

## **Burden of disease: what is it and why is it important for safer food?**

### **What is 'burden of disease'?**

Burden of disease is concept that was developed in the 1990s by the Harvard School of Public Health, the World Bank and the World Health Organization (WHO) to describe death and loss of health due to diseases, injuries and risk factors for all regions of the world.<sup>1</sup>

The burden of a particular disease or condition is estimated by adding together:

- the number of years of life a person loses as a consequence of dying early because of the disease (called YLL, or Years of Life Lost); and
- the number of years of life a person lives with disability caused by the disease (called YLD, or Years of Life lived with Disability).

Adding together the Years of Life Lost and Years of Life lived with Disability gives a single-figure estimate of disease burden, called the Disability Adjusted Life Year (or DALY). One DALY represents the loss of one year of life lived in full health (see text box for more explanation and examples).

Looking at burden of disease using DALYs can reveal surprises about a population's health. For example, the Global Burden of Disease 2004 Update suggests that neuropsychiatric conditions are the most important causes of disability in all regions of the world, accounting for around 33% of all years lived with disability among adults aged 15 years and over, but only 2.2% of deaths.<sup>2</sup> Therefore while psychiatric disorders are not traditionally regarded as having a major impact on the health of populations, this picture is completely altered when the burden of disease is estimated using DALYs.

### **Why is it important to estimate burden of disease?**

Scientific evidence is key to improving global public health, because national and international health policies should be based on accurate and meaningful health information. Poorly informed policy-making can be one of the reasons why attempts to improve public health fail, jeopardizing the attainment of the health-related Millennium Development Goals. However, much of the time it is extremely difficult to directly translate health data into policy, for a number of reasons:

- Health data from routine statistics or epidemiological studies may be fragmented, concentrate on fatal health outcomes, or only be partially available.
- Studies which investigate particular conditions may overestimate mortality, largely because several coexisting diseases may contribute to and compete for the cause of death.

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<sup>1</sup> [http://www.globalforumhealth.org/filesupld/monitoring\\_financial\\_flows2/MFF04chap3.pdf](http://www.globalforumhealth.org/filesupld/monitoring_financial_flows2/MFF04chap3.pdf)

<sup>2</sup> [http://www.who.int/healthinfo/global\\_burden\\_disease/GBD\\_report\\_2004update\\_part3.pdf](http://www.who.int/healthinfo/global_burden_disease/GBD_report_2004update_part3.pdf)

- Traditional statistics often do not permit direct comparisons of the cost-effectiveness of different health treatments.

Estimating the burden of disease helps overcome some of these problems.

### **How has the burden of disease method been used so far?**

This method has been used by WHO to describe the global and regional burden of disease for more than 130 different causes of death and disability. Based on their experience, the scientists involved produced a ‘how to’ guide to help countries do burden of disease studies for themselves.<sup>3</sup> Recognizing the advantages that DALYs have compared to traditional health statistics, many countries have since used this tool to establish their burden of disease at national or sub-national level. Some examples highlighting the relevance of the burden of disease method in the context of unsafe food are given in the textbox.

### **How is the burden of disease method being used to make food safer?**

Diarrhoeal diseases alone - a considerable proportion of which is foodborne - kill 1.9 million children globally every year, but the true full burden of foodborne diseases is clearly larger. The heaviest share of the burden occurs in poor countries and jeopardizes international development efforts, including the achievement of the Millennium Development Goals (particularly those relating to poverty and child mortality).

However the full extent of the burden and cost of unsafe food is currently unknown. No consistent global information has ever been assembled to describe the full spectrum of foodborne diseases, and previous global burden of disease studies have not included foodborne diseases in any detail.

The WHO Initiative to Estimate the Global Burden of Foodborne Disease aims to change this by providing the first ever quantitative estimates of foodborne disease burden.<sup>4</sup> The information generated by the Initiative will enable policy-makers and others to:

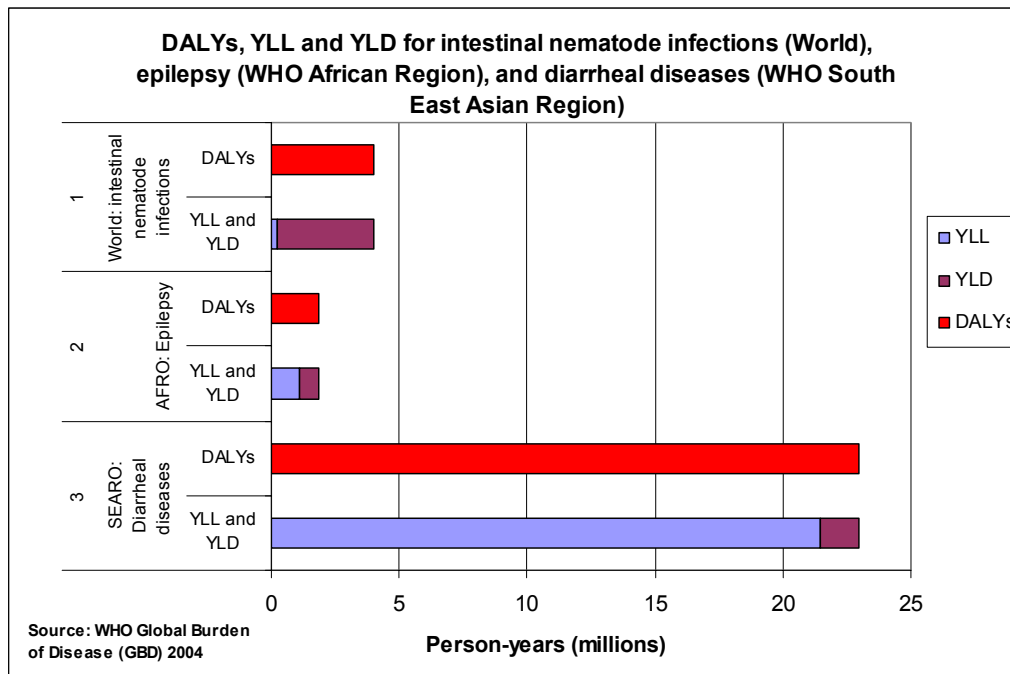
- appropriately allocate resources to foodborne disease, prevention and control efforts;
- monitor and evaluate food safety measures;
- develop new food safety standards;
- assess the cost-effectiveness of interventions; and
- quantify the burden in monetary costs.

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<sup>3</sup> <http://www.who.int/healthinfo/bodresources/en/index.html>

<sup>4</sup> [http://www.who.int/foodsafety/foodborne\\_disease/ferg/en/index.html](http://www.who.int/foodsafety/foodborne_disease/ferg/en/index.html)

**Text box: examples of DALYs for diseases with a link to unsafe food using data from WHO Global Burden of Disease 2004 update<sup>5</sup>**



**1. Intestinal nematode infections**

Eating food that is infected with the eggs of intestinal nematodes (more commonly known as ‘worms’) is the cause of much illness across the world. The chart shows that while not many people die from worm-infection (represented by a small number of YLL), most of the overall burden of disease from worm infection (as shown by the number of DALYs) comes from a high degree of disability (high number of YLDs).

**2. Epilepsy**

The picture is slightly different for epilepsy. There are different causes of epilepsy, one of which occurs through eating food infected with the parasite *Taenia solium*. Infection with this parasite can lead to neurocysticercosis, which is an entirely preventable form of epilepsy. The chart shows the DALYs, YLL and YLD associated with all causes of epilepsy for the WHO African region (unfortunately there are no data currently available on the burden of disease solely from *Taenia solium*). The data show that, unlike infection with worms, epilepsy leads to approximately equal amounts of YLL and YLD.

**3. Diarrheal diseases**

As the chart shows, diarrheal diseases are a major cause of burden of disease in the WHO South East Asia region (as shown by the high number of DALYs). Unfortunately there are no data currently available that estimate the total burden of disease from diarrhoea related to unsafe food, but studies from developed countries show that foodborne diseases account for a significant proportion of diarrhoeal disease. The chart shows that the high number of DALYs from diarrheal disease is mostly a result of the high YLL. Put more simply, diarrhoea causes a great number of deaths, particularly in babies and young children. This, however, is also a reflection of the fact that the complications arising from diarrheal disease have never been quantified.

<sup>5</sup>[http://www.who.int/healthinfo/global\\_burden\\_disease/2004\\_report\\_update/en/index.html](http://www.who.int/healthinfo/global_burden_disease/2004_report_update/en/index.html)