

<p><b>1. Name of Governmental Department or Agency</b></p> <p>Food Safety Authority of Ireland (FSAI)</p>
<p><b>2. Title of the Project</b></p> <p>Risk Ranking of Microbiological Hazards</p>
<p><b>3. Description of the Project</b></p> <p>This project aims to improve the efficiency of the FSAI in protecting public health by enabling the Authority to prioritise its work where there is the greatest health impact. The FSAI Scientific Committee has already been requested to conduct a risk ranking exercise for microbiological foodborne hazards in Ireland and to identify the data gaps, if filled, that would enable a risk ranking with reduced uncertainty in the future. From the initial scoping exercise, the working group has identified that the European Centre for Disease Prevention and Control's (ECDC) 'Burden of Communicable Diseases in Europe' (BCoDE) toolkit can be used to establish the burden of illness with selected microbiological hazards. This burden of illness data will be combined with data on food attribution (i.e. to determine the proportion of cases of illness that can be attributed to a food source rather than to other sources such as direct contact with animals, environmental exposure or person to person spread) in order to rank the risks.</p> <p>This project falls under the scientific support function enabling the Scientific Committee to meet this request from FSAI.</p>
<p><b>4. Project Scope</b></p> <p>The project working group includes expertise in food science, veterinary, virology, parasitologist, surveillance science and modelling. The researcher will assist the working group with the following tasks.</p> <p><b>Task 1: Selection of the microbiological hazards/pathogens to be included.</b> A preliminary selection has been conducted based on an initial review of available Irish data and of microbiological hazards included in published risk ranking studies. In order to make the project manageable, the list of hazards to be included must be further reduced. The outcome from this work is a list of hazards to be included and a list of those excluded and a record of the selection criteria used (e.g. relevance to Ireland, number of cases, severity of illness, data available etc.)</p> <p><b>Task 2: Estimation of the burden of illness at population and individual level.</b> ECDC's BCoDE tool will be used to establish the burden of illness for the microorganisms it includes. BCoDE allows the calculation of disability-adjusted life years (DALYs) by inputting age- gender- and population-specific incidence data and adjustment values for underestimation. It consists of disease models (with outcome trees) for a range of pathogens which reflect the symptoms and sequelae. However, it does not include some pathogens of interest identified by the project working group. In such cases it is planned to see if we can identify a pathogen included in the BCoDE, with a very similar disease outcome and to make minor adjustments to custom the model.</p>

**Task 3: Attribution of illness to food.** Exposure to foodborne pathogens can happen in a number of ways in addition to consumption of contaminated food. These include for example person to person transmission, contact with animals, exposure to animal faeces in the environment and drinking contaminated water. From the FSAI's perspective, it is important to estimate the proportion of illness that can be attributed to foodborne transmission before ranking the risks. This can be achieved by reviewing data from outbreaks and case control studies and by consulting expert opinion.

**Task 4: Risk ranking.** The data from tasks 2 and 3 will be combined and modelled using Monte Carlo simulation using 'R' software.

#### 5. Skills/Expertise Required

The skills required are as follows:

- Food Microbiology
- Microbial modelling/engineering
- Ability to review and collate the peer reviewed and grey literature
- Science communication (written and oral)

#### 6. Expected Outputs of Project

The outcome of the project will be a draft report to be presented to the Scientific Committee on risk ranking of microbiological hazards in Ireland and a risk ranking model that can be further populated and developed.

#### 7. Working Arrangements

The placement would ideally be based at the FSAI offices in Dublin's IFSC area. However, flexibility to work remotely or other working arrangements could be considered. Any arrangement would require researchers to have access to the FSAI IT systems and to attend FSAI's offices as required. They will report to the Chief Specialist Biological Safety who will be responsible for directing the work.

#### 8. Expected Timeline

The project is currently ongoing and has a deadline of end of September 2020 for submission to the Scientific Committee. It would be ideal if the researcher could start as soon as possible and work for 9 - 12 months.