Executive summary

Foodborne illness causes a significant health burden in Australia. Estimates of both the extent of foodborne illness and the costs arising from illness are essential for measuring the impact on the population. In 2010 it was estimated that Australians experience almost 16 million episodes of gastroenteritis each year, with about one quarter of these due to contaminated food. This report updates these numbers to circa 2019 and estimates the associated costs to individuals and the health system. As foodborne disease interventions are often targeted at specific causes of illness, costs are also provided for ten high-priority pathogens.

We estimate that foodborne illness and its sequelae costs Australia AUD 2.44 billion each year. The largest component of this cost is lost productivity due to non-fatal illness, followed by premature mortality and direct costs (including hospitalisations and other health care use). While costs due to lost productivity are lower under the more conservative friction cost model, it remains the largest component cost for foodborne illness due to all causes.

The pathogen with the highest individual cost is *Campylobacter* (AUD 365 million per year), while norovirus, other pathogenic *E. coli*, and *Salmonella* are all estimated to cost Australians over AUD 100 million each year. Lost productivity is the largest component cost for most pathogens, although premature mortality is the largest cost for pathogens that typically cause more severe illness, such as *Listeria monocytogenes*, Shiga toxin-producing *Escherichia Coli*, and *Salmonella*. Table 1 and Figure 1 provide estimates of burden and cost by pathogen, including costs arising from sequelae.

Significant advances in this report include the incorporation of estimated willingness to pay to avoid pain and suffering based on a discrete choice experiment from another FSANZ commissioned study, and the use of a simulation approach to estimating costs which provides uncertainty intervals on all estimates. A costing tool is provided with this report to allow estimates to be updated in the future. Costs associated with surveillance for foodborne pathogens and related to outbreak investigations are considered separately to the model. Likewise, industry costs due to outbreaks such as lost sales, disposal of products, recall costs, enforcement related costs and potential business costs are not included in the costing model.

Key limitations in this work include the lack of data on the long-term burden and health care usage associated with sequelae or ongoing illness due to toxoplasmosis and listeriosis. These costs are not included in this report due to unavailability of data. Costs of pain and suffering, which we approximate using willingness to pay to avoid pain and suffering, are relatively low compared to those estimated for other countries, which may represent differences in underlying preferences across countries and could suggest that greater international standardisation of methods and data collection may be required.

This report demonstrates that foodborne illness results in a substantial cost to Australia and that interventions to improve food safety across industry, retail, and consumers are needed to improve public health. Pathogen-specific costing estimates allow policymakers to target such interventions at individual pathogens, with the end goal of reducing the burden due to foodborne illness.

Figure 1: Annual cost of foodborne illness for priority pathogens, showing component costs of direct costs (health care usage; medication costs), productivity losses, pain and suffering (estimated by willingness to pay values), and premature mortality.