Meeting

Review of ACMSF Member Expertise – October 2025

Introduction

To ensure the Advisory Committee on the Microbiological Safety of Food (ACMSF) continues to maintain a comprehensive and balanced range of expertise, the secretariat is undertaking a review of the committee's current skills and knowledge base. This exercise aims to assess the breadth and depth of expertise available within the committee and to identify any areas where additional capability may be required to support both current and anticipated future work.

Methodology

Committee members were invited to complete a Microsoft Forms survey designed to capture self-assessed levels of expertise across a range of skill sets. These skill sets reflect both historical areas of work and those expected to feature in the committee's future agenda. The members were asked to rate themselves on 49 topics, across 7 categories (See Annex 1). For each item, members were asked to rate their personal level of expertise using a three-point scale:

- **1 – Low level of expertise**
- **2 – Medium level of expertise**
- **3 – High level of expertise**

Members were also asked to list any areas of expertise they bring to the committee which are not covered by the list provided. Responses were submitted confidentially and are accessible only to the secretariat. The data collected will inform the committee's discussion on whether any gaps exist and, if so, how these might best be addressed.

This review has several limitations. Firstly, two committee members did not complete the survey, which may affect the overall representation of expertise across the group. Secondly, the expertise levels reported are self-assessed,

introducing potential subjectivity and bias. Lastly, while future work areas have been identified, they may not be fully comprehensive, as emerging or unpredictable topics could arise that were not captured during this review.

Results

Overall, the committee demonstrates strong expertise in most areas, though some areas were identified opportunities for improvement.

Strengths

The committee demonstrates robust expertise in several critical domains. Areas of strength include:

- **Operational Food Safety Practices**
  Skills in HACCP systems and corrective actions, cold chain management, shelf-life determination, packaging and preservation methods, and hygiene practices scored among the highest averages (around 2.1–2.2 out of 3). These areas also had the greatest number of members rating themselves at the highest level (Level 3), indicating strong practical capability for ensuring food safety throughout the supply chain.
- **Microbiology and Foodborne Pathogens**
  Core microbiology skills, including contamination testing protocols, growth modelling, and challenge testing, are well covered. Members also reported strong expertise in foodborne pathogens such as *Salmonella spp.*, *E. coli (including VTEC/STEC)*, and *Listeria monocytogenes*, which are central to ACMSF's remit.
- **Veterinary Public Health and Epidemiology**
  Expertise in zoonotic disease transmission, surveillance in livestock and animal feed, and abattoir practices is strong, supporting the committee's ability to assess risks at the human–animal interface. Epidemiological skills, infectious disease surveillance, outbreak investigation, and risk modelling, also scored well, ensuring capability for evidence-based risk assessments.
- **Risk Assessment and One Health**
  Foundational skills in risk assessment and hazard analysis, quantitative and qualitative risk assessment, and uncertainty analysis are broadly distributed. The One Health approach stands out as the single strongest individual skill, with an average rating of 2.5 and the highest proportion of experts, reflecting strong interdisciplinary awareness across human, animal, and environmental health.

Additional skills identified by members and summarised in Annex 2 will be retained by the Secretariat for future reference. This provides a useful indication of any supplementary expertise that may be required for future work.

Gaps

Several areas show limited depth and require attention. Some areas of concern include:

- **Virology**
  Topics such as Influenza A (H5N1) and zoonotic strains and viral transmission/mutation potential scored the lowest (averages around 1.3–1.4), with only one or two members identifying as highly expert. This represents a significant gap for emerging zoonotic threats and pandemic preparedness.
- **Behavioural Science and Horizon Scanning**
  Behavioural science for consumer risk mitigation had the lowest overall rating (1.33), and strategic horizon scanning, climate change impacts on food systems, and environmental surveillance (e.g., wastewater) also scored poorly. These areas are critical for forward-looking risk management and resilience planning but currently lack depth within the committee.
- **Specific Pathogens**
  While *Salmonella*, *E. coli*, and *Listeria* are well covered, pathogens such as Vibrio spp., Yersinia, Hepatitis A and B viruses, and SARS-CoV-2 had averages below 2.0 and very few experts. This suggests vulnerability in responding to outbreaks or emerging risks associated with these organisms.
- **Genomics and Molecular Biology**
  Although some members reported experience with whole genome sequencing and metagenomics, overall coverage is uneven, which could limit the committee's ability to interpret genomic data in risk assessments.

Recommendations

The review of expertise has highlighted several areas which should be a priority during the next ACSMF recruitment process:

1. Virology Expertise

Both *Influenza A (H5N1) & zoonotic strains* and *Viral transmission/mutation potential* scored among the lowest in mean rating (≈1.3–1.4) and had <10% of respondents rating themselves as "High".

SARS-CoV-2 and Hepatitis A and B viruses also scored low, indicating a systemic gap in viral foodborne and zoonotic risk expertise.

2. Behavioural Science Specialist

Behavioural science for consumer risk mitigation had the lowest mean rating (~1.36) and only ~7% “High”.

This is critical for influencing consumer practices, compliance with hygiene guidance, and effective risk communication.

3. Advanced Risk Modelling / Quantitative Analyst

Multidimensional risk modelling and *Risk modelling & burden estimation* scored <1.6 mean, with very low “High” ratings.

These skills are essential for evidence-based decision-making, especially under uncertainty and for emerging hazards.

The review also highlights the importance of strengthening expertise in specific niche areas, possibly, by maintaining an external expert network. Key gaps identified include marine and climate-linked pathogens, such as *Vibrio* species, whose relevance is increasing due to climate change, and enteric viruses like hepatitis and norovirus. To address these, it is recommended to engage a microbiologist with marine pathogen experience and ensure virological expertise is available, particularly in enteric viruses, either internally or through external advisors.

Summary

- **Recruit 3 new members**:

1. **Virologist** (zoonotic & foodborne viruses, One Health)
2. **Behavioural Scientist** (consumer risk mitigation)
3. **Risk Modeller** (quantitative, uncertainty, burden estimation)

- Maintain an external expert network for niche gaps (marine pathogens, hepatitis viruses, climate impacts).

For consideration by the committee

1. Do you agree with recruitment in these 3 areas?
2. Any other areas which we should consider recruiting for?

Secretariat

October 2025

Annex 1

Scientific and Technical Expertise

- **Microbiology / Food Microbiology**
  - Foodborne pathogens (e.g. *Listeria*, *Campylobacter*, *Salmonella*, *E. coli*, Norovirus, Botulinum toxin-producing *Clostridia*)
  - Microbial growth modelling and detection methods
  - Microbiological contamination and testing protocols
  - Challenge testing and strain selection
- **Veterinary Microbiology & Public Health**
  - Zoonotic disease transmission
  - Surveillance in livestock and animal feed
  - Abattoir practices and meat hygiene
  - Companion animal pathogen risks
- **Epidemiology**
  - Infectious disease surveillance
  - Outbreak investigation and attribution
  - Risk modelling and burden estimation
  - Statistical analysis
- **Genomics and Molecular Biology**
  - Whole genome sequencing
  - Metagenomics for pathogen tracking
  - Strain variability analysis
- **Virology**
  - Influenza A (H5N1) and zoonotic strains
  - Viral transmission and mutation potential

Food Safety, Hygiene & Technology

- Risk assessment and hazard analysis
- Hygiene practices in domestic and commercial kitchens
- Cold chain management and contamination control
- Shelf-life determination and validation
- Packaging and preservation methods

- HACCP systems and corrective actions

Antimicrobial Resistance (AMR)

- AMR risk assessment
- AMR terminology
- Detriment frameworks for AMR in the food chain
- Environmental AMR surveillance
- AMR in pets and implications for humans

Risk Assessment & Data Analysis

- Quantitative risk assessment
- Qualitative risk assessment
- Multidimensional risk modelling
- Uncertainty analysis and severity scoring

Regulatory and Policy Expertise

- UK, EU, and international food safety regulations
- Governance and risk management frameworks

Behavioural and Social Sciences

- Behavioural science for consumer risk mitigation

Environmental and Climate Science

- Climate change impacts on food systems
- Environmental surveillance (e.g., wastewater)

Cross-disciplinary and Collaborative Skills

- One Health approach (human, animal, environmental health)
- Strategic horizon scanning

Pathogens

- *Listeria monocytogenes*
- *Campylobacter spp.*
- *Salmonella spp.*
- *Escherichia coli* (including VTEC/STEC)
- Norovirus
- *Clostridium botulinum* and other neurotoxigenic clostridia

- *Staphylococcus aureus* (including MRSA)
- *Vibrio spp.*
- Hepatitis A and B viruses
- SARS-CoV-2

Annex 2

Food systems, standards & certification

- Food standards and labelling enforcement
- Food safety thirdparty certification
- Methods and techniques for verifying Food Control Management Systems
- Expertise in minimally processed foods

Animal health & feed supply chain

- Comprehensive knowledge of farm animal feeds, their manufacture, microbiological risks and controls, and impacts on the food chain
- Application of digital technologies and AI/ML in animal health
- Social media listening analysis for risk insights
- Understanding of Free Trade Agreements and implications for UK agriculture

Environmental & materials

- Environmental monitoring in food systems
- Microplastics in food and microbial contexts

Genomics, microbiome & human health

- Genomic epidemiology
- Microbiome composition and dynamics
- Survival and transmission biology of *Campylobacter*
- Biofilms in food systems
- Gut microbiome, inflammatory bowel disease, systemic inflammation
- Gut–brain axis, cognitive function, and personalised nutrition

Biotechnology applications

- Use of genetically engineered microbes in food systems
- Use of bacteriophage in food systems

Quantitative methods

- Multivariable modelling
- Time to event analysis