

RSPH Conference Listeria: Legislation, the Law and Food Practices

Birmingham, June 2023

Background

Listeria monocytogenes (“Lm”) is a foodborne bacterium which can cause the infection listeriosis when the contaminated food is eaten. Listeriosis is rare and often causes only mild symptoms of fever, muscle aches, nausea, vomiting and diarrhoea. However, some people can develop severe symptoms or even die from the invasive form of his illness, which can lead to conditions including sepsis, meningitis, miscarriage or stillbirths. Groups who are especially vulnerable include an estimated 20% of the UK population: the elderly, pregnant women and their unborn babies, newborn babies and those who have weakened immune systems. Lm and other *Listeria* species are widespread in the environment, but Lm is unusual in being able to grow at low temperatures, in oxygen-free and low oxygen environments (such as vacuum packed foods) and in highly salted food such as cured meat. Illness is particularly associated with consumption of contaminated high protein “ready to eat” (RTE) foods such as cooked or cured meat, smoked fish, mould-ripened soft cheeses such as brie and camembert and RTE foods containing these ingredients. The risk of listeriosis can be reduced if these foods are produced under appropriate high care/risk conditions, they are kept refrigerated (less than 5°C), they are not eaten beyond their use-by dates and there is compliance with label instructions on consumption once packaging is opened.

The RSPH conference in Birmingham in June 2023 “Listeria: Legislation, the Law and Food Practices” was organised with support from RSPH members Food Special Interest Group and with venue kindly provided by Harrison Clark Rickerbys Limited. It was an opportunity to provide and an update on the EU’s proposed changes to testing and establishing the shelf-life of foods in relation to control of Lm. The conference also explored some of the best practice hygiene procedures to prevent contamination in food manufacturing settings and look at legal aspects relating to listeriosis outbreaks. Reducing the risks of listeriosis in home settings was also considered, especially in relation to the latest studies on how peoples’ beliefs and food practices can influence their potential exposure to Lm in the home.

Conference Proceedings

The conference was chaired by Professor Lisa Ackerley, Director of Public Health and Hygiene Engagement, Reckitt Benckiser and Kathryn Gilbertson, Partner at Harrison Clark Rickerbys Limited.

Kathryn opened the conference, with an overview of recent outbreaks of listeriosis, the common sources of Lm, the ways in which food can become contaminated in the manufacturing plant, the legal consequences and the current testing legislation. Recent outbreaks of listeriosis in Europe and the USA have been linked to contamination of smoked fish, soft cheese, goat’s cheese and chocolate mousse desserts. These outbreaks led to hospital admissions and deaths, with the impact on the manufacturers being product recalls, production shut-downs and fines (which in one case reached \$19.35 million). In food production and processing plants, reservoirs of Lm bacteria can be found in places such as cracked hoses, equipment that has not been properly sanitised and hard-to-reach places within the facilities which are difficult to sanitise, so becoming harbourage points.

From a legal viewpoint, regulations state the general requirements that food must be fit for human consumption and the food business requires a documented food safety management system based on HACCP principles. Regulation (EC) 2073/2005 sets out the specific “Microbiological Criteria for Foodstuffs”. For most RTE foods able to support the growth of Lm there are 2 criteria. The amount of Lm should not exceed 100 cfu/g (colony forming unites per gram) if it can be demonstrated that the 100 cfu/g limit will not be exceeded throughout the shelf life of the food and the food supports the growth of Lm (criterion 1.2a). If this limit during the shelf-life cannot be demonstrated, then the current EU legislated limit (criterion 1.2b) for Lm is that it is not detected in a 25g sample of food product, tested immediately prior to dispatch, i.e. “positive release”.

Karin Goodburn, Director General of the Chilled Food Association (CFA) and chair of the Industry Listeria group, then provided an update on what is known so far about the EU’s proposed changes to Lm criteria legislation and the Industry Listeria Group’s views.

Karin explained that there has been an alert that there are planned changes to the EU regulations relating to the maximum allowable levels of Lm (detailed above). However, there were still no details of the actual proposed changes. The situation relating to the influences on EU regulations is complex, but across Europe there has been a general movement towards introduction of “challenge testing” of foodstuffs. (This involves the inoculation of food with the bacteria to determine its behaviour in the product and whether the bacteria presents a risk to the microbial safety or quality of the product). Proposed changes could involve (i) introduction of challenge testing to establish shelf life, (ii) setting a limit of no Lm detected in food stuffs before dispatch or (iii) demonstrating no detectable Lm throughout the shelf life of the food.

Karin pointed out that European (ECDC/EFSA) data on confirmed cases of foodborne diseases (2021) indicated that although listeriosis was only responsible for 1.08 % on the confirmed human cases of disease, it was responsible for 63% of the recorded deaths. European listeriosis rates (2016 -2021) indicate some dependence on the types of food commonly eaten in different countries, especially cured meats and smoked fish (Spain and the Scandinavian countries). However, case rates in the UK are consistently substantially lower than the European average.

In the UK, the current regulations (which are 2073/2005) encourage high levels of testing, monitoring and validation, for both the food items and the production environment. CFA members’ food and factory monitoring and Government listeriosis data show that current UK industry and EU hygiene, shelf life and microbiological rules are effective when implemented and enforced commercially. The current regulations can provide a high level of consumer protection.

A change to the longstanding establishment of shelf life from using storage trials using food sampling (Day of Production and End of Life) coupled with production area sampling to the technique of “challenge testing” would only provide information on whether a bacterial species grows on a food sample. However, since Lm is an environmental organism the major source of food contamination is lack of segregation and/or control causing the equipment and premises of the food factory itself. This is not taken into account in the challenge testing. Root cause analysis following a number of fatal listeriosis outbreaks across the world has indicated that the vast majority of causes were problems of poor hygiene practices at the food business and cross-contamination after the food item had been produced.

The key messages are that challenge testing should not be made mandatory in the future and instead, efforts should be made to ensure that food businesses have sufficient resources to implement effective preventative actions, effective cleaning and environmental monitoring and implement corrective actions as soon as any suspect test result is found.

The danger of changing to a more widespread zero tolerance or "undetectable" level of Lm, hence becoming an incentive not to test. This is what has happened in the USA where there are even contractual requirements on FBOs buying ingredients not to test as any positive samples are not tolerated. There were indications of a trend towards withdrawing or recalling foods if Lm were even detected but below the limit of quantification, which is well below the current 100 cfu/g limit. International industry guidance has been published by the Chilled Food Association setting out effective environmental hygiene management monitoring data gathering and usage in triggering corrective actions

(<https://chilledfoodassociation.myshopify.com/products/principles-of-an-environmental-monitoring-program-for-the-management-of-listeria-monocytogenes>). When the new draft regulations are issued for comment, the consultation times are short. Karin would like to see the collaboration being built across Europe to be strengthened to give a united response to any proposed changes.

Solveig Langsrud, Senior Scientist at Nofima, then discussed the role of people's beliefs and food practices on exposure to *Listeria monocytogenes* (Lm). Solveig described the insights from the international "SafeConsume" project 2017 - 2022, funded through the European Union Horizon 2020 fund. SafeConsume's overall objective was to reduce health burden from foodborne illnesses. Solveig described a number of factors which can lead people to contracting listeriosis, including their attitudes, beliefs and practices. Some facts about Lm can be counter-intuitive, leading people to take risks with the food they eat. For example, people can think that smoking fish safeguards it from bacterial contamination. It is also significant that although the danger from Lm for pregnant women is widely known, the danger to the elderly is less appreciated. People are reluctant to change lifetime eating habits and some of the foods potentially harbouring the bacteria are luxury foods, frequently seen at celebrations, so there is a social pressure to eat them.

In the home foods can be kept too long outside the refrigerator, for example at family buffets. Even in the refrigerator, the temperature may not be kept low enough, either due to people setting the temperature too high on the controls or inaccurate temperature readings. Studies measuring actual fridge temperatures in homes have recording figures well over the maximum of recommendation of 5°C, one study for example showing a mean of 5.6°C, and a range between 1.3°C and 9.9°C.

Other problems highlighted included either not checking use-by dates or eating foods beyond the use-by date if the food was thought acceptable by smell and appearance. Affordability is also a risk factor, with people reluctant to throw away out of date foods and turning up fridge temperatures, or even turning them off for a time period, to save energy costs.

Overall, these studies have shown the importance of taking into account people's knowledge, attitudes and beliefs when trying to implement food safety measures in the home. Practical ways forward include more education of the public about Lm and vulnerable groups, more widely available cheap fridge thermometers. wider use of temperature warnings on fridges and more affordable food and energy.

Ruth Sheret, a solicitor at Harrison Clark Rickerbys, then provided delegates with information on the stages of a food business's response to a food poisoning outbreak from a

legal viewpoint. This pathway starts with the notification of an outbreak, ending with litigation or settlement. Ruth's presentation looked at the different ways in which a food business might become aware of an outbreak and what should be their first actions. The food business needs to implement a rigorous investigation in order to establish what has happened, the sequence of events and the required corrective actions. From a legal viewpoint, evidence may be collected for both the claimant and defendant. There was also discussion about how potential claims are valued. The food business then needs to decide on whether to defend a legal claim in court or make a settlement. Factors to consider at this stage are the potential size of the claim and any relevant commercial sensitivities which might become apparent. It was commented that businesses should make best use of "legal privilege", ie that the legal advice they receive can be kept confidential.

The panel discussion, with delegate participation, then raised several topics. There was a discussion about testing for Lm and why challenge testing was not thought appropriate. (Note website information from the Chilled Food Association on [Establishing shelf-life](#) with regard to Lm and [guidance](#) on actions to be taken on detection of Lm).

The discussion also mentioned a recent case of listeriosis resulting from contaminated melon. Ground-grown foods such as melons were naturally exposed to *Listeria* including Lm, and, if not cleaned properly before cutting, contamination would be pushed into their flesh, which in the case of melons was high sugar and pH and therefore supported its growth. This led to discussion of other consumer behaviours which can lead to food poisoning from a variety of organisms. A particular problem is people using frozen vegetable without cooking them, for example frozen sweetcorn in salad and frozen kale in smoothies.

It was commented that there were some different standards and approaches in different countries. For example, in France hospital food is tested for Lm as it is being given to vulnerable groups, but the UK, where hospital-catered RTE food is the major food type associated with listeriosis outbreaks, has not adopted this approach.

Several points were raised in relation to Whole Genome Sequencing (WGS), which can identify the specific strain of a bacteria. It was commented that, due to cost, few companies carry out WGS of Lm positive isolates. This meant that there is no clear picture of the dominance of any strains. It was commented that in North European countries only a few strains of Lm dominate in raw and smoked fish products.

RSPH received excellent feedback from delegates who attended the event and RSPH will continue to provide feedback to its stakeholders on any future developments on this topic.