

# The Burden of Foodborne Disease in the UK 2018

Area of research interest: [Foodborne pathogens](#)

Study duration: 2015-05-01

Planned completion: 1 September 2019

Conducted by: Food Standards Agency

## Background

Over the last five years an extensive programme of work has been undertaken by the FSA economists, in collaboration with external experts and academics, to estimate the societal burden of foodborne illness in the UK.

Working with academics from leading UK universities, the FSA economists have built a Cost of Illness (COI) model, whose objective is to identify and measure all the costs of a particular disease, including the direct, indirect, and intangible dimensions. The output, expressed in monetary terms, is an estimate of the total burden of foodborne illness to society.

This analysis represents a significant improvement from the previous, much simpler model, which has been used internally within FSA to estimate the burden of foodborne illness.

Using a bottom-up approach and a prevalence method, we can now estimate the burden for each of the 13 main foodborne pathogens by identifying the direct and indirect costs, including the pain, grief and suffering for individuals and carers affected by them.

The COI analysis provides decision-makers with a perspective on the magnitude of the societal burden of a particular disease or condition. This can, in turn, improve our organisational capability in a number of ways. For example, it can support economic appraisals, policy evaluation, impact assessments and measures to monitor the impact of food safety measures at macro-level.

## Research Approach

A bottom-up approach has been used to calculate and estimate the cost of foodborne illness based on the number of cases, severity category (presenting to a GP, hospitalisation, not presenting to a GP) and relevant unit prices (medical costs, wages etc). When aggregated, an estimate of the total cost of the burden of FBD in the UK is obtained.

The 13 main pathogens were selected as the most important ones to include, based on a range of criteria, including the significance and the availability of data from sources such as the latest Infectious Intestinal Diseases studies (IID1 and/or IID2) and foodborne disease outbreak data.

Unattributed cases (also referred to as 'unknown aetiology') are also included, so that we build a model of the overall cost burden figure for foodborne disease. This is important, as up to 60% of all IID cases caused by contaminated food are never attributed to a specific pathogen. As a

result, to ignore these unattributed cases, would significantly underestimate the total burden of foodborne disease.

The COI model looks at the costs borne by individuals, their carers, businesses and government. In doing this, it comprises two main components: the financial and the non-financial costs.

By considering also the non-financial aspects, the model is able to identify the full social cost of the burden of FBD, which extends far beyond the financial consequences.

The non-financial component of the COI model accounts for the intangible valuation of the 'pain, grief & suffering' - the human cost of foodborne-related illness, chronic disability and fatalities. These are concepts which are difficult to measure on a simple monetary basis, as they represent a 'non-market cost' and thus need to be valued by other means. In such circumstances, where market prices do not exist or where they are unknown, there are "non-market valuation" methods that can be used to estimate its value.

The COI model is underpinned by substantially more robust, monetised estimates of the pain, grief & suffering of individuals with a foodborne illness using the study commissioned by the FSA in 2016 called '[Estimating Quality Adjusted Life Years and Willingness to Pay \(WTP\) Values for Microbiological Foodborne Disease \(Phase 2\)](#)'.

## Results

Based on latest (2018) estimates of 2.4m foodborne cases per year, the new COI model allows us to estimate that the total burden for the UK from foodborne illness is approximately £9bn (£3bn for known cases and £6bn for unattributed cases).

This is a significant increase over previous estimates. The previous FSA COI model, attributed an annual cost to FBD in the UK that was exceeding £1bn, based on approximately 1m foodborne disease cases.

The total burden of FBD in the UK is predominantly driven by the number of individual cases.

Unknown cases account for 60% of total FBD cases which imposes by far the greatest burden when compared to known cases.

Of known cases, norovirus imposes the greatest economic and societal burden at an estimated annual cost of £1.68bn followed by *Campylobacter* spp. (£0.71bn) and *Salmonella* spp. (non-typhoidal) (£0.21bn). VTEC O157 (£0.04bn) and *Cryptosporidium* (£0.02bn) impose the least burden.

Research report

### England, Northern Ireland, Scotland and Wales

PDF

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