

Results

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Results

The design of the workshop produced a meaningful consensus; however, the committee found it challenging to provide scores as a group. Members could not always provide scores 1-10 as certain factors limited the ability to rank (for example, some pathogens were deemed to have the same level of risk for the same food group).

Q1 - Score the risk of emerging microbiological issues within specific food groups that could arise following severe flooding.

The participants agreed that VTEC and STEC contamination of crops (specifically leafy greens) and RTE fruit and vegetables were the biggest risk following extreme flooding (scoring 10 and 9, respectively). The participants highlighted that VTEC/ STEC contamination during flooding is likely to affect any field or irrigated crop due to an increased risk of contaminated run off and increased splashing of water onto crop.

Listeria, *Salmonella* and Norovirus contamination of RTE fruit and vegetables were scored 8, 7 and 6, respectively, as the most important risk following severe flooding. The key causes for the increased risk were also linked to irrigation problems and splashing. As well as additional sources of contamination, RTE fruit and vegetables do not have to be cooked by consumers (heating to a temperature sufficient to kill pathogens).

Norovirus in shellfish was also identified as a likely risk during or after flooding. The three groups assigned this risk different scores (8 or below); however, it was agreed that norovirus in shellfish is the next likely risk due to flooding. Therefore, a consensus was drawn that norovirus in shellfish scores 5. The participants agreed that the key cause for norovirus contamination of shellfish is likely to be due to increased pollution caused by sewage spillover and intentional discharge into the sea.

After scoring risks from 10-5, although the participants could identify further pathogen-sector combinations that might increase in risk they felt unable to assign risk rankings to them. The reasons given were that the risks were difficult to quantify, similar and/or contingent on other uncertainties (such as the level of resilience in the national power supply). Therefore, instead of allocating scores below 5, the participants continued the task by simply identifying the food sector and contaminating pathogens that are likely to pose a risk in flooding events. All groups identified viruses (e.g., HepA, HepE) and VTEC/STEC in shellfish due to sewage pollution and discharge into the sea.

One group identified *Salmonella* and VTEC/STEC in beef as potential risks following flooding. This was linked to the movement of wild animals (e.g., rats) which can spread pathogens to livestock. However, the other groups did not identify beef as a food sector that will be affected by emerging microbiological issues caused by flooding.

All groups agreed that *Campylobacter* and *Salmonella* are a risk for poultry during flood events. This risk could be caused by contaminated drinking water and a loss of strict biosecurity measures at the farm level.

VTEC/STEC and *Listeria* contamination of dairy products (including milk and cheeses) and raw milk/ raw milk cheeses were identified by all groups as being a risk following flood events. The impact pathway was less direct in this case but is expected to be caused by the interaction between greater contamination of the outdoor environment interacting with poor hygiene practices and lack of control measures.

Listeria was identified as a risk for the chilled foods sector during a flood. This was only identified by one group during separate discussions but during the wider discussion, all groups agreed that this may be an issue due to a breakdown in societal infrastructure e.g., loss of power to keep refrigerators at the correct temperature.

One group suggested that *Salmonella* in imported eggs may be a risk during flooding. This was linked to reduced domestic supply and reliance on increased import from countries with *Salmonella* prevalence in eggs. However, UK eggs and fish were the only food sectors that the participants did not assign a flood related risk of emerging microbiological issues. Additionally, *E. coli* and *Vibrio* were the only microorganisms not assigned a risk score or identified as emerging microbiological issues during flood events. A table summarising the consensus results can be found in Annex 2.