Report

Horizon scanning output 2022

PDF
View ACMSF Horizon Scanning output 2022 as PDF (354.52 KB)

ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD

ACMSF horizon scanning workshop 2022 summary of discussions and outputs.

Introduction

The Committee held a virtual horizon scanning workshop in June 2022. The workshop followed a similar format to previous workshops with a mixture of breakout groups and plenary sessions. Members were asked to identify emerging issues around a series of specific questions and use more general horizon scanning questions as a prompt. A number of key issues were identified by members both outside the workshop and as part of the breakout groups and the plenary session was used for the Committee to agree a prioritised list of recommendations based on their potential for reducing foodborne illness. This paper summarises the main outputs and discussions from the workshop and actions, where identified, have been highlighted. Where specific actions have not been mentioned but it is obvious that the Committee is suggesting some further work/consideration, this has been indicated. General thoughts/deliberations have also been captured.

At Annex 1 are the comments members provided before the workshop. The secretariat sent the questions to the committee members before the workshop which members provided responses to. This document guided the discussions at the workshop.

Members were asked to consider:

How are the following issues likely to affect the burden of foodborne disease in the UK over the next 10-20 years, in terms of existing and new hazards and likelihood of exposure, including to AMR? What are the key evidence gaps?

Priority emerging issues identified by Members.

Q1 - Challenges associated with the disruption to the supply chain?

In the event of food supply disruption, the following challenges were identified as potentially having direct or indirect impact on the burden of foodborne disease.

Challenge	Possible Actions

1a Increased risk of contamination – Members discussed the effect that less robust supply chains and climate change may have on food safety. Members underlined the potential for climate change to cause increased flooding, contaminating food, or higher temperatures resulting in cold chain being less robust, or for disrupted or reduced water supplies affecting washing/processing of food, leading to increased risk.

Possible Actions for Items a-c

To enable consumers to cope better with food supply disruptions combined with squeeze on cost of living, the FSA (in collaboration with industry) may consider research into:

I. Safety aspects of shelf-life determination for basic/essential foodstuffs, both pre-packaging processes and types of packaging.

II. Identifying foods with shorter or more resilient supply chains and promoting them.

III. Identifying and promoting locally produced foods that would effectively substitute for those with longer supply chains or shorter shelf lives.

1b Increasing risk of fraud – Members noted that supply shortages combined with the increased pressures on cost of living could lead to mislabelling, reduced due diligence, and greater appetite by the consumer to take risks with fraudulent or counterfeit products. The need for effective fraud detection was highlighted, together with having in place measures to monitor unscrupulous operators attracted to the opportunity that disruption of the food supply chain may bring.

1c Increased pressures on cost of living – Members agreed that increased pressures on cost of living would have food safety risks. There was appreciation that in some communities, sustainability and environmentally friendly sources of food will be less important as consumers have to make tough decisions regarding food and budget. Members also felt there was merit for the UK to be more self-reliant in food production and underlined the risks of being heavily reliant on imported food. In addition, members discussion covered possible risk associated with changes in consumers dietary behaviour. It was acknowledged that this could lead to malnourishment and eventually increase the proportion of the population classified as vulnerable in terms of foodborne disease.

	Possible Actions for items d-f
1d Lack of resources in Local Government (LA) to enforce food safety regulations – Members were informed that LAs were presently under resourced in terms of inspecting premises and carrying out food safety checks. It was highlighted that the pandemic has severely affected the systematic approach employed by LAs in the food safety/hygiene inspections they carry out which includes checks in nursing/care homes and public eateries.	Local Authorities (and Port Health Authorities) should be encouraged to allocate appropriate funding for food safety law enforcement/food safety inspection. ACMSF has concerns about the current reduced resourcing in relation to food safety that has limited enforcement of food safety regulations. Members pointed out that systematic food safety monitoring should be happening in all LAs.
1e There is a risk of less effective food safety controls – Members remarked that this could be due to a number of factors including labour shortages, less skilled workers, cost cutting leading to a reduction in key safety measures (such as to reduce energy costs in production methods), longer delivery times, disrupted/changed supply chains. The consequences of this being increased level of food spoilage and potentially shelf lives being unreasonably extended or shortened.	

1f Members commented that the UK exiting the European Union has resulted in challenges in implementing safety measures for imported food. The need to have a robust system for food safety was underlined. The Committee recognised the risk of increased imported foods coming in with their own safety issues such as new or emerging pathogens, introduction of different antimicrobial resistance (AMR) **patterns** and inadequate safe processing. There was discussion on the need for the FSA to consider profiling countries the UK imports food from to assess risks from the particular foods being imported.

1g Predict sudden short-term impact of loss of important supplies – Although it is impossible to predict the exact nature of a future threat to the supply chain, members agreed that there is merit of having the ability to identify broad microbiological safety risks that might arise as a result of certain categories of issue when they develop. In practice, this would potentially provide the capability to classify risk based on characteristics such as geopolitical events, climate related issues etc.

Developing a classification scheme (or a defined approach) to describe the likely impact of a possible food chain disruption will put the FSA/ACMSF in a good position to address likely future food chain disruption effectively e.g., a separation of short-term acute issues from long-term developing issues.

1h Emphasis on hand hygiene: The Committee viewed this as important emphasising the significance of a hand hygiene campaign from children (schools) to adults. This could encompass many areas of food safety but starting with simple hygiene measures. Need to reinforce the message due to the potential of new and emerging pathogens.

The FSA should consider running a continuous hand hygiene campaign for all ages.

1i New hazards emerging (new strains, AMR, and new pathogens) – Members discussed the possible new hazards, or changes in risk, more intensification in food production and rising sea temperatures (climate change) affecting seafood microbes may introduce. Other areas highlighted include: changing supply chains exposing populations to different pathogens not encountered previously, changing livestock diets e.g., to reduce methane (for sustainability/environmental reasons) that may affect microbes and cause transmission of pathogens to new species or a change in the pathogenicity of organisms and the circular economy where recycled material particularly food/animal waste are used as a substrate to culture microalgae which is then used as animal feed. Microalgae produced through this process could possibly become a Transmissible Spongiform Encephalopathy (TSE) agent.

1j Members flagged the issue of foodborne viruses as important particularly in relation to the increased levels of minimally processed products. In addition, members acknowledged that there were huge differences in the AMR profile of bacteria in foodstuffs depending on where it is produced and agreed that it is vital that threats on a molecular level for imported food should be considered.

1k Use of prioritisation by ACMSF – Members commented on the benefit of the Committee having access to data from food surveillance and food safety inspection reports to interrogate the evidence from these variety of sources with regard to identifying risks. Discussing the evidence from industry and other sources would help in building up prioritisation in relation to food safety mitigation programmes.

Make food surveillance and food inspection reports accessible to ACMSF for analysis in relation to identification of risks.

Q2 – Changes in methods of food production and new food technologies?

Challenges	Possible Actions

2a Traceability – Value of having more survey data/intelligence on changes of source of food for consumers (legal vs "back-yard" production) – Members discussed the value of collecting data/intelligence on changes of source of food for consumers (where do consumers get their food from, e.g., social media, internet etc). It was felt that recognisable changes in the food system should push the drive to seek relevant data, particularly information relating to legal vs 'back-yard' production and using this to assess food safety risk. It was noted that the appearance and disappearance of online unregulated food sources is becoming familiar. New smaller food businesses are increasing and there appears to be no effective control on how they are monitored. Lots of new entrants (FBOs) coming into the market/trading are helped by online distribution.

The FSA in collaboration with LAs should consider how to pull together data on online businesses together with exploring how they can be effectively regulated. Consideration should be given on how to support their needs using new technology and methods.

2b Emerging trend of new protein sources – Members discussed the emerging trend of new protein sources. Plant based alternatives, insect proteins, 3-D meat printing and cell cultured milk were specifically mentioned. The discussion covered the need for detailed information, monitoring (looking at patterns associated with these foods) and how the FSA is regulating these foods. Members noted the risk of contamination due to these new, unfamiliar technologies (3-D printing, vertical farming, plant/insect-based foods, non-thermal processing, novel transmission environments) as new appropriate food safety controls may not have been fully identified or validated.

FSA should consider monitoring and collecting detailed information from the producers of new protein sources looking for patterns associated with these kinds of food.

2c New Technology – As members acknowledged that new technology is being used to change food production in the UK, the issues of scrutiny, assessment, and regulation were flagged. Some of the questions raised include: Is there robust scrutiny as new technology enters the food system? How is it being assessed and regulated? How many of the foods produced with the new technology should be treated as ‘novel foods’ but aren’t, and are they being appropriately assessed. It was pointed out that new entrants to the market may not have the expertise or technical capability to do proper risk assessment and may need help and support from skilled and appropriately trained Environmental Health Officers (EHOs).

It was added that EHOs who enforce food law may be struggling in keeping up with new technologies used in food production and this would impact their ability to properly assess the operations of FBOs.

I. The importance of food microbiological input into the novel food assessment process to be reiterated, it was felt the current approach focuses more on chemical and toxicological issues. ACMSF may consider further developing its interaction with the Novel Foods and Processes Committee.

II. Consideration should be given to support new entrants to the market who may not have the expertise or technical capability to do proper risk assessments.

2d Regulation and Education – There was discussion on challenges EHOs are facing in keeping up with new technology used in food production to be able to competently advise FBOs. It was highlighted that staff shortages and budget cuts have not helped EHOs in fulfilling their role. The added risk of unlicensed, less knowledgeable businesses being able to sell food online was highlighted. Regulation and basic education on food hygiene needed for new FBOs was underlined. The need to look at the necessity to licence food businesses and novel food producers to reduce the risks was strongly advocated. It was stated that there would be less risk if the public and FBOs were enlightened on food risks.

2e Control of risks through procedures and controls – Members noted that large food producers who dominate the wholesale/retail trade have a good track record of providing the general public with food with acceptably managed risks through their tested procedures and controls. However, as there is a shift to smaller independent operators, there is a lack of evidence of appropriate controls in place to mitigate against risk.

FSA/LAs may consider how to monitor the activities of the small food producers/retailers in relation to procedures and controls they employ to reduce risk.

2f Track and trace system (communicating key food safety messages to food business operators) – Members discussed the need to collect data of businesses producing novel foods together with new entrants to the food industry so as to ensure they are up to speed on food hygiene and the HACCP process. Communicating food safety process to emerging businesses was underlined as vital. It was felt this could be covered in the licensing process. Food safety courses should be a requirement to obtaining a licence for food production.

2g Changes to food production/tech outside of UK and how that might affect food safety of imports – Members discussed the effect changes to food production and use of new technology outside of the UK may have on products imported to the UK particularly if the products are novel and have not gone through a robust assessment process. There was concern on how the UK ensures that imported food is safe. The need to adopt the EU system of deploying inspectors to third countries to check food production systems was mentioned.

Q3 – How are changes in consumer behaviour and preferences likely to affect the burden of foodborne disease in the UK.

Challenge	Possible Actions

3a Increasing cost of food and energy – External influences such as the increasing cost of energy and food products and the direct and indirect impact on consumer behaviours were highlighted as an emerging issue to consider in relation to foodborne illness. There are concerns that due to economics and regulations, changes may be imposed on the consumer rather than these changes being up to their own choice. As a result, this may lead to more people needing access to foodbanks, but also struggling to donate to foodbanks. There may also be a decline in sustainability and ethical food consumption. In terms of foodborne disease, consumers could potentially ignore use-by as they struggle to buy enough food. Members felt that consumers may also disregard cooking instructions as means to reduce energy costs. Consumers may also not run refrigerators at the correct temperature as means of energy reduction, leading to an increased risk of pathogen growth. Members also expressed concerns of the potential of biofilm formation in the home environment on food, especially food that is incorrectly stored, leading to the formation of new or changing pathogen communities.

I. Develop educational guidance on cooking basic foods safely using less energy. For example, teaching consumers how to adapt cooking instructions for use with microwave or air fryer.

II. Conduct research on consumer methods of cooking and handling food safely and cheaply. Also, to investigate which food products are more likely to be cooked incorrectly.

More research and policy work may need to be carried out, in regard to the labelling of foods, to provide the consumer more ways of how foods can be cooked cheaply e.g., in the microwave.

Q4 – How are challenges associated with changes in size of vulnerable groups likely to affect the burden of foodborne disease in the UK.

Challenges	Possible Actions
4a Defining what is a vulnerable group – Members discussed the difficulty in defining what constitutes a vulnerable group as it relates to food safety and the need to be able to provide appropriate advice and risk assessment. For example, older adults who rely on meals on wheels services have lost some independence and therefore may be vulnerable to food safety risks as they depend on others to cook for them. However, people who go on a cruise may also be vulnerable for norovirus if there is a large consumption of seafood such as oysters as well as being in close quarters with a large number of people. Members identified that it is important to consider not only physiological circumstances but also contextual circumstances that may result in a vulnerable group such as location and economic status. It is also important to consider that the level of homogeneity in a vulnerable group may be changing. For example, members noted that we have an ageing population. However, many older adults are healthy and live independently but foodborne outbreaks occur more likely in those in care and therefore a differentiation needs to be made, with the focus being on those who provide the care.	I. Use whole genome sequencing meta-data to help inform the decision on defining vulnerable groups. This may not be possible due to data confidentiality, but it may be worth exploring. This meta-data may also be incomplete. II. FSA to conduct research to explore what causes vulnerability in terms of health and contextual issues. The aim of this is to help identify if specific advice for subgroups could be created. How often this definition should be revisited is also key.

Challenges	Possible Actions
4b Long-COVID patients and the incidence of foodborne disease – Members pointed out that as we are coming out of the COVID-19 pandemic, we may have an increase in vulnerable groups due to those dealing with long-COVID. There are large evidence gaps surrounding long COVID, especially regarding the incidence of foodborne disease. There are also a range of other health burdens that have increased due to COVID-19 along with ongoing COVID-19 infections which would need to be explored regarding its effect on foodborne disease.	I. Research into the incidence of foodborne disease in long-COVID patients in an attempt to fill evidence gaps. II. Formation of a potential ACMSF subgroup focused on long-COVID and the results of COVID-19 pandemic in relation to the incidence of foodborne disease. III. Possibly contact those who run the track-and-trace app to assist with information collation.

Challenges	Possible Actions
4c Ageing population and loss of independence – Some members raised concerns that due to medical advances people are living longer with co-morbidities. As people are living longer, members were concerned with a higher percentage of people relying on services such as meals on wheels or other care services. These people lose some of their independence and therefore may be more vulnerable to food borne illness. These people are reliant on care workers and therefore it is up to these care workers to ensure suitable food hygiene practices.	The FSA should consider commissioning research, gathering evidence and assessing risks involving carers of the elderly rather than the elderly themselves to ensure that those who rely on care services are receiving food prepared to a high food-safety standard.

Q5 - Anything else? What are other important issues or challenges that the Committee may face in the next 10-20 years?

Challenges	Possible Actions

5a Need to consider complex and potentially antagonistic effects on risk from different hazard groups (micro vs chemical food safety/food waste and sustainability issues) – Members discussed the complexity in some of the issues ACMSF have looked at over the years (and may consider in the future) that revealed conflict in food safety advice. Risk management choices which reduce risk from one category of hazard may increase the risk from others. Reduction in waste and environmental and sustainability issues may also be in competition with assessment of food safety issues. It was agreed that a framework that can express the current situation is needed to explore technical approaches to expressing these potential interactions when they occur.	FSA/ACMSF to consider developing a framework that can consider net effects on assessed risk via food from microbiological and chemical hazards.
5b Complexity increasing in Food Business Operators (FBOs) supply chain – There was discussion on the increasing complexity and opacity of the supply chain as it was noted that there has been a huge shift to online trading. The ease in setting up and shutting down of internet food businesses was identified as a concern in relation to food safety. Members felt resources should be targeted towards monitoring the activities of internet FBOs. The use of technology in drawing insights and gathering data that could be used to identify/prioritise food safety risks was highlighted. Members agreed that there was a need to move away from the conventional approach in the way food safety risks are managed for physical and internet FBOs. It was underlined that this shift was needed in managing emerging complexity of the risks that may come from difficult to trace sources.	Appropriate authorities should explore the volume and risks presented by unregulated food sold online and how to support Environmental Health Officers to enforce standards. The use of technology should be considered in drawing insights and gathering data that could be used to identify/prioritise food safety risks.

5c Change in consumer preferences for alternative packaging materials – Consumers preferences to move away from plastics and its effects on food safety was discussed. Members felt that the drive to move towards removal of plastics may have knock on effects on food storage, food hygiene and food preservation.

5d Microplastics – new challenges and new threats – Microplastics was flagged as having the potential to bring new challenges and novel threats to the food chain. The main threats highlighted were the introduction of physical kind of particles in food together with these microplastics being vehicles for transmission of pathogens.

5f Viruses: lack of information on how food processing/matrix affects viruses – Members commented on the challenge food safety assessors face in knowing what food processing does to viruses, particularly thermal processing. Members discussed the challenge of how to use data from thermal inactivation experiments which can be poor and hard to extrapolate. Members agreed that there was dearth of information on food processing in relation to viruses. Although it was acknowledged that the committee published a comprehensive report on virus in food chain in 2015, there was no objection to the suggestion of the need to revisit the report.

I. FSA/ACMSF to consider how to address the dearth of information on food processing in relation to viruses.

II. ACMSF to consider revisiting the comprehensive report it produced on virus in food chain.

5g Lack of knowledge about food safety risks and management, and the food supply chain in the general population. There appears to be very little information on food safety or nutrition included in school syllabuses.	Ensure food knowledge in the population from a young age to enable informed decisions re food and safety, possibly by seeking to have it included in relevant sections of the school curriculum, so as to empower people to be aware of and manage their own food safety risks.
5h EU sunsetting Bill - Government's bill that proposes sunsetting more than 2,400 pieces of retained EU legislation on 31 December 2023 was highlighted as among the challenges associated with the disruption to the supply chain. The Committee is concerned how the review of several food safety rules within 12 months will be done effectively without compromising food safety. This proposal has the potential to harm food safety leading to increased risks to the food chain.	

December 2022

Secretariat

ANNEX 1

ACMSF HORIZON SCANNING 2022 (collated responses to horizon scanning questions from Members)

How are the following issues likely to affect the burden of foodborne disease in the UK over the next 10-20 years, in terms of existing and new hazards and likelihood of exposure, including AMR? What are the key evidence gaps?

- **Challenges associated with disruption to food supply chains**

Potential examples to consider: disease outbreaks, climate and environmental change, geopolitical issues including EU Exit, shortages of materials or resources.

Member A

1. Ingredient supply shortages resulting in increased risk or contamination / fraud, increased likelihood of procurement from less robust supply chains.

2. Worker shortage and / or increased cost of employment leading to recruitment of less skilled labour.

3. Production cost increases due to energy resulting in cost cutting of key food safety controls e.g., cleaning, protective clothing, etc.

4. Climate change resulting in increased rainfall resulting in greater risk of pathogen contamination of field grown crops or increased temperatures resulting in poorer temperature control in production, distribution, retail, and consumer.

Member B

5. More intensification in broiler chicken and pig production (to tackle food shortages and price increase) may lead to the emergence of new hazards or new strains of existing hazards, which may pose different level of risks to the consumer. This also may be linked to increase in AMR.

Member C

6. The conflict in Ukraine is already affecting the food supply chain, adverse weather conditions (more floods, droughts etc.) may affect the supply of certain ingredients and lead to an increase in food fraud, which could pose microbiological hazards. The food sector in the UK is suffering from a labour shortage of skilled workers which may lead to unqualified workers making mistakes along with training quality diminishing due to time constraints. The

- **Changes in methods of food production and new food technologies**

Potential examples to consider: new food packaging, sustainable food practices, food reformulation trends.

Member A

1. Plant based foods including modified atmosphere packaged, extended shelf life, chilled, ready to eat foods.

2. 3D printed meat analogues.

3. Synthetic cell culture milk and milk products.

4. Vertical farming.

Member B

5. Diverging from EU legislation and possible trade agreements with USA may lead to different approach towards food safety interventions, particularly the ones for which regulatory approval is required at present (e.g., chemical interventions). This will require a proper risk assessment for associated microbiological and chemical hazards. This may also lead to an increase in AMR.

Member C

6. Food that has been reformulated to reduce salt and/or sugar (where their inclusion may have a preservative effect) must also have the storage conditions and best-before date checked to ensure that it is adequate for the new recipe. The same for food that have artificial preservatives or additives removed to provide a ‘fresh’ product to the consumer. Will either of these changes lead to a reduction in shelf life and potentially an increase in food waste? Will the removal of plastic packaging reduce shelf life for some products, or will it expose the food to an increased contamination risk? Some food is packaged to protect it (delicate fruit) and if the packaging is changed, the food may get damaged and not chosen by the consumer so it will be wasted. The current debate on use-by dates

Changes in consumer behaviour and preferences

Potential examples to consider food poverty and inequality, changes in food storage/preparation practices, changes in consumer diets influenced by health or sustainability issues.

Member A

1. Food poverty due to household cost pressures resulting in reduced food safety compliance e.g., exceeding use by dates, cooking efficacy, use of leftovers, etc.

2. Reuse of containers and consequent increased risk of cross contamination of filling stations or storage containers.

3. Increased poverty resulting in poorer diets and poorer health / immunity.

Member B

4. Not overly related to direct foodborne route, but novel trends in pets raw feeding is leading to increased exposure to main hazards from raw meat: STEC, Campylobacter, Salmonella, AMR, etc. Pet owners and particularly their immunocompromised household members (children) are more often at risk of acquiring infections when in direct contact with raw pet food.

Member C

5. The increase in people choosing a plant-based diet may increase the amount of land given over to crop cultivation and may encourage clearing of forests in certain countries. Insect protein may become a larger part of our diet, and this will need to be regulated to be done safely. People may keep food too long at home as they cannot afford to throw it away once the use by date expires. People may start to eat more ready to eat food as they cannot afford the fuel bills to cook food, and this may lead to an increase in listeriosis particularly.

Member D

Challenges associated with changes in the sizes of vulnerable groups.

Potential examples to consider ageing population.

Member A

1. A significant increase in the proportion of elderly adults in the population has the potential to lead to an increase ag-related diseases and greater vulnerability to certain foodborne pathogens.

Member B

2. Increase in the size of ageing population will lead to increase in the incidence of the food related incidents involving foodborne pathogens that are affecting predominantly immunocompromised individuals (e.g., *Listeria*, *Toxoplasma*, nosocomial infections, etc).

Member C

3. Older persons are at higher risk for Listeria poisoning and cases may increase with an ageing population. Older people may rely more often than others on ready to eat foods due to several factors. They may lack the motor skills (due to arthritis etc.) to chop and prepare food and may have trouble standing for long periods. They are more likely to live alone and therefore not ‘bother’ to cook a full meal for one, they are more likely to be in fuel poverty and cannot afford to pay fuel bills as they are on a fixed income so cold food is more likely to be consumed. They are more likely to choose to purchase their sliced, cooked meats from the delicatessen counter rather than prepacked and studies have shown that sliced, cooked meats from the delicatessen counter have higher incidents of Listeria contamination. They may choose this way to buy sliced, cooked meats as this is what they are used to from their younger days before supermarkets, they may wish to talk to the person behind the counter for human interaction and they can choose a smaller number of slices rather than the 7+ slices in a pre-packed packet. In addition, older persons are in a vulnerable group as their immune system is weakened over the years and they are more susceptible to infections generally.

Member D

Anything else?

What are other important issues or challenges that the Committee may face in the next 10-20 years?

Member A

1. Reduced enforcement and inspection resource for official controls.

2. Reduced industry resource on food safety controls.

3. Reduced capability and capacity to deal with major incidents.

Member B

4. Nil.

Member C

5. One current hazard is the lack of knowledge about the food supply chain in the general population. Food science/safety/nutrition can be included in almost every school subject, but it doesn't seem to be. Empowering the population from a young age with food knowledge is a very important part of any future plans to help the public to protect themselves with knowledge and understanding.

6. The volume of unregulated food sold online is astonishing. People are selling food through Facebook/Instagram etc. with no checks or inspections as to how safe this food is. If the above suggestion were implemented and we educated people on the dangers of this type of food, they wouldn't buy it. Something needs to be done to either make sure that these businesses are supplying safe food or to close them down to protect the public.

Member D