA also added that the Microbiological Safety of Food Funders Group considered publishing a report on research supported by its member organisations in the field of foodborne parasites in relation to the microbiological safety of food. However this was not progressed due to the very small number of research projects in this field.

Antimicrobial treatment of poultry meat

35. In June the FSA briefed the Committee on antimicrobial treatment of poultry meat⁴⁰. Members were reminded that in 2005 they were briefed on a draft Commission Regulation laying down proposals for approval and conditions of use of certain antimicrobial substances to remove surface contamination from poultry carcasses. The FSA explained that since the draft Regulation was considered by the Committee, these substances had been assessed for safety and efficacy by the European Food Safety Authority (EFSA). EFSA concluded that there was no safety concern for treatment of poultry carcasses with chlorine dioxide, acidified sodium chlorite, trisodium phosphate or peroxyacids under the prescribed conditions of use. The FSA outlined the main points in the new Regulation explaining that there was a requirement to label poultry meat and preparations produced from treated carcasses. The FSA also summarised current issues under discussion including international trade/WTO, microbiological efficacy and safety evaluation data, the relationship between antimicrobial treatments and other food safety controls, toxicological assessment, labelling and consumer views. The FSA added that the Commission had not decided how to progress the assessment of antimicrobial treatments using bacteriophages. The FSA sought the Committee's view on the safety assessment of four substances under their prescribed conditions of use, the approval procedure, conditions of use and official controls and procedures to assess antimicrobial treatments using bacteriophages.

36. Members discussed the impact of the proposed Regulation on biosecurity measures. The Committee expressed concern that such antimicrobial treatments could be used to clean up dirty products and stressed the need for continued good farm biosecurity to be carried out to target foodborne pathogens. Some Members also highlighted a more general concern about the use of such treatments on meat that consumers would assume to be fresh, as well as concerns that consumer views on the Regulation had not been sought at an earlier stage of the proposal negotiations although it was noted that consumer input was subsequently considered. The Committee discussed the labelling of treated products noting that labelling only related to raw products. Members acknowledged that the approval process had adopted a precautionary approach and that the revised proposal addressed previous ACMSF concerns on product safety raised in 2005. However some concerns were raised about placing all four substances in the same group and Members emphasised that there should be a strong approach to approval. Members also suggested that the Commission should be encouraged to develop a broad Regulatory Framework which should take account of existing measures to target foodborne pathogens. Some Members considered that safety issues around use of bacteriophages such as presence of host DNA, virulence factors, and selection of sub-resistant populations needed further consideration and stressed that, being mindful of jargon, consumer opinion on use of bacteriophages should be sought at an early stage.

37. Members noted that previous concerns raised by the Committee had been taken on board. However, the need for consumer involvement at an early stage and consideration of safety issues linked to use of bacteriophages was highlighted.

Foodborne viral infections

38. In June the FSA briefed the Committee about its report on foodborne viral infections which assessed the significance of viruses as agents of foodborne infection in humans⁴¹. Members were reminded that it was almost 10 years since the publication of the report. The FSA explained that the report considered foodborne illness, sources and routes of transmission, and prevention and control measures for human foodborne viruses. The FSA summarised the main recommendations arising out of the report and updated Members on developments since the report's publication in 1998 including work arising from a study of Infectious Intestinal Disease in England, developments in terms of outbreaks of foodborne viral infections and research to develop methods for the detection and quantification of viruses in shellfish. Members were also updated on published guidance for businesses and industry guides.

39. Noting the preliminary nature of the paper, Members highlighted the need to focus on the importance of European outbreaks linked to noroviruses. The Committee acknowledged that some of the original recommendations had not been progressed due to the limited data available on the burden of disease attributed to noroviruses. However support was given to revisit this issue due to its large impact on clinical infection.

40. The Committee agreed to revisit noroviruses noting that the work should focus on food transfer rather than revisiting previously identified areas in the report which had not been addressed.

Working Group on Avian Influenza

41. In June, Dr Brown (Chair, Working Group on Avian Influenza) updated the Committee on the work of this Group to review findings from the avian influenza incident which occurred in Suffolk in February 2007⁴². He informed Members that the Group was briefed on research underway to address data gaps identified as a result of the outbreak. Preliminary data on the Suffolk turkey and Hungary goose isolates were discussed. Epidemiological investigations had not identified a clear route of infection associated with the Suffolk outbreak. Genome sequencing data had shown little difference between the Hungarian and Suffolk strains. The Group therefore remained unconvinced that the proposed route of infection was supported by the sequencing data. The Group concluded that although several questions and data gaps had been identified as a result of the outbreak, there was no fundamental change to the ACMSF risk assessment. The Suffolk outbreak posed a low risk to humans via the food chain.

42. In December, the FSA updated Members on the November 2007 outbreak of avian influenza in Suffolk. The FSA reported that on 13 November H5N1 virus was confirmed in an organic turkey flock in Suffolk. Dead birds were identified in three out of five sheds, with the majority of deaths being located in the first shed. All the birds in the sheds (including ducks and geese) were destroyed, including 90,000 turkeys. All flocks on the affected sites were tested. One duck tested positive. The organic farm was linked to another company and the farm workers were known to work on another farm. On 26 November a preliminary epidemiological report was published by Defra. This report confirmed the H5N1 strain was of Asian lineage and most closely resembled an isolate seen in the Czech Republic (99.8% homology). There was no evidence that the strain was introduced on to the farm via people, vehicles or food. However transmission via wild birds could not be ruled out. Testing of dead wild birds and bird droppings had not detected the presence of any virus. In terms of risk management action, the FSA placed advice on avian influenza on the front page of its web site. Some flocks were depopulated and it was agreed that, following vet inspection, animals could be moved from the surveillance zone to slaughter and permitted to enter the food chain.

43. Members considered that there was no new scientific evidence to warrant a review of the ACMSF's risk assessment on avian influenza. The Committee agreed that it was not necessary to reconvene the Working Group on Avian Influenza. However the Working Group was requested to maintain a watching brief on developments.

Safe Cooking of Burgers

44. In February the *Ad Hoc* Group on Safe Cooking of Burgers met to consider the consultation responses on safe cooking of burgers report⁴³. In March the consultation responses and revised report were presented to the Committee for approval. Members were reminded that in June 2006 the Committee approved the publication of the draft report on safe cooking of burgers for public consultation. This consultation took place between July and October 2006.

45. A wide a range of comments in response to the consultation broadly fell into three categories: comments received which were supportive of the report; comments on detailed or technical issues (these were taken on board to improve the clarity and accuracy of the report); and comments relating to concerns on procedural aspects of the Group's work and a misunderstanding relating to the recommendations about the advice. The Group recognised the issues raised associated with *E.coli* O157 and confirmed that it had conducted its investigations in accordance with Nolan Principles.

46. Members approved the consultation response for publication on the FSA web site and recommended the report for submission to the FSA Chair for approval for final publication by June 2007. The report was published in July 2007²⁹.

Safe cooking times for poultry

47. In September, the FSA briefed the Committee on the findings of an investigation of cooking times for the roasting/cooking of poultry⁴⁴. The FSA had commissioned a short research study to review the cooking advice for turkeys and other poultry in fan assisted ovens to ensure food safety whilst maintaining the organoleptic qualities of the meat. This followed reports that the cooking times advised by the Agency (which were based on conventional convection ovens) may be too great for fan-assisted ovens. Joy Gaze and Greg Hooper, Campden & Chorleywood Food Research Association (CCFRA), presented the findings from the research study. They outlined reported differences in cooking times and temperatures between fan assisted and conventional ovens and approaches to achieve a safe product with the most acceptable sensory quality. The Committee considered that:

- the recommendations as presented focused on quality not safety. However Members noted that the report demonstrated that there was little need to change much of the existing advice which was already based on an assessment of microbiological safety. The Committee agreed that the proposed revised cooking temperature and times for fan-assisted ovens would achieve a safe product.
- new information concerning the use of foil, regular basting and piercing skin of goose and duck should be considered as part of development or revision of advice on cooking of poultry.
- consumer advice on cooking of poultry should be simplified.
- the report would benefit from inclusion of statistical information outlining how the study was designed and analysed and Members suggested that this was an issue for consideration between FSA and CCFRA.

48. The Committee welcomed the report and considered that the FSA should reinforce the safety of its current cooking advice and consider including additional information on basting and use of foil during cooking.

Food safety advice on flooding

49. In September, the FSA briefed the Committee on its food safety advice on flooding⁴⁵. As a result of the floods over the summer in 2007, ACMSF was asked to consider FSA advice on the safety of fresh produce and agricultural land contaminated by flood water. Members were asked to consider the following five questions and to identify the need for any revision to current advice:

- (i) Whether FSA advice to discard all produce affected by flood water is appropriate or over-precautionary; Is there a risk associated with eating crops contaminated with flood water if such crops are washed, peeled and cooked?
- (ii) If advice relating to consumption of foods grown on allotments was modified, are there any considerations relating to commercial crops that should be taken into account?
- (iii) What advice should be given to allotment holders and commercial growers in relation to replanting and appropriate harvest levels? Does the underlying microbiology justify adopting the same precautionary approach applied to sewage sludge?
- (iv) Is there any justification for requiring a delay before replanting crops that are destined to be cooked?

- (v) With sewage spills, given the high water content and dilution effect in comparison with the direct application of biosolids, is FSA advice for sewer bursts on agricultural land over-precautionary?

50. Members discussed the preliminary written response previously provided to FSA by the Committee. Following review of the responses to questions (iii) and (v) Members queried the limited evidence available to support pathogen survival of 4-6 and 4-12 months in sewage sludge. The Committee suggested this time interval should be revised to be a minimum of 6-12 months. Professor Hunter reported that risk-modelling data had shown that the length of time for pathogen survival depended on the initial contamination rate and the die-off rate. Professor Coia added that, in relation to incident handling, more data on different types of flood water was needed as any guidance would need to emphasise that it was depended on the environmental conditions in particular affected areas. Mr McMullin commented that, in relation to basing risk on extrapolated data, an over-precautionary approach in relation to flood-related advice may exacerbate food production problems in areas which had already suffered the direct effects of the flooding.

51. The Committee concluded that in response to the five questions posed:

- The Agency's current advice to discard all produce affected by flood water may be over-precautionary based on the data available;
- Ready-to-eat crops grown above ground affected by flood water should be discarded;
- Produce contaminated by flood water can be eaten provided that it is cooked, or that it is subjected to a process that delivers an equivalently safe product;
- Contaminated produce from allotments and commercial crops should be treated the same in terms of risk;
- There is no reason to delay before replanting crops that are destined to be cooked;
- There is a need for guidance on handling, to manage cross-contamination;
- Current advice on sewer bursts should remain;
- The time interval between replanting and harvesting and in relation to sewage spills should be a minimum of 6-12 months, which is consistent with evidence of *E.coli* O157 survival.

52. The FSA was requested to consider the comments raised in the development of its food safety advice on flooding.

Guidance on vacuum packaged foods

53. In December, the FSA briefed the Committee on vacuum packaged foods and modified atmosphere packaged food⁴⁶. The FSA provided a historical overview of the development of guidance on the safety and shelf-life of vacuum and modified atmosphere packed chilled foods, with respect to *Clostridium botulinum*. In June 2006 ACMSF had considered the findings of an independent review of *Clostridium botulinum*, which was previously requested by the Committee to support its deliberations on guidance for chilled vacuum packaged and modified atmosphere packed foods. In December the ACMSF recommended the 10 day shelf-life rule for vacuum-packaged and modified atmosphere packaged foods. The Committee also recommended that the FSA set up a small drafting group to revise the guidance to address issues arising from the public consultation on the Guidance on Vacuum-Packaged Foods. The FSA outlined the scope of the drafting group and explained that the resulting guidance produced by the group was circulated to industry stakeholders for comment prior to being finalised.

54. The Committee discussed the scope of the guidance. Members recognised that it was difficult to balance simple and complex issues in a single guidance document. They welcomed the fact that the guidance had been developed to assist EHOs carry out their enforcement duties. Members noted that the wording in the guidance reflected that published in the 1992 ACMSF Report on Vacuum Packaging and Associated Processes and that the drafting group, where possible, had avoided overcomplicating messages. The group had also decided not to include specific examples in the text in order to provide some flexibility with regard to enforcement risk management decisions.

55. The Committee endorsed publication of the document in early 2008.

Raw Milk

56. Members were informed of recent media coverage promoting the nutritional benefits of raw milk, which advocated that it was fed to children. Members expressed concern that the microbiological risks associated with consumption of raw milk needed to be highlighted and suggested that the FSA reiterate its advice on consumption of this product.

57. ACMSF Chair confirmed that the Committee's position on consumption of raw milk had not changed. ACMSF continued to advise that raw milk should not be made available for public sale. Dr Hilton (FSA Assessor) added the FSA's Chief Scientist had pointed out the risks from consumption of raw milk on his website blog.

Review of recommendations of the ACMSF Report on Antibiotic Resistance

58. In September, the FSA updated the Committee on the actions taken to address the recommendations in the ACMSF 1999 Report on Microbial Antibiotic Resistance in Relation to Food Safety⁴⁷. Members were reminded that in 2005 the ACMSF considered a paper from the Defra Antimicrobial Resistance Co-ordination Group summarising actions taken to address some of the recommendations in the ACMSF 1999 Report on Microbial Antibiotic Resistance in relation to Food Safety. The FSA explained that, at that meeting, Members were informed that progress on some recommendations was at an early stage, and it was now timely to update the Committee on developments. The FSA summarised progress on non-research recommendations and on those made in chapter 12 regarding research on antibiotic resistance in relation to food safety. The FSA reported that most of the recommendations from the 1999 ACMSF Report had been taken forward and completed. Areas highlighted for further consideration included antibiotic resistance in commensal micro-organisms in food, antibiotic resistant organisms in imported food and animal feed and microbiological risk assessment. The Committee was informed that the FSA intended to hold a stakeholder meeting on antimicrobial resistance in the food chain in November 2007, and the results of this meeting would inform an FSA strategy on antimicrobial resistance in the food chain.

59. It was confirmed that the FSA was involved with the Codex task force on antimicrobial resistance.

Surveillance

Survey of *Campylobacter* and *Salmonella* in raw retail chicken available to consumers in Wales and Northern Ireland

60. Dr Richard Meldrum (National Public Health Service, Wales) briefed the Committee on the survey of *Campylobacter* and *Salmonella* in raw retail chicken available to consumers in Wales and Northern Ireland between November 2001 and December 2006⁴⁸. He provided an overview of the background to the surveys, and outlined the methodology used. He explained that the surveys had measured the baseline rate of *Salmonella* and *Campylobacter* in whole retail raw chickens for five consecutive years. He reminded Members that the findings from each survey had been presented to the Committee on several previous occasions. Key conclusions and outcomes arising from the work were that:

- The overall *Campylobacter* rate has not changed over the duration of the project;
- The *Salmonella* rate has decreased during this time;

- The project had produced several peer-reviewed publications; and
- *Campylobacter* isolates from these projects have been used for further work.

61. Members discussed the sampling approach used for the surveillance including how sample numbers were determined noting the reliance on Local Authorities for sample collection. Members also discussed the reported rates of contamination of *Campylobacter* and *Salmonella* on fresh and frozen poultry from butchers and retailers and noted that the survey was not representative of market share reaching the consumer.

62. Members also discussed the statistical approach used to analyse the data and suggested the work might benefit from professional statistical input.

63. The Committee thanked Dr Meldrum for his final presentation on this topic and also for the previous updates he had provided to the ACMSF over the last five years.

Catering eggs survey

64. The FSA and the HPA briefed the Committee on the UK wide survey of *Salmonella* contamination in eggs used in catering premises⁴⁹. Members were informed that the FSA had recently published the results of a 14-month survey to estimate the prevalence of *Salmonella* in raw shell eggs used in UK catering premises. The survey also aimed to identify sero- and phage types present and gathered information on egg storage and handling practices in catering premises. This was the third in a series of FSA egg surveys. The FSA outlined the sampling approach used noting that there was no market share data available therefore catering premises were selected at random from Local Authority lists. The sample size was monitored against interim prevalence levels to obtain best estimates of prevalence. The survey method was based on the HPA standard method for *Salmonella* testing where the shell and contents were tested separately. Key findings from the survey were that:

- Of 1,588 samples tested 6 were positive for *Salmonella* on the shell; one was also contents positive. Due to the small number of positives detected detailed statistical analysis was limited;
- All the *Salmonella* isolates were sensitive to antimicrobial agents used;
- Overall prevalence of *Salmonella* was 0.38%;
- 89% samples were of UK origin;
- There was no statistical difference between clean and dirty eggs and the prevalence of *Salmonella*.

65. The FSA concluded that these findings were similar to levels of *Salmonella* contamination reported in previous surveys such as the 2003 HPA/LACORS catering egg survey and the FSA survey of UK produced eggs. The current survey had highlighted the need to provide food hygiene training and advice to food handlers and caterers in relation to pooling, storage and use of eggs.

66. Members welcomed the survey results commenting that this represented a good news story. The survey emphasised the low level of *Salmonella* prevalence in eggs available in the UK. Members recognised that this was due to a large proportion of eggs sampled being of UK origin. The Committee discussed the findings and practices relating to poor stock rotation and ambient storage of shell and pooled eggs. Some Members commented that it was not always practical for caterers to refrigerate large volumes of eggs due to the limitations of refrigerator space. Members identified that, due to the increased risks associated with pooling of eggs there was a need to focus advice on appropriate use and storage of eggs. The Committee was reminded that the second ACMSF Report on *Salmonella* in Eggs recommended that eggs should be refrigerated after purchase, noting that eggs were only at ambient for a short space of time whilst in the supply chain. The Committee welcomed the survey report.

Egg surveillance

67. The FSA briefed the Committee on the surveillance programme on *Salmonella* contamination in eggs available to the UK consumer⁵⁰. The work of the ACMSF *Salmonella* in Eggs Working Groups since 1991 was reviewed. The FSA also summarised the background to commissioning of three FSA egg surveys to measure the prevalence of *Salmonella* in eggs available to the consumer following publication of the Second ACMSF *Salmonella* in Eggs Report in 2001.

68. An overview of *Salmonella* prevalence reported in the FSA surveys and outlined the findings of each survey was provided. The FSA also summarised its current advice on eggs to caterers and consumers and EU controls to reduce *Salmonella* in layer flocks.

69. The Chair of the Working Group on Surveillance briefly reviewed the Group's deliberations on the survey results. He highlighted that, in view of the low prevalence of *Salmonella* reported in the surveys, the current FSA egg advice was now rather strongly worded. He also highlighted the positive initiatives undertaken by the egg industry to reduce the prevalence of *Salmonella*.

70. Members discussed the FSA advice on eggs in relation to risk communication to the consumer. The Committee agreed that the practical

advice should remain the same although the tone of the communication should be revisited in light of the survey results which indicated a low prevalence of *Salmonella* in eggs available to caterers and consumers. Members noted that despite the lower prevalence, the large number of eggs consumed on a daily basis still offered significant opportunities for public exposure to *Salmonella*. Members suggested that the advice should include information on the different risks associated with eggs from vaccinated and unvaccinated flocks, egg shell and contents and storage of pooled and shell eggs. Risks of eggs becoming cross-contaminated during handling should also be emphasised. A suggestion was also made to link the advice to information in the FSA's Safer Food Better Business guidance.

71. The Committee requested that the FSA should consider revising its advice on eggs to reflect the risks posed by vaccinated and unvaccinated eggs and cross-contamination during storage and handling of shell and pooled eggs.

Epidemiology of Foodborne Infections Group

72. The FSA updated the Committee on the outcome of the two Epidemiology of Foodborne Infections Group meetings that took place in 2007⁵¹⁻⁵². In March, the FSA outlined the animal and human data for the second six months of 2006, and briefed Members on discussions surrounding sorbitol-fermenting VTEC O157 and highlights from the VTEC 2006 conference. Other issues considered by the Group included a presentation on a *Campylobacter* case control study involving around 1700 cases and over 3000 controls. A report of the EU layer flock *Salmonella* survey was presented followed by an update on proposals for investigation of the increase in non-PT4-*Salmonella* Enteritidis. Information on recent patterns of non-UK egg sourcing was also presented which showed a decrease in sourcing from Spain and increased sourcing from Germany. The Group also received a presentation on RADAR, a veterinary surveillance system that brings together animal surveillance and population data. In addition, the Group considered antimicrobial resistance, specifically in relation to extended spectrum beta-lactamase (ESBL) producing *E.coli*.

73. The FSA reported that the Defra Antimicrobial Resistance Committee had suggested that consideration should be given to the potential role of the food chain in transmission of ESBLs. Since the Standing Advisory Committee on Antimicrobial Resistance was about to be disbanded, EFIG had suggested that ACMSF should be invited to consider this issue.

74. Members welcomed the paper and noted that there were difficulties linked to detecting sorbitol-fermenting *E.coli* O157. Mr Gayford (Defra assessor) commented that Defra was directing its resources to look at *E.coli*. The Committee welcomed the information on antibiotic resistance and ESBLs and reiterated that this issue should be revisited. It was added that a broader look

at antibiotic resistance was needed to assess whether the picture had changed since the ACMSF last considered this issue in 1999. Mr Gayford outlined Defra's concerns in relation to ESBLs noting that enhanced surveillance had been in place since 2004 and that an increasing number of isolates had been detected in animals.

75. The Committee agreed to consider the wider issues surrounding antibiotic resistance in the medium term once the Committee had recruited the appropriate expertise following Professor Piddock's departure. The Emerging Pathogens Working Group was requested to examine ESBLs in food in the first instance and report back to the Committee with recommendations in 2008.

76. In December, the FSA provided a review of animal data for the first six months of 2007 noting that there was little to report. It was highlighted that an early detection system had been instituted by VLA to detect signs of increased reporting for individual serotypes. The FSA also reviewed the human data covering the period January to September 2007. The FSA reported that *Salmonella* reports continued to show a levelling off with little change in incidence since 2005. However *Campylobacter* reports increased in 2007 after four years of stability. *Listeria* reporting rates have risen and were currently at a similar level to the peak seen in 2003. VTEC O157 rates have returned to 2003 levels although high rates were continuing in Scotland. Trends were similar across GB. Rates of *Campylobacter* and *listeria* had continued to decrease in Northern Ireland. The number of outbreaks had continued to decrease. Other areas considered by EFIG included an update on sorbitol-fermenting *E.coli* O157, further data from a *Campylobacter* case control study, CHRO conference, non-PT4 *Salmonella* Enteritidis foreign travel cases, antimicrobial usage, food surveys, National Control Plans for *Salmonella* in breeding and laying flocks, updates on EU layer and broiler surveys, HPA review of surveillance systems and a foodborne disease strategy review workshop.

Codex Alimentarius Commission

77. The FSA updated the Committee on the outcomes of the two Codex Committee on Food Hygiene (CCFH) meetings. In March, Members received a synopsis of the main outcomes of the 38th session of CCFH which was held in Houston, Texas in December 2006⁵³. By way of background, the FSA explained that historically the ACMSF was informed of the work of this Codex group, which met every 12-18 months.

78. The Codex Committee agreed to advance three documents to the Codex Alimentarius Commission (CAC) for adoption on guidelines for microbiological risk management, hygienic practice for eggs and egg products and guidelines on the application of general principles of food hygiene to the control of *L. monocytogenes* in ready to eat foods. The Committee also

agreed to take forward new work on proposed guidelines for control of *Salmonella* and *Campylobacter* in broiler meat. Future work on noroviruses in shellfish, *E.coli* and fruit and vegetables was also discussed. In addition, the FSA reported that an FAO/WHO expert consultation on the uses of active chlorine was expected to be held in 2007.

79. In December, the Members received a summary of the outcomes of the 39th session of the CCFH held in New Delhi, India 30 October-4 November 2007⁵⁴. The Committee had a very productive session and agreed to advance three documents to the CAC for adoption. These were a proposed draft Code of Hygienic Practice for Powdered Formulae for Infants and Young Children apart from Annex II (*Enterobacter sakazakii* criterion – which was held for consideration next year), proposed draft Guidelines for the Validation of Food Safety Control Measures and proposed draft Annex II on the Guidance on Microbiological Risk Management Metrics to the Principles and Guidance for the Conduct of Microbiological Risk Management. Ongoing work included the draft Microbiological Criteria for *Listeria monocytogenes* in Ready to Eat Food and revisions to the scope of the proposed Draft Guidelines for the Control of *Campylobacter* and *Salmonella* spp. in broiler chicken meat to include all chicken meat of the species *Gallus gallus* and not just young bird meat. ACMSF Members noted that the UK was part of the drafting group on *listeria*.

80. The Codex Committee did not reach a consensus regarding removal of current international trade restrictions on milk subjected to treatment using lactoperoxidase. New work included development of a commodity specific annex on leafy green vegetables, including leafy green herbs to add to the Code of Hygienic Practice for Fresh Fruit and Vegetables. Development of a Code of Hygienic Practice for *Vibrio* species in Seafood was also proposed. New work on Foodborne Viruses would be considered at next year's session. The Committee would also be developing its own risk analysis principles document as requested by the CAC in the context of the Strategic Plan.

General Papers

Good Practice Guidance

81. In 2007 the Committee reviewed its performance against the 27 key principles set out in the Agency's Good Practice Guidance for Scientific Advisory Committees. Members agreed that the work of the Committee and its sub-groups conformed closely to the requirements of the good practice guidelines. ACMSF considered it operated in an open and transparent way and it focussed on risk assessment. The issues it examined were clearly defined, it sought independent expert advice where appropriate, quality of data was carefully considered and statistical analysis incorporated when possible. In addition, the Committee made assumptions and uncertainties clear and risks and benefits were taken into account in the presentation of its advice.

Self Appraisal

82. Members carried out a self appraisal of their performance in summer 2007.

Report from ACMSF Chair

83. Professor O'Brien informed Members that in the summer she met with Professor Pat Troop (former Chief Executive of the HPA) and Professor Bill Reilly (FSA Board Member) to discuss gastrointestinal surveillance. At this meeting Professor O'Brien reiterated the importance of high quality surveillance data to support the work of ACMSF. It was agreed that she would meet with Professor Peter Borriello (HPA) twice a year to keep the issue on the agenda.

84. In October Professor O'Brien attended the annual dinner for Scientific Advisory Committee Chairs. Issues discussed included the formation by the Agency of the over-arching General Advisory Committee on Science and a Social Science Research Committee. Other meetings Professor O'Brien attended on behalf of ACMSF included a workshop to review the Foodborne Disease Strategy, an Antibiotic Resistance stakeholder workshop, and the cross-departmental National Expert Panel on New and Emerging Infections.

Website

85. Miss Butler (Secretariat) informed Members that the ACMSF website pages had been redesigned. The website could now be accessed directly via acmsf.food.gov.uk.

Freedom of Information

86. During 2007 the ACMSF received a request from the Information Commissioner seeking explanation on how the freedom of information requests regarding its work on safe cooking of burgers were handled. A response was sent to the Information Commissioner by the Secretariat.

Information papers

87. 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 2007 were:

- Surveillance database for Local Authorities (ACM/835)
- VMD report on sales of antimicrobial products (ACM/836)
- Good Practice Guidelines for the independent Scientific Advisory Committees (ACM/837)

- Microbiological topics covered under the FSA's Postgraduate Scholarship Scheme (ACM/838)
- EFSA Report on trends and sources of zoonoses, zoonotic agents, antimicrobial resistance and foodborne outbreaks in the EU in 2005 (ACM/839)
- Items of possible interest from the literature (ACM/840)
- MSFFG *Clostridium* Report (ACM/841)
- New Scientific Advisory Committee: FSA Board Paper (ACM/842)
- *E. coli* O157:H7 outbreak in spinach (ACM/843)
- Food Industry Guide on Mail Order Food (ACM/844)
- MSFFG Microbial Antibiotic Resistance Report (ACM/845)
- Sustainability for Scientific Advisory Committees (ACM/852)
- Development of an FSA Strategy in Relation to the Problem of Antimicrobial Resistance in the Food Chain (ACM/853)
- Joint FAO/WHO Project to assess the benefits and risks of the use of "active chlorine" in food production and food processing (ACM/854)
- FSAI report on the control and management of *Listeria monocytogenes* contamination of food (ACM/855)
- ILSI Europe Report. *Campylobacters* as zoonotic pathogens: a food production perspective (ACM/856)
- Defra DNA Bushmeat Project summary report (ACM/857)
- Guidelines for the safe preparation, storage and handling of powdered infant formula (ACM/858)
- Update on outbreak of *E. coli* O157 in South Wales and subsequent developments (ACM/859)
- Items of possible interest from the literature (ACM/860)
- LACORS/HPA (EC) Study on the Microbiological Examination of Raw or Thermised Cheeses (ACM/861)
- Self assessment appraisal questionnaire (ACM/862)
- Update on outbreak of *E. coli* O157 in South Wales and subsequent developments (ACM/870)
- Guidance for small businesses on salt reduction (ACM/871)
- LACORS/HPA Study on pathogens in raw meat (ACM/872)
- LACORS/HPA Study on sandwiches in hospitals (ACM/873)
- LACORS/HPA Study on cheese made from pasteurised milk (ACM/874)
- *Salmonella* in livestock production in GB: 2006 Report (ACM/875)

- Items of possible interest from the literature (ACM/876)
- ACMSF Pen Portraits (ACM/877)
- Using Microbiological Risk Assessment in Food Safety Management (ACM/885)
- Foodborne Disease Strategy Review (ACM/886)
- Update from other Advisory Committees (ACM/887)
- EFSA Biological Hazards Panel Opinion on monitoring and identification of VTEC (ACM/888)
- Items of possible interest from the literature (ACM/889)

Chapter 3: A Forward Look

Future work programme

88. The Committee will keep itself informed, through its close links with the Food Standards Agency and the Health Protection Agency, of developing trends in relation to foodborne disease. A continuing task will be to respond promptly with advice on the food safety implications of any issues, which may from time to time be referred to the Committee by the FSA. The Committee expect to report on the findings of its *Ad Hoc* Group on Vulnerable Groups on the recent increasing trend in listeriosis in the elderly in 2008. The Committee through the above Group will also consider the risks posed by *Toxoplasma* in food in more detail.

89. The Committee will report on work to assess the potential risk to human health from botulism in sheep and goats and its consideration of simplified guidance for vacuum-packaged foods.

90. The Committee will, through the Working Group on emerging pathogens, consider extended spectrum beta-lactamase (ESBL) producing *E.coli* in food.

91. 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. The Group will specifically report on *listeria* in smoked fish and *listeria* in cooked sliced cold meats and pâtés.

92. The Working Group on avian influenza will continue to keep a watching brief on developments.

93. The Committee will revisit its previous work on foodborne viral infections.

94. The Committee will also revisit the issue of microbiological safety of ready to eat foods.

95. 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. As the Committee's next horizon scanning review is scheduled for 2008-09, Members will review topics on the short list of priorities from the 2006 short list⁵⁵ in light of emerging issues.

Annex I: 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 micro organisms 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.

Avian Influenza Working Group

To review the ACMSF's 2003 risk assessment on avian influenza including to carry out a detailed review of import measures required for poultry meat and eggs, and to keep a watching brief on developments.

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 Botulism in Cattle, Sheep and Goats**

To consider the potential human health risk associated with botulism or suspected botulism in cattle, sheep and goats, particularly in relation to the spreading of poultry litter on agricultural land. To report back with recommendations to the ACMSF.

Ad Hoc Group on Vulnerable Groups

To examine the potential risks to vulnerable groups including the elderly in relation to the microbiological safety of food by

- considering factors that make people vulnerable in order to define vulnerable groups in relation to foodborne disease;
- identifying key hazards for key vulnerable groups for review;
- assessing the impact of changing patterns of food consumption and behaviour on risks to these groups;
- assessing/reviewing the value/adequacy of current advice and controls and whether it is appropriate;
- advising the ACMSF on the need for changes in advice/recommendations on vulnerable groups and identifying gaps/research needs.

Ad Hoc Group on the Safe Cooking of Burgers

To review the current advice issued by the Chief Medical Officer in 1998 on the safe cooking of burgers and to report back with recommendations to the ACMSF.

Membership Tables

		ACMSF	Surveillance Working Group	Avian Influenza Working Group
Chairman				
Professor S J O'Brien ¹	Professor of Health Sciences & Epidemiology, School of Translational Medicine, University of Manchester	▼	▼	
Members				
Mr J Bassett	Microbiological risk assessor, Unilever Safety & Environmental Assurance Centre	▼		
Dr D W G Brown ²	Director, Virus Reference Department, HPA Centre for Infections, 61 Colindale Avenue, London NW9 5HT	▼		▼
Mrs V Buller	Business improvement & catering consultancy	▼		
Professor J Coia ³	Consultant Microbiologist, NHS Greater Glasgow and Clyde	▼		

¹ Appointed Chair in February 2007 (Acting Chair from January 2006)

² Dr Brown chairs the Avian Influenza working Group

³ Appointed 1 April 2007

		ACMSF	Surveillance Working Group	Avian Influenza Working Group
Ms S Davies MBE	Chief Policy Adviser, Which?	✓		
Professor M J Gasson	Deputy Director (Science), Institute of Food Research	✓	✓	✓
Dr R E Holliman	Consultant and Reader in Clinical Microbiology, St George's Hospital, London	✓		
Professor T J Humphrey ⁴	Professor of Veterinary Zoonotic Bacteriology, University of Bristol	✓	✓	
Professor P R Hunter	Professor of Health Protection, University of East Anglia	✓		
Mr A Kyriakides	Head of Product Safety, Sainsbury's Supermarkets	✓	✓	
Ms E Lewis	Computer consultant Consumer representative	✓		
Mr P McMullin	Senior Veterinarian & Managing Director, Poultry Health Services	✓		✓
Dr S Millership	Consultant in Communicable Disease Control, Essex Health Protection Unit and Consultant in Microbiology	✓		

⁴ Professor Humphrey chairs the Surveillance Working Group

		ACMSF	Surveillance Working Group	Avian Influenza Working Group
Mrs J Morris	Food Safety Policy Officer, Chartered Institute of Environmental Health	▼		
Professor L J V Pidcock 5	Professor of Microbiology, Division of Immunity & Infection, University of Birmingham	▼		
Mr R Rees MBE	Chef and Food Consultant	▼		▼
Professor P Williams	Professor of Microbiology, Dept. of Genetics, University of Leicester	▼		
Co-opted Members				
Dr D Alexander	Veterinary Laboratories Agency			▼
Dr C Bell	Consultant		▼	
Dr I Brown	Head of Avian Virology, Veterinary Laboratories Agency			▼

		ACMSF	Surveillance Working Group	Avian Influenza Working Group
Dr A Hay	Director, World Influenza Centre, National Institute for Medical Research			▼
Dr N Phin	Respiratory Diseases Department, Health Protection Agency			▼
Dr J Wood	National Institute for Biological Standards and Control			▼
Assessors				
Mr P Gayford Mr S Wyllie 6	Department for Environment, Food and Rural Affairs	▼		▼
Dr J Hilton	Food Standards Agency	▼		▼
Dr S Neill	Northern Ireland Department of Agriculture and Rural Development	▼		
Dr J McElhiney	Food Standards Agency (Scotland)	▼		

6 Mr Wyllie replaced Mr Gayford in April 2007

		ACMSF	Surveillance Working Group	Avian Influenza Working Group
Mrs J Whinney	Food Standards Agency (Wales)	✓		
Secretariat				
Administrative Secretary Dr L Foster	Food Standards Agency	✓	✓	✓
Scientific Secretary Dr P E Cook	Food Standards Agency	✓		
Administrative Secretariat				
Mr A Adeoye	Food Standards Agency	✓	✓	✓
Miss S Butler	Food Standards Agency	✓	✓	✓
Mr S Rahman	Food Standards Agency			
Scientific Secretariat				
Dr C-H Chan	Food Standards Agency		✓	
Miss J Higgins	Food Standards Agency			✓
Dr S Rollinson	Food Standards Agency			✓

Members	Workin Group on newly-emerging Pathogens	Ad Hoc Group on:		
		Botulism in Cattle, Sheep and Goats	Vulnerable Groups	Safe Cooking of Burgers
Mr J Bassett ⁷		✓	✓	✓
Dr D W G Brown	✓			
Professor J Coia			✓	
Ms S Davies MBE			✓	✓
Professor T J Humphrey ⁸			✓	
Professor P R Hunter ^{9,10}	✓		✓	
Dr R Holliman	✓		✓	
Mr A Kyriakides	✓	✓	✓	✓
Ms E Lewis		✓		
Mr P McMullin		✓		
Mrs J Morris			✓	
Professor S J O'Brien	✓			✓
Professor L J V Piddock	✓			
Professor P H Williams ^{11, 12}		✓		✓

⁷ Mr Bassett joined the Ad Hoc Group on Botulism in Cattle, Sheep and Goats in October 2007

⁸ Professor Humphrey chaired the Ad Hoc Group on Vulnerable Groups from December 2007

⁹ Professor Hunter chairs the Ad Hoc Group on Newly Emerging Pathogens

¹⁰ Professor Hunter chaired the Ad Hoc Group on Vulnerable Groups from April to December 2007

¹¹ Professor Williams chairs the Ad Hoc Group on Botulism in Cattle, Sheep and Goats

¹² Professor Williams chairs the Ad Hoc Group on the Safe Cooking of Burgers

		Workin Group on newly-emerging Pathogens	Ad Hoc Group on:		
			Botulism in Cattle, Sheep and Goats	Vulnerable Groups	Safe Cooking of Burgers
Co-opted Members					
Professor P Hawkey	University of Birmingham	✓			
Dr D Livermore	HPA	✓			
Mr C Teale	VLA	✓			
Dr M Brett	Consultant (retired from HPA)		✓		
Mr P Roger	Sheep Veterinary Society		✓		
Professor K Kerr	Consultant Microbiologist			✓	
Dr J McLauchlin	HPA			✓	
Ms C Roberts	Social scientist			✓	
Assessors					
Dr J Hilton				✓	
Mr S Wyllie		✓		✓	
Dr S Kennedy			✓		

	Workin Group on newly-emerging Pathogens	Ad Hoc Group on:		
		Botulism in Cattle, Sheep and Goats	Vulnerable Groups	Safe Cooking of Burgers
Secretariat				
<i>Administrative Secretary</i>				
Dr L Foster	✓	✓	✓	✓
<i>Administrative Secretariat</i>				
Mr A Adeoye	✓	✓	✓	✓
Miss S Butler	✓	✓	✓	✓
<i>Scientific Secretariat</i>				
Dr P Cook				✓
Ms Gael O'Neill	✓			
Dr J Aish		✓	✓	

Annex II: 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
Mr J Bassett	Unilever plc	Employee		
Dr D W G Brown	None		Various	HPA industry-funded research and laboratory investigations
Mrs V Buller	Nutmeg UK Ltd North East Land Links Local Authorities and Schools Association of Public Service Excellence	Consultancy work Consultancy Project-Public Sector Food Procurement Consultancy work Consultancy work for Local Authority members	None	
Professor J Coia	Various	Ad Hoc medico-legal work on infection related matters	Various	Funding for research projects
Ms S Davies MBE	Which? (formerly the Consumers' Association) ¹³	Employee	None	
Professor M J Gasson	Novacta	Shareholder	Various	IFR Food Safety Science Division industry-funded research projects
Dr R E Holliman	Various	Medical Legal work on <i>toxoplasmosis</i> and hospital acquired infection	None	

¹³ Ms Davies has additionally declared shares held by her father in Marks & Spencer.

Member	Personal interests		Non-personal interests	
	Name of company	Nature of interest	Name of company	Nature of interest
Professor T J Humphrey	British Egg Industry Council MacDonalds Ltd	<i>Ad Hoc</i> consultancy work <i>Ad Hoc</i> consultancy work	Various	Funding for research projects
Professor P R Hunter	Suez International Paris Institute for Public Health & Water Research	Chair of Science Advisory Committee, Chair of Board of Directors Medical/Legal advice regarding Travel Health	Chambre Syndicale des Eaux Minérales, Paris	Study of Antibiotic Resistance in Food & Water in France
Mr A Kyriakides	J Sainsbury plc Sainsbury's Supermarkets Ltd. CCFRA Scientific & Technical Committee	Shareholder Employee Chairman	None	
Ms E Lewis	None		None	
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	
Mrs J Morris	Chartered Institute of Environmental Health Whitbread plc	Member Shareholder	None	
Professor L J V Piddock	None	<i>Ad Hoc</i> consultancy work	Various	Funding for research projects
Mr R Rees MBE	Gloucestershire Primary Care Trust	Non-Executive Director	None	

Member	Personal interests		Non-personal interests	
	Name of company	Nature of interest	Name of company	Nature of interest
Professor P H Williams	None		None	
Ad Hoc Group on Botulism in Cattle, Sheep and Goats				
Dr M Brett	None		None	
Mr P Roger		Independent Sheep Consultant		
Avian Influenza Working Group				
Dr Dennis Alexander	None		None	
Dr I Brown	Veterinary Laboratories Agency	Director of International Reference Laboratory for AI	None	
Dr A Hay	None		None	
Dr N Phin	None		None	
Dr J Wood	None		None	
Surveillance Working Group				
Dr C Bell	The United Kingdom Association of Microbiologists – Accreditation Marks & Spencer plc	Convenor	Companies in the food manufacturing and retailing sectors	Consultant in Microbiology
		Shareholder	Food Standards Agency	Programme Adviser for BII VTEC research project

Member	Personal interests		Non-personal interests	
	Name of company	Nature of interest	Name of company	Nature of interest
Working Group on Newly Emerging Pathogens				
Prof P Hawkey				
Dr D Livermore	GlaxoSmithKline, Dechra, Pfizer, Schering Plough, AstraZeneca, Tate & Lyle, within diversified portfolio	Shareholder	Merck, Wyeth, Oxoid, Cerexa, Protez	Grants or contract research
	GlaxoSmithKline, Eco Animal Health, Sainsbury's, M&S, ABF, Tate & Lyle within diversified portfolio	EPA for shareholder		
	Health Protection Agency	Employee		
	Intervet	Ad hoc advisor on ESBLs		
Mr C Teale	Marks & Spencer plc J Sainsbury plc	Shareholder		
Ad Hoc Group on Vulnerable Groups				
Professor K Kerr	None		None	
Dr J McLauchlin	Health Protection Agency Various	Employee Ad hoc consultancy work	Various	Funding for research projects
Ms C Roberts			Food Standards Agency	Microbiological Safety Division Special science adviser

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