



OzFoodNet: a network for enhancing food-borne disease surveillance and investigation across Australia



Background

The Australian Government established OzFoodNet in 2000 to enhance surveillance and determine the burden of infection from food-borne illness across Australia (www.ozfoodnet.org.au). The OzFoodNet network collaborates nationally to investigate food-borne disease. OzFoodNet has three main areas of work, which are to:

- Determine the burden of food-borne illness in Australia.
- Identify the causes of food-borne disease.
- Coordinate investigations into outbreaks of food-borne illness.

As part of this initiative, each State or Territory health department employs one or more epidemiologists to focus on food-borne disease. Along with a central coordination unit at the Department of Health and Ageing, there are approximately 18 staff employed to investigate and understand food-borne illness across Australia. When the network was originally established, it did not cover the Australian Capital Territory, the Northern Territory or all of New South Wales. These jurisdictions were added when the benefits of national coverage were realised.

OzFoodNet is a member of Australia's peak body for infectious disease control –

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The Communicable Diseases Network of Australia (CDNA)¹. The Public Health Laboratory Network provides advice to the OzFoodNet on microbiological matters². A management committee oversees OzFoodNet. As a result of an external review by a team of international experts, OzFoodNet now incorporates scientific advice from a panel of experts in epidemiology, microbiology, risk assessment and animal health³. OzFoodNet also has well-established links with international agencies for disease control, such as the Centers for Disease Control and Prevention (CDC) in the United States, Health Canada, and the Health Protection Agency in the United Kingdom (Figure 1).

The burden of food-borne illness in Australia

The burden of food-borne disease is difficult to assess, as there are many different aetiological agents and different modes of transmission⁴. The typical symptoms of food-borne illness are gastroenteritis, which may be transmitted from infected persons or animals, or from contaminated food, water or environments. Gastroenteritis is often mild and self-limiting, and rarely requires a specific medical or laboratory diagnosis.

To calculate the burden of food-borne gastroenteritis requires combining incidence data on gastroenteritis with an estimate of the proportion of various

aetiological agents possibly transmitted from contaminated food. The National Centre for Epidemiology and Population Health (NCEPH), in collaboration with OzFoodNet, recently assessed the burden of food-borne illness in Australia. The assessment followed the methodology developed by the CDC, and accounted for uncertainty in estimates and the possible influence of concomitant respiratory illness on gastrointestinal symptoms⁵.

NCEPH coordinated a national survey to determine the incidence of gastroenteritis in Australia during 2001 and 2002. The survey identified that there were 17.2 million cases of gastroenteritis each year in Australia (95% C.I. 14.5-19.9 million cases)⁶. Annually in Australia, approximately 6.5 million days of work are lost when people have been ill with gastroenteritis themselves or have cared for ill family members. Only 20% of people reporting gastroenteritis attended a doctor, and 20% of those who did submitted a faecal specimen for testing.

To determine the proportion of gastroenteritis that was food-borne, a group of national experts conducted a Delphi assessment of 17 enteric pathogens that were relevant in Australia. The overall proportion of gastroenteritis that was food-borne was estimated to be 32% (95% CI: 24-30%). The assessment



Figure 1. Participants at an international collaborative meeting on the burden of food-borne disease, Gold Coast 2003.



concluded that there were between 4-6.9 million cases of food-borne gastroenteritis each year in Australia (mid-point 5.4 million).

Causes of food-borne disease

The causes of food-borne disease are multi-factorial, making identifications of key risk areas difficult⁷. To identify causes in Australia, OzFoodNet collects data on food-borne disease outbreaks and conducts case control studies to identify risk factors for specific infections. OzFoodNet stores the information arising from outbreaks in a database, which allows identification of common themes. There is an incredibly wide range of foods identified as vehicles for outbreaks, ranging from desserts to salads, and pasta to sandwiches⁶. The challenge for food-borne disease investigators is to identify the original source of contamination for the food vehicle, which may be from the processing or primary production environments⁸. The information arising from these datasets is used to develop food safety policy, and inform specific interventions.

Food-borne disease outbreaks crossing borders

The national and international distribution of foods means that diseases are distributed nationally and internationally⁹. Only recently have health and food regulatory agencies appreciated the multi-state nature of food-borne disease in Australia.

OzFoodNet maintains surveillance for food-borne and gastrointestinal outbreaks, both for early warning purposes and for the development of food safety policy. Through regular fortnightly reports about food-borne outbreaks occurring across Australia, OzFoodNet is able to identify when food-borne infections are increased in multiple jurisdictions. Monthly reports on the incidence of various *Salmonella* serotypes and phage types from the National Enteric Pathogen Surveillance Scheme also highlight multi-state outbreaks¹⁰. The CDNA oversees OzFoodNet's coordination of multi-state outbreaks of disease.

The potential for food-borne diseases to spread nationally, and even globally, is illustrated by the fact that Australian agencies investigated four outbreaks with products distributed internationally in the last 4 years. These have included:

- Halva originating from Turkey contaminated with *Salmonella typhimurium* 104 in 2001.
- Dried peanuts from China contaminated with *S. stanley* and *S. newport* in 2001.
- Tahini from the middle East contaminated with *S. montevideo* 2002-3.
- Individually quick frozen oyster meat from Japan associated with norovirus outbreaks 2002-4^{6,11-13}.

Investigation of these outbreaks was a collaborative effort between many different agencies, including microbiological laboratories, State and Territory health departments, local public health units, Food Standards Australia New Zealand, Departments of Agriculture, NEPSS, NCEPH's Master of Applied Epidemiology Programme, and international surveillance networks. Each of these outbreaks resulted in the distribution of international alerts about contaminated foods and subsequent product recalls¹⁴.

Summary

The burden of food-borne disease in Australia is massive and justifies the attention given to food-borne disease and food safety. The discipline of microbiology is an integral part of our understanding and controlling food-borne illness. OzFoodNet regularly coordinates the investigation of multi-state food-borne disease outbreaks, which has highlighted the benefits of a national network that is able to detect outbreaks and coordinate investigations.

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Further reading

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