

OzFoodNet

**REPORT OF THE
EXTERNAL REVIEW TEAM**

November 2002

Department of Health and Ageing
Canberra

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DISCLAIMER

Opinions expressed in this report are those of the Review Team and not necessarily those of the Department of Health and Ageing or OzFoodNet participants.

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ACRONYMS

AFFA	Commonwealth Department of Agriculture, Fisheries and Forestry – Australia
AQIS	Australian Quarantine and Inspection Service
BSES	Bi-National Surveillance and Enforcement Strategy
CDNA	Communicable Diseases Network of Australia
DoHA	Commonwealth Department of Health and Ageing
EHO	environmental health officer
FSANZ	Food Standards Australia New Zealand
HACCP	Hazard Analysis and Critical Control Points
MAE	Master of Applied Epidemiology
MDU	Microbiological Diagnostic Unit, University of Melbourne
NCEPH	National Centre for Epidemiology and Population Health
NEPSS	National Enteric Pathogen Surveillance Scheme
NHMRC	National Health and Medical Research Council
NNDSS	National Notifiable Diseases Surveillance System
PHLN	Public Health Laboratory Network

EXECUTIVE SUMMARY

FOODBORNE DISEASE has significant human impact in Australia. It also threatens major local food industries and can adversely affect our international trade efforts. As part of Australia's efforts to control foodborne disease, OzFoodNet was established in 2000 as a collaborative system to enhance existing surveillance mechanisms. The Commonwealth Department of Health and Ageing (DoHA) funds each state and territory to employ one or more dedicated epidemiologists to focus on routine surveillance, outbreak investigation and applied research on foodborne illness. A coordinating epidemiologist and data manager coordinate OzFoodNet activities in conjunction with a management group. OzFoodNet is funded until June 2003 and costs \$2 million annually.

In September 2002, DoHA commissioned an independent review of OzFoodNet to assess progress, advise on its overall utility and value to the Commonwealth, and recommend ways in which its goals may be better achieved. The OzFoodNet Review was undertaken by a team of five members who collectively had expertise in public health, epidemiology, foodborne disease and health economics. The Review Team met with OzFoodNet staff and a range of key stakeholders over a one-week period.

The Review Team found that OzFoodNet has enhanced Australia's ability to control foodborne illness by strengthening national surveillance. OzFoodNet has been able to build on existing surveillance mechanisms to improve the monitoring and evaluation of trends, patterns and outbreaks, and to identify risk factors. OzFoodNet has built capacity, improved or created communications links within and between jurisdictions, reduced reporting delays, and enhanced the quality of data by standardising reporting.

Through improving surveillance capabilities, OzFoodNet has improved the likelihood that Australia would identify and respond to intentional contamination of the food supply in a timely manner. This added capacity stems from enhanced surveillance at the local level and a greater ability to rapidly integrate information across jurisdictions.

Health economic analyses indicate that OzFoodNet is cost-effective if it can play a major role in the prevention or early termination of only one major outbreak a year. To date, identification and investigation of several clusters of foodborne illness by OzFoodNet appear to have led to public health actions that probably reduced the number of people affected. The broader policy recommendations consequent to outbreak investigations can potentially have a far greater impact on the cost effectiveness of OzFoodNet than any single investigation.

The Review concluded that OzFoodNet should continue to act as the Australian foodborne disease surveillance system, collecting data through the states and territories, collating and interpreting the data, and disseminating intelligence as appropriate to stimulate effective action. It should operate in concert with corresponding systems that are responsible for animal and food industry data in order to provide as complete a picture as possible of the dynamics of pathogens that are of concern to the Australian food industry and its consumers.

As a national epidemiological resource, OzFoodNet should interact closely with centres of laboratory expertise and international authorities, and act as a national repository of educational expertise for the investigation and management of foodborne disease in Australia.

The Review Team recommended that funding of OzFoodNet be extended until 2008.

RECOMMENDATIONS

- 1 Continue funding OzFoodNet for another five years, when a formal review would be appropriate.
- 2 Enhance the resources of the OzFoodNet coordinating unit and formalise its relationship to the management body.
- 3 Establish a scientific review body reporting to the management body, to help prioritise OzFoodNet activities.
- 4 Establish performance standards that define measurable objectives for OzFoodNet, and appropriate indicators that provide a basis for internal and external monitoring of OzFoodNet activities.
- 5 Strengthen links to animal epidemiology and the monitoring of food throughout the production and distribution cycle.
- 6 Ensure that agencies across the whole of the food sector recognise the value of OzFoodNet and have influence in its activities and outcomes.
- 7 Formalise collaborative relationships with the National Enteric Pathogen Surveillance Scheme and the National Notifiable Disease Surveillance System.
- 8 Reduce frequency of face-to-face meetings.
- 9 Develop a communication strategy to ensure timely, appropriate dissemination of OzFoodNet findings and recommendations to current and potential stakeholders.
- 10 Contribute to the monitoring of antibiotic resistance.

BACKGROUND

WHEN AUSTRALIA was established as a federation in 1901, responsibilities for public health were generally retained by the newly formed states, and the Commonwealth assumed a very limited role, except in relation to quarantine. Over time, it became clear that a national focus was required for a number of reasons, including the need for standardisation of practice, consistency of funding and coordination of activities. As a result, the Commonwealth has become involved in an expanding range of public health initiatives in cooperation with the states and territories.

Although the Commonwealth's contribution has varied across program areas, it has always been seen as having a role to play in the collection and analysis of information on the occurrence of disease and its risk factors. This function is recognised as crucial to monitoring the success of any public health initiative.

In the area of food standards, each state passed a Food Act or inserted provisions relating to food in their Health Acts between 1905 and 1912. However, each state had different provisions and, in an attempt to resolve this lack of uniformity in food law, the Commonwealth government through the National Health and Medical Research Council (NHMRC) established the Food Standards Council in 1954. Further uniformity of food standards was achieved with the adoption of the Model Food Act in 1980 but it was not until 1991 that the Commonwealth, states and territories joined to endorse the creation of the National Food Authority (now Food Standards Australia New Zealand (FSANZ)). Food hygiene was brought under the jurisdiction of FSANZ in 2000, when the Health Ministers agreed to the national Food Safety Standards. These standards are progressively being implemented by states and territories and will lead to national consistency in food hygiene regulation for the first time during 2003.

In addition, the Food Regulation Agreement, signed in November 2000, has seen a new food regulatory structure put in place with an 'all of food chain approach'. The new regulatory structure has implemented many of the recommendations of the 1998 Food Regulation (Blair) Review.

An important recommendation of the Food Regulation Review was that:

The governments of Australia should as a matter of priority, integrate the systems of food monitoring and surveillance from paddock to plate. This should include, where necessary, strengthening the current food-borne illness, food safety and food production surveillance systems; and improving linkages, in partnership with government and industry, which will deliver improved information on food safety hazards to governments, industry and consumers.

Although there were already mechanisms in place that provided insight into the occurrence of foodborne disease and its risk factors in Australia, the establishment of the national regulatory structures highlighted the potential benefits that could result from a substantial strengthening of Australia's capacity to conduct surveillance in this area.

A strong surveillance capacity at national level has become all the more necessary with the development of increasingly centralised food processing and extended

distribution networks. A century ago, public health thinking and practice held that foodborne disease was essentially village-based and required a local solution. With modern approaches to food production and distribution, outbreaks can be extended in duration and stretch across jurisdictional borders.

FORMATION OF OZFOODNET

In 2000, the Commonwealth Department of Health and Ageing (DoHA) established OzFoodNet to enhance the existing surveillance mechanisms for foodborne disease. OzFoodNet involves many different agencies and its establishment has required a major collaborative effort. DoHA provides funding and strategic management for OzFoodNet, and convenes a regular management group that includes senior managers from FSANZ and the Commonwealth Department of Agriculture, Fisheries and Forestry – Australia (AFFA). Australia's peak body for communicable disease control, the Communicable Diseases Network of Australia (CDNA), oversees the work of OzFoodNet.

The OzFoodNet initiative built upon the experience of an eighteen-month trial of active foodborne disease surveillance in the Hunter region of New South Wales. Following this trial, DoHA provided funding for the six Australian states and more recently the Australian Capital Territory and the Northern Territory to participate in OzFoodNet. Each of the eight funded jurisdictions has employed one or more epidemiologists to participate in OzFoodNet. Reporting to their respective jurisdiction's manager of communicable disease surveillance, these epidemiologists conduct work that is locally or nationally important for prevention of foodborne diseases. The work program includes a mixture of routine surveillance, outbreak investigation and applied research.

After two years of activity, funding was extended until June 2003.

MISSION AND OBJECTIVES OF OZFOODNET

The mission of OzFoodNet is to apply concentrated effort at a national level to investigate and understand foodborne disease, to describe more effectively its epidemiology, and to provide better evidence of how to minimise foodborne illness in Australia. The specific objectives of OzFoodNet, as enunciated in its own submission, are:

- 1 Estimate the incidence and cost of foodborne illness in Australia.
- 2 Improve our understanding of the epidemiology of foodborne disease by enhancing surveillance and conducting special studies on foodborne pathogens.
- 3 Identify inappropriate practices in domestic and commercial settings which lead to food contamination and foodborne illness.
- 4 Assess the efficacy of current and proposed food hygiene standards and their enforcement by jurisdictions.
- 5 Provide data essential for future risk assessments and policy interventions.
- 6 Train people to investigate foodborne illness.

THE OZFOODNET REVIEW

DoHA COMMISSIONED a review to take place in September 2002, to assess progress and advise on the overall utility and value to the Commonwealth of OzFoodNet. The review was undertaken by a team made up of three Australian members and two members from the United States' Centers for Disease Control and Prevention. The team had expertise in public health, disease surveillance and health economics. Several members of the team had specialised expertise in foodborne disease. The reviewers were asked to consider a series of questions relating to the role and performance of OzFoodNet. The Review Team spent a week with OzFoodNet members and stakeholders. Before the review, DoHA had sought submissions from a range of agencies and individuals with an interest in food safety. The submissions were generally responses to the series of questions that were considered by the Review Team.

This document presents the findings of the Review Team. It is based on the written submissions of OzFoodNet members, partners and stakeholders (see Appendix A), as well as information provided at face-to-face meetings with these groups (see Appendix B). The report first summarises the extent to which OzFoodNet has met its stated objectives over the past two years. It then addresses the specific review questions that were posed by DoHA.

QUESTIONS PUT TO THE REVIEW TEAM

In commissioning the review, DoHA put a series of questions to stakeholders and the Review Team, to provide a framework for the review. The questions were:

- 1 Does OzFoodNet add value to existing foodborne illness surveillance initiatives? If so, how?
- 2 What value has the Commonwealth's contribution added to existing state and territory activities as measured by population health outcomes?
- 3 Given that Australia is a federation, how does Australia's system for foodborne illness surveillance compare with other federations?
- 4 Is OzFoodNet cost effective?
 - ◇ What quantifiable marginal benefits can be attributed to OzFoodNet?
 - ◇ Can such benefits be expressed in terms of premature deaths and/or disability averted?
 - ◇ What is the ratio of marginal benefits to marginal costs?
 - ◇ Does OzFoodNet represent value for money?
- 5 Do epidemiological data on foodborne illness in Australia get translated into action?
- 6 Does OzFoodNet promote the take-up of epidemiological data by regulatory and policy setting?

- 7 What initiatives should be put in place to ensure greater use of epidemiological data on foodborne illness?
- 8 In a post–September 11 environment, does OzFoodNet provide Australia with added capacity to identify and combat contaminated food, be it due to accidental or malevolent contamination?
- 9 Are the research and investigatory activities undertaken by OzFoodNet appropriate?
- 10 What additional research or other investigatory activities should be undertaken?
- 11 What changes should be introduced to enhance the capacity of OzFoodNet (in an era of budgetary restraint)?
- 12 How could the management of OzFoodNet be more effective?
- 13 What additional activities (if any) should OzFoodNet undertake?

GENERAL IMPRESSIONS

Overall, the Review Team was impressed with the professionalism, expertise and enthusiasm of everyone involved in the OzFoodNet program. OzFoodNet has assembled a team of dedicated public health practitioners with a diversity of expertise that provides a strong foundation for OzFoodNet activities.

OzFoodNet was recognised as having provided the basis for a greatly strengthened national system of surveillance for foodborne disease. It has made remarkable progress in two years, having moved rapidly to design and implement a range of important activities. It has also improved communication and collaboration across jurisdictions and provided practical training in outbreak investigation.

On the other hand, there is a need for OzFoodNet to build upon the links that it has established with other agencies involved in foodborne illness, both within and beyond the health sector.

EVALUATION OF ACHIEVEMENTS AS ASSESSED AGAINST STATED OBJECTIVES OF OZFOODNET

Objective 1: Estimate the incidence and cost of foodborne illness in Australia.

Estimation of the incidence of foodborne illness requires information on both the occurrence of illnesses that potentially have a food-related aetiology and the attributable risk of food as the vehicle for these illnesses. OzFoodNet has made an excellent start in obtaining the first of these components through a national survey of gastroenteritis, and the second through case-control studies of specific infections that may be transmitted through food.

These investigations are being carried out using appropriate methodological approaches. With currently available technology and resources, there is a limited

number of study designs that might be adopted to provide estimates of the incidence of foodborne illness. Given the recent establishment of OzFoodNet, none of these studies has so far been concluded, but progress appears to be good.

Translation of incidence into cost will require further information about the level of morbidity associated with foodborne illness. The self-reported information arising from the national survey will be useful, but could be further validated by access to clinical records. The ongoing case-control studies can provide information on the associated morbidity of a sample of culture-confirmed cases of foodborne disease, to the extent that they measure the severity and duration of illness, risk factors associated with the illness and associated medical costs.

Non-health costs arising from foodborne illness, including those related to primary production, industrial practice and trade, are not covered by the information-gathering mechanisms being used by OzFoodNet. Contributors to the cost of foodborne illness to industry may include the need for compliance with food standards in general, response to outbreaks, and the reduction in trade that might result from a loss of reputation overseas. None of these costs are captured by the surveillance systems or epidemiological studies that are being undertaken by OzFoodNet.

Objective 2: Improve our understanding of the epidemiology of foodborne disease by enhancing surveillance and conducting special studies on foodborne pathogens.

With the inclusion of the Northern Territory and the remainder of New South Wales in July 2002, OzFoodNet has established a network of epidemiologists attached to communicable disease control units in all jurisdictions of Australia. This network has provided the basis for strengthening routine surveillance for foodborne pathogens and conducting a range of new studies.

In the area of surveillance, OzFoodNet's major contribution so far has been in the improved national response to foodborne outbreaks. Participating jurisdictions have increasingly standardised their investigatory mechanisms, and are now able to share information and conduct joint activities when necessary in a more timely manner. National review of information on outbreaks has also assisted individual jurisdictions to identify areas in which their procedures need to be modified.

OzFoodNet has worked closely with the existing case reporting systems that can provide information related to foodborne agents, particularly the National Notifiable Diseases Surveillance System (NNDSS) and the National Enteric Pathogen Surveillance Scheme (NEPSS). It has evaluated the timeliness and completeness of *Salmonella* typing in the states and territories and identified jurisdictional differences. As a result, OzFoodNet sites have worked to recognise areas of weakness and improve data quality. So far, it has not had a substantial influence on the way these data collection systems function, but it has increased the quality of analysis applied to their outputs and made extensive use of the findings.

As noted under Objective 1, OzFoodNet has begun a series of national and regionally based cross-sectional and case-control studies that will provide a much more comprehensive picture than is currently available on the incidence of foodborne illness and its risk factors in Australia.

Objective 3: Identify inappropriate practices in domestic and commercial settings which lead to food contamination and foodborne illness.

The network established by OzFoodNet to identify and investigate foodborne disease outbreaks has coordinated multi-jurisdictional outbreak investigations on several occasions over the past two years. These investigations have identified commercial practices which are inadequate and potentially present public health threats. The ability to recognise and investigate these outbreaks has come largely as a result of improved communication across jurisdictions, brought about through OzFoodNet. Although only a handful of such investigations has taken place so far, they provide good evidence of the ability and sensitivity of the OzFoodNet network to detect illness and identify the source of contamination. These OzFoodNet activities complement the routine surveys and inspections undertaken by the states, territories and local government.

Although only a few investigations have taken place so far, they provide good evidence of the ability and sensitivity of the OzFoodNet network to detect illness and identify the source of contamination.

Objective 4: Assess the efficacy of current and proposed food hygiene standards and their enforcement by jurisdictions.

Food can become a vehicle for the transmission of infectious disease because either existing standards are not adequate in some respect or they are violated either intentionally or unintentionally. The challenge for surveillance of foodborne disease is to identify and describe such systemic problems in a way that is sufficiently convincing to support corrective actions. Although OzFoodNet is not directly responsible for food hygiene standards, it has increased Australia's capacity to prevent foodborne disease through the provision of data to support the ongoing evaluation of hygiene standards and their enforcement.

The presence in each jurisdiction of specialist staff able to draw on a national network of peers has inevitably led to higher quality investigations being conducted at the jurisdictional level. This benefit appears to have occurred even in jurisdictions where there was already a high standard of investigatory practice.

Pooling of information across jurisdictions has provided larger sample sizes for investigation and the consequent ability to detect patterns of illness that may not otherwise have been identifiable or considered significant in individual jurisdictions.

Furthermore, the conduct of such work by a nationally recognised agency has increased the likelihood that the results of investigations will be acted upon and will result in improved food practice or changed regulation if necessary.

Objective 5: Provide data essential for future risk assessments and policy interventions.

So far OzFoodNet has only produced a limited amount of new data that can be used for risk assessment and policy intervention. Nevertheless, a number of OzFoodNet studies currently in progress are close to completion and will, in the near future, yield information relevant to policy on the risk of foodborne illness. For the reasons noted previously, Australia's access to such information is likely to have been substantially increased as a result of OzFoodNet's existence.

Objective 6: Train people to investigate foodborne illness.

OzFoodNet has clearly had a substantial role in training. It has achieved this goal directly, by providing training in outbreak investigation and related matters to a range of personnel via its jurisdictional members. It has also acted as a training mechanism for its members, either formally through their enrolment in field epidemiology programs or informally as a result of the peer interactions that the network has provided.

RESPONSES TO THE QUESTIONS

The responses elicited in the submissions to the review are presented in detail in Appendix A.

Question 1: Does OzFoodNet add value to existing foodborne illness surveillance initiatives? If so, how?

The submissions unanimously state that OzFoodNet has added value to the existing foodborne illness surveillance initiatives by creating a national surveillance network where none previously existed. Some comments indicated that these benefits are more evident at the state and federal levels rather than the regional or public health unit level.

The Review Team found that OzFoodNet has created a core structure for comprehensive national surveillance related to foodborne disease in Australia. OzFoodNet was not designed to replace the existing legislative or administrative responsibilities of the jurisdictions but to supplement their capacity. With the advent of OzFoodNet, it is now possible to monitor and evaluate foodborne illness trends and outbreaks in Australia. OzFoodNet has built capacity, improved or created communications links within and between jurisdictions, reduced reporting delays and enhanced quality of data by standardising reporting.

OzFoodNet has added value to the existing foodborne illness surveillance initiatives by creating a national surveillance network where none previously existed.

Question 2: What value has the Commonwealth's contribution added to existing state and territory activities as measured by population health outcomes?

The Review Team agrees with most submissions that it is currently too early to discern measurable population health outcomes resulting from OzFoodNet efforts. However, it is already clear that without a mechanism such as OzFoodNet it would not be possible to assess changes in the levels of foodborne illness or its risk factors at a population level.

Given the long lead time required for the establishment of collaborative networks such as OzFoodNet, and the scale and complexity of the public health issues that OzFoodNet is designed to address, it is appropriate to provide at least medium-term security of its tenure.

At least one submission was concerned that OzFoodNet has not been engaged in education activities such as health promotion and the provision of advice to medical practitioners. The Review Team believes that such activities are currently beyond the core resources or objectives of OzFoodNet. In any case, it is essential for food safety education programs to be based on sound knowledge about foodborne disease in the population. OzFoodNet has the ability to provide this information through its ongoing activities.

Identification and investigation of several clusters of foodborne illness by OzFoodNet appears to have led to the earlier recognition of outbreaks, resulting in public health actions that probably reduced the number of people affected.

Question 3: Given that Australia is a federation, how does Australia's system for foodborne illness surveillance compare with other federations?

The authors of most submissions did not feel adequately informed to comment on this question.

Several federations have established central authorities for monitoring and responding to foodborne illness, within their communicable diseases control structures (for example Canada and the United States). In contrast, Australia has not established a national centre for communicable disease control, surveillance and research. In the absence of a national centre, OzFoodNet has provided a mechanism for coordinating foodborne disease surveillance, through improved cooperation between laboratory scientists and epidemiologists. Existing national systems such as NNDSS and NEPSS provide key information, but on their own are not sufficiently timely or linked to a response mechanism. In addition to its national coordination role, OzFoodNet has established collaborative links with international agencies to examine similarities and differences between the various national surveillance systems.

Question 4: Is OzFoodNet cost effective?

- ◇ What quantifiable marginal benefits can be attributed to OzFoodNet?
 - ◇ Can such benefits be expressed in terms of premature deaths and/or disability averted?
 - ◇ What is the ratio of marginal benefits to marginal costs?
 - ◇ Does OzFoodNet represent value for money?
-

A comprehensive economic evaluation of OzFoodNet would compare the additional direct and indirect costs of its activities against any benefits to the community of additional cases of disease prevented. If the analysis could value the outcomes of the activities in money terms then it would be possible to determine whether resources devoted to OzFoodNet had resulted in a net benefit to the community or, equivalently, whether the rate of return from this investment in public health has been above an acceptable level. The boundaries of such a calculation are problematic. From the perspective of public health the appropriate opportunity cost of this investment in food safety might be other potential public health investments. With this perspective, the value of benefits might be restricted to the health gains. A wider community perspective however might consider also the cost of OzFoodNet activities on the production, consumption and exports (in general and specifically) of food and food products.

In the submissions to the review, consideration of the additional costs and benefits of OzFoodNet to the Australian community were based purely on a public health perspective. Nevertheless a number of informal comments were made to the Review Team concerning both the potential benefits of a national system of surveillance on the confidence of overseas markets in Australian food products as well as the potential offsetting cost of increased surveillance and public health action on the profitability of Australian food producers. It has not been possible in this review to assess the economic impact of OzFoodNet in these terms. It may be possible to estimate the marginal effect of OzFoodNet that particular investigations and actions may have had on the costs of particular producers, but it would be much more difficult to assess the beneficial impact on the reputation for quality food for export. As a consequence the review has only examined evidence on the direct cost of OzFoodNet to the public health system and compared this to the additional population health gains achieved in the first 18 months and the potential for future gains.

The **direct running cost** of OzFoodNet in its first two years was equivalent to \$2 million per annum. The expenditure was split roughly \$0.25 million for central coordination and national surveillance, \$1.25 million for state sites and \$0.5 million for special research projects such as the National Gastroenteritis Survey.

The **indirect costs** are far harder to quantify. To the extent that OzFoodNet has increased the level of surveillance and investigation, OzFoodNet is likely to have had a significant effect on the activities and workloads of state and territory

health departments, public health laboratories and local authorities. The unpaid time of others involved in foodborne disease outbreak investigations would also have increased, such as those affected by illness, controls (non-ill study participants) and any unfunded people involved in meetings. In addition, state and territory health departments have contributed to the ongoing costs associated with the employment of staff for OzFoodNet such as office space, computers and communications. Increased information flows across the system may also have led to an increase in time spent in communication and policy discussion around foodborne illness at local and national levels. It is possible that more timely action encouraged or coordinated by OzFoodNet would have led to less overall cost in some outbreak investigations, however on balance it seems much more likely that a higher level of activity would have been stimulated.

The direct economic **benefits** of OzFoodNet can be considered within the key work areas of outbreak investigation and national surveillance coordination.

In 2001, OzFoodNet sites reported 86 outbreaks potentially related to food. These affected nearly 2000 people, of whom 70 (4%) were hospitalised and one died. To investigate, health departments conducted 35 detailed analytical studies. In order to quantify the benefit provided by OzFoodNet, it would be necessary to assess how OzFoodNet contributed to the investigations, and the impact of the investigations in reducing the occurrence of disease or its complications. Both of these quantities are difficult to measure directly.

It is difficult to separately attribute the contribution of OzFoodNet staff to these investigations since the designated epidemiologists generally act as members of teams at the jurisdictional level, and the impact of the network may even be indirect. For example, one submission referred to the investigation of the outbreak of *S. Typhimurium* 104 by the Victorian Department of Human Services, and noted that the OzFoodNet Queensland epidemiologist provided the critical clue about imported halva as the potential vehicle of the infection.

Similarly, there is limited information available on the extent to which investigations reduce the occurrence of disease. A submission to the review suggests that the *S. Typhimurium* 104 investigation in Victoria resulted in actions that prevented 79 notified cases and a further 3,002 infections. Using a preliminary estimate for the direct health care cost of *Salmonella* of \$501 and for the lost income and transport cost of \$871 (Yohannes K 2002, pers. comm.) suggests a saving of \$1.5 million to the health care system and an additional personal saving of \$2.6 million from this one outbreak.

The order of magnitude, however, is consistent with estimates of £606 for the average cost of a case of *Salmonella* presenting to a general practitioner in the UK (Food Standards Agency 2001).

A US study found that the average cost of salmonellosis was \$5,460 per hospitalised case, \$315 for cases seen in an outpatient setting and \$24 for cases without medical care (Frenzen et al. 1999).

It must be recognised that not every investigation is successful in finding the immediate source of an outbreak. Nevertheless, given a budget of \$2 million per

annum, if the OzFoodNet epidemiologists can play a major role in the prevention of an average of at least one major outbreak a year, their activities in the area of

If OzFoodNet plays a major part in preventing one major outbreak a year, it would likely represent value for money.

assistance and coordination of acute investigations would likely represent value for money. Moreover, as one submission to the review points out, the broader policy changes consequent to an

outbreak investigation may have far greater impact on the cost effectiveness of OzFoodNet than any single investigation. At this stage it is too early to tell if significant food safety policy changes are likely to flow from the work of OzFoodNet.

At a national level, OzFoodNet has on several occasions been in a position to recognise an outbreak before it became apparent at a jurisdictional level, because of the distribution of cases. OzFoodNet also has the potential to add value to state and territory activities by ensuring a more timely response to national outbreaks. It is worth pointing out, however, that a national investigation of a possible foodborne illness is likely to be very resource-intensive, and there may be a need to define clearly the threshold trigger for such investigations. If that threshold is set too low it may result in investigations without substantial public health benefits but which are costly in terms of direct investigation resources, and indirect costs to consumers and producers of suspected food.

The applied research conducted by OzFoodNet, including the National Gastroenteritis Survey and several case-control studies, should provide data of value to policy makers conducting economic evaluations of resource use and costs associated with policy options and food safety interventions.

Question 5: Do epidemiological data on foodborne illness in Australia get translated into action?

OzFoodNet has been established on the premise that surveillance data are collected for action. The reviewers agree with the majority of submissions that the use of epidemiological data provided by OzFoodNet had led to a number of actions.

Use of epidemiological data provided by OzFoodNet has led to a number of actions.

The kebab-associated clusters of *Salmonella* and *Campylobacter* identified in 2001 and the resulting action was cited as a good example of OzFoodNet's ability to generate an appropriate public health response that might have occurred more slowly or less widely had there not been a national surveillance mechanism.

During 2001, OzFoodNet assisted in recognising and investigating two multi-jurisdictional outbreaks due to imported food products (*S. Stanley* in peanuts imported from China and *S. Typhimurium* DT104 in halva from Turkey). As a result of these investigations, other countries identified related cases and the product was recalled internationally.

Another practical outcome arose through the regular outbreak discussions promoted by OzFoodNet which led to the awareness that over a five-year period several jurisdictions had identified outbreaks of *Clostridium perfringens* affecting several hundreds of people. These outbreaks, which were previously unrecognised as related events, were associated with a single company providing spit-roasts. As a result of the enhanced communication and sharing of data, state and territory regulators were able to link these outbreaks to a single company and make food safety recommendations.

Question 6: Does OzFoodNet promote the take-up of epidemiological data by regulatory and policy setting?

Food safety regulatory agencies and policy makers require data to identify problem areas in the food chain and to help evaluate their food safety efforts. The OzFoodNet coordinating unit has had a key role in engaging the lead bodies of the food regulatory system, namely the Food Regulation Standing Committee, its Development and Implementation Sub-Committee, and the Technical Advisory Group that advises the subcommittee. Information and data from OzFoodNet have been passed to the bodies for information and action.

Members and partners of OzFoodNet reported several examples to the Review Team that demonstrate regulatory and policy responses that resulted from information produced by OzFoodNet. Specifically mentioned were:

- ◇ data collected for the FSANZ risk assessment on *Listeria* in seafood
- ◇ information provided to a national working group that identified the need for better regulation of chicken meat because of the risk of *Salmonella* contamination
- ◇ data presented from cases of illness caused by escolar (fish that contain toxic waxes) to national food safety committees which resulted in changes to the marketing names for fish and the need for an educational campaign to alert the seafood industry, retailers, restaurateurs and caterers.

Although OzFoodNet has clearly had an impact on regulatory and policy processes, it was evident that some stakeholders and potential partners did not have a full understanding of OzFoodNet, and that relationships with appropriate organisations could be expanded. This situation is understandable given the short time since the establishment of OzFoodNet, but could also be due to the means by which OzFoodNet had communicated its findings. There was a general view that OzFoodNet could employ a range of communication pathways to ensure that its various constituencies were aware of its activities.

It was noted that OzFoodNet had assisted with an *S. Typhimurium* 170 outbreak investigation that ultimately resulted in a senior government committee addressing the need for better national integration of surveillance data at all steps in the food chain.

Question 7: What initiatives should be put in place to ensure greater use of epidemiological data on foodborne illness?

The submissions listed a variety of ways in which data on foodborne illness could be better used. They involved the creation of new data collection mechanisms, as well as the improvement of current systems and the way that their outputs are analysed.

Question 8: In a post-September 11 environment, does OzFoodNet provide Australia with added capacity to identify and combat contaminated foodborne disease, be it due to accidental or malevolent contamination?

In Australia, as elsewhere, the food supply is increasingly characterised by centralised, mass-production coupled with wide distribution of products. Whether contaminated intentionally or by accident, mass-produced foods can be a vehicle for outbreaks that are spread over a large geographic area. Depending on the etiologic agent and the specific food, these outbreaks may present as a diffuse, initially unremarkable increase in sporadic cases, or as an explosive epidemic involving thousands of cases in many different locations. In the United States, several episodes of intentional contamination of food with biological agents have been reported. Recently the US General Accounting Office concluded: 'Although few actual incidents or threats of deliberate food contamination with a biological agent have occurred to date, there is little assurance that this track record will continue'.

OzFoodNet has significantly enhanced Australia's capacity to identify and respond to episodes of intentional contamination of the food supply.

To identify and respond to such outbreaks, health officials must have highly sensitive mechanisms for detecting outbreaks, and the ability to coordinate investigations across a wide area. There was strong view expressed in the submissions and supported by the Review Team that OzFoodNet has significantly enhanced Australia's capacity to identify and respond to episodes of intentional contamination of the food supply. This enhanced capacity stems from both enhanced surveillance at the local level and a greater ability to integrate information across jurisdictions.

Question 9: Are the research and investigative activities undertaken by OzFoodNet appropriate?

Submissions reflected mixed views on the appropriateness of current research and investigative activities. Most agreed that outbreak investigations were relevant and appropriate for OzFoodNet to undertake, and the National Gastroenteritis Survey was described as being very worthwhile. Some submissions questioned the

conceptual basis for the specific case-control studies undertaken. It was noted by the Review Team that case-control studies were stipulated in the initial state contracts, and that the choice of studies may not have been based on a comprehensive review of the situation in Australia.

Nevertheless, there was general recognition that the case-control studies will likely yield valuable information on risk factors and economic burden and that they provided an important ‘proof of concept’ in demonstrating the capacity of OzFoodNet to carry out multi-centre case-control studies. There was also a consistent view that OzFoodNet had been ambitious in undertaking multiple case-control studies during the first two years. In the future, it may be beneficial to take a more measured and focused approach, doing fewer case-control studies at any given time and ensuring that they are prioritised according to local needs.

Question 10: What additional research or other investigatory activities should be undertaken?

Submissions to the Review Team identified a variety of additional activities that could be undertaken. These activities range from short-term expansions of existing efforts to long-term, fundamentally distinct undertakings. Specifically proposed were a repeat of the National Gastroenteritis Survey (in two years, for example), further case-control studies of specific pathogens, investigations of the sequelae and cost of foodborne illness, surveys of consumer attitudes to food safety approaches such as irradiation and strengthened monitoring of organisms that are resistant to antibiotics.

As previously identified in the 1998 Food Regulation Review, an important and recurrent theme was the need for strengthening linkages between the epidemiological research that fell within OzFoodNet’s mandate, and corresponding activities in the areas of animal health and direct monitoring of food safety. The ultimate objective would be a vertically integrated surveillance system that captured data from human, food and animal sources.

Judging from the experience in other countries, such as Denmark, these integrated systems are relatively expensive and resource-intensive, and it would be unrealistic for OzFoodNet to dilute its current effort of better quantifying and characterising the burden of foodborne disease in humans. Further information on the Danish system is available at < http://www.vetinst.dk/high_uk.asp?page_id=212 > .

The Review Team recognises that these efforts at expanding foodborne disease surveillance are not solely the responsibility of OzFoodNet. A comprehensive system of surveillance and public health action will only be achieved through the full cooperation of primary industry and the food processing industry.

Despite the cost barriers, the Review Team believes that an integrated surveillance system is an appropriate long-term goal for Australia and that

Despite the cost barriers, the Review Team believes that an integrated surveillance system is an appropriate long-term goal for Australia and that OzFoodNet should begin to establish the groundwork for such a system.

OzFoodNet should begin to establish the groundwork for such a system. Building better links with primary industry and food authorities and sharing information on non-human pathogens and non-human epidemiological (animal and/or food) data collected either by primary industry regulatory agencies or by veterinary laboratories would aid in understanding the epidemiology of these pathogens in Australia and greatly enhance outbreak investigations of human disease. Surveillance of non-human enteric organisms would clarify issues such as the prevalence of pathogens and the duration of their carriage in the gut or skin of food animals (animals bred for consumption) and human contact animals (homes, petting zoos).

The Review Team considered that many of the proposed activities were indeed worthwhile, but that OzFoodNet needed a mechanism by which it could critically evaluate and prioritise current and potential future activities. This mechanism would take into account available resources, as well as public health and scientific criteria. It was clear that some research needed to be of an applied or routine nature, while other projects could be more speculative and open-ended. Given resource limitations, OzFoodNet would be unlikely to be able to conduct all research projects that were proposed by stakeholders. Some form of scientific steering or advisory committee would assist OzFoodNet in setting priorities, as well as sharing the responsibility for programmatic decisions that might involve choosing among competing alternatives.

Question 11: What changes should be introduced to enhance the capacity of OzFoodNet (in an era of budgetary restraint?)

The Review Team interpreted this question to mean changes to OzFoodNet that would enhance the capacity of the program without substantial increases in overall cost to the national public health budget. A number of the proposals made in submissions to the review could potentially satisfy these criteria.

For example, establishment of electronic communication between laboratories involved in the various national surveillance systems for foodborne disease could lead to a considerable saving in the long term, although there would be capital expenditure required in the short term. Costs may also be conserved by greater integration of the activities of OzFoodNet, NEPSS and the Public Health Laboratory Network (PHLN) through greater standardisation and more efficient use of laboratory resources. A website could also be developed to aid the sharing of data and information.

Savings may also be achieved by conducting some activities on a regional basis, recognising that not all OzFoodNet initiatives need to be national to achieve their goals for example site-specific case-control studies, and greater use and analysis of the surveillance data that have been collected.

Some submissions favoured the use of research funding (whether for postgraduate students or projects grants) to enhance some of the activities being undertaken by OzFoodNet.

Question 12: How could the management of OzFoodNet be more effective?

The current management structure of OzFoodNet involves a management committee chaired by DoHA with representatives from FSANZ and AFFA, which meets every two months with the coordinating epidemiologist to discuss the progress and the direction of OzFoodNet.

The submissions generally saw the management of OzFoodNet as well-structured and effective but identified areas that could be enhanced as the program matures. It was recognised by a number of submissions that the current management structure had been put in place in the knowledge that OzFoodNet was only funded for an initial two years, and that its primary strategy had been to ensure a wide variety of outputs. If longer term funding (for example five years) can be assured, OzFoodNet will be in a good position to strengthen its management processes.

The establishment of a broader management committee, with a scientific reference panel reporting to it, would enable OzFoodNet to develop a strategic plan, set priorities, and clarify ongoing relationships with partners and stakeholders. The specific roles and responsibilities of OzFoodNet staff and related committees could be further defined in this context.

It was recognised that OzFoodNet could be located under a variety of geographic and administrative arrangements. Regardless of which model is adopted in the future, it will be important for OzFoodNet to remain independent of the day-to-day activities of government departments to ensure that it continues to maintain a strategic role. Another important criterion for the location of OzFoodNet is the need to retain strong links to the laboratory networks that are central to the surveillance of foodborne disease.

The funding model employed for the first two years has benefited jurisdictions by giving them a high proportion of the overall resources. Subsequent years' funding could now take account of the increasing demands on the coordinating unit by providing some additional resources to fulfil management and analysis functions.

Relationships between the coordinating unit and the jurisdictions appear to have been highly cooperative and productive over the first two years. In general, the potential traps of data ownership, confusion of national versus jurisdictional roles and workplan prioritisation seem to have been successfully negotiated and avoided. To ensure that this situation continues, OzFoodNet's long-term strategy could increasingly involve defined performance standards that include specification of agreed outputs for both the coordinating unit and jurisdictions.

The Review Team saw ways in which the formal processes of OzFoodNet could be modified to increase its efficiency and effectiveness. The quarterly face-to-face meetings have been invaluable through the initial phase of team building and establishment, but could now alternate with much briefer teleconferences. One of the face-to-face meetings each year could be staged to allow the wider participation of key stakeholder or partner organisations (for example laboratory scientists, primary producers and the food processing industry).

Question 13: What additional activities (if any) should OzFoodNet undertake?

Although many interesting suggestions came forward, it was not clear to the Review Team whether OzFoodNet would have the capacity or resources to add activities that were distinct from those already being undertaken. A number of submissions suggested that OzFoodNet could do more in the areas of health promotion and education and training. Clearly OzFoodNet's activities already involve strong linkages to these two areas, but the Review Team found it hard to see how it could do much more without compromising its core surveillance activities of data collection, analysis, interpretation and dissemination.

Any further enhancements, particularly in areas such as health promotion and training, would be dependent upon close cooperation with state and territory jurisdictions, which vary considerably in their interest and activities in these areas.

CONCLUSIONS AND RECOMMENDATIONS

OZFOODNET should continue to act as the Australian foodborne disease surveillance system, collecting data through the states and territories, collating and interpreting the data, and disseminating intelligence as appropriate to stimulate effective action. It should operate in concert with equivalent systems that are responsible for animal and food industry data to give as complete a picture as possible of the dynamics of pathogens that are of concern to the Australian food industry and its consumers. OzFoodNet should identify areas in which the absence or quality of scientific data inhibits development of rational policy, and be capable of implementing the required studies. As a national epidemiological institution it should interact closely with centres of laboratory expertise and international authorities, and act as a national repository of educational expertise for the investigation and management of foodborne disease in Australia.

The Review Team found that OzFoodNet was well run and had demonstrated the potential to be a valuable asset to the Commonwealth. It has started to fulfil a longstanding need in Australia for standardised, comprehensive national data on foodborne illness and to coordinate cross-border outbreak investigations and regulatory response. Although it is still in a developmental phase, OzFoodNet already functions as a proper surveillance system that has the capacity to collect and interpret relevant data in ways that support public health action. OzFoodNet has served as a conduit for sharing information on the occurrence of foodborne disease and its risk factors at several levels (jurisdictional, national and international). It is uniquely positioned to bridge the gap between public service health activities and academic research, in order to find practical solutions to the problems of foodborne disease in Australia.

Assuming OzFoodNet continues to function at least at its current level of activity, the yield on the investment by the Commonwealth should continue to grow.

The Review Team makes the following recommendations.

Recommendation 1: Continue funding OzFoodNet for another five years, when a formal review would be appropriate.

After two years, OzFoodNet has provided proof that dedicated resources for national surveillance of foodborne disease can be used effectively in the Australian context, but the time frame has been too short for the real benefits to become evident and a formal review would be appropriate in 2008.

Recommendation 2: Enhance the resources of the OzFoodNet coordinating unit and formalise its relationship to the management body.

One of the main reasons that OzFoodNet has taken root so well is that the funding has been predominately aimed at establishing the peripheral arms of this

national network, so its effects are most obvious at the jurisdictional level. It is now appropriate to ensure that the national level is provided with sufficient resources to provide leadership of the network. To this end the core structure should include a dedicated manager, a coordinating epidemiologist and a data manager/epidemiologist. There would be value in allocation of space and resources for a Master of Applied Epidemiology (MAE) student.

Recommendation 3: Establish a scientific review body reporting to the management body, to help prioritise OzFoodNet activities.

With a range of competing priorities placed before it, and a number of partners and stakeholders, OzFoodNet needs the support of a scientifically credible advisory structure that can provide peer review of current and proposed activities.

Recommendation 4: Establish performance standards that define measurable objectives for OzFoodNet, and appropriate indicators that provide a basis for internal and external monitoring of OzFoodNet activities.

As the core responsibilities of OzFoodNet are defined more clearly, it will become possible to formalise the basis for its collaborative relationships with funding agencies, partners and stakeholders. Ongoing support from these organisations will benefit from an agreed set of indicators that can be used to assess outcomes and highlight any structural barriers to successful outcomes.

Recommendation 5: Strengthen links to animal epidemiology and the monitoring of food throughout the production and distribution cycle.

The focus of OzFoodNet's activities has been on surveillance of human disease, but the interpretability of its findings depends on comparable information being available on infectious disease in animals, and on microbiological contamination in the food chain. There are parallel mechanisms for surveillance in those fields that are currently not closely integrated with OzFoodNet's work.

Achievement of this integration will require a reciprocal understanding by sectors other than human health that they can benefit from OzFoodNet's activities.

Recommendation 6: Ensure that agencies across the whole of the food sector recognise the value of OzFoodNet and have influence in its activities and outcomes.

A greater awareness and appreciation of OzFoodNet in the food regulatory areas of health and primary industry departments and food production sectors will assist OzFoodNet to fulfil its responsibilities.

Recommendation 7: Formalise collaborative relationships with the National Enteric Pathogen Surveillance Scheme and the National Notifiable Disease Surveillance System.

OzFoodNet has worked with existing surveillance networks to enhance the monitoring of foodborne disease in Australia. Key relationships with NEPSS and NNDSS have been conducted successfully, but would benefit from further negotiation and clarification, including the incorporation of performance criteria that define the need for linkages for all three organisations.

Recommendation 8: Reduce frequency of face-to-face meetings.

OzFoodNet does not need to conduct face-to-face meetings so frequently, now that it has become established. At least once per year, the meetings could be expanded to involve scientific communication with key stakeholders such as primary producers, veterinary health practitioners and the food production industry.

Recommendation 9: Develop a communication strategy to ensure timely, appropriate dissemination of OzFoodNet findings and recommendations to current and potential stakeholders.

OzFoodNet's output is currently directed mainly at its immediate collaborators. If it is to achieve its objective of influencing public health policy and practice, it will need to find a broader range of communication mechanisms, of both a technical and nontechnical nature, at the same time as maintaining high levels of scientific practice.

Recommendation 10: Contribute to the monitoring of antibiotic resistance.

OzFoodNet can play a key role in the proposed Australian Action Plan for Antibiotic Resistance Surveillance under development by the Infection Management Section of DoHA. The network can provide valuable data on antibiotic usage, resistance, and risk factors from the case-control studies and outbreak investigations. In addition, OzFoodNet can prioritise recording information about antibiotic profiles on the National Outbreak Register, and conduct surveys of antibiotic profiles for organisms not currently covered by NEPSS.

Appendix A: SUMMARY OF SUBMISSIONS

SUMMARY OF SUBMISSIONS TO THE OZFOODNET REVIEW

TWENTY-ONE SUBMISSIONS from agencies and individuals were received. Submissions are identified only by number in these extracts relating to the review questions.

Overall comments

Submission 1: After the initial six months' development phase, the network improved with the appointment of a coordinating epidemiologist, including the initiation of outbreak and cluster reports and more successful investigations.

Concern is expressed about the real value of the *Salmonella* and *Campylobacter* case-control studies, as well as NNDSS, which lacks the ability to handle sero- and phage type data.

Submission 2: OzFoodNet has very significantly enhanced the existing foodborne surveillance capacity of this state which views its export trade as a vital part of the economy. Unlike state employees, OzFoodNet staff do not have competing priorities and together are able to produce a very timely overview of what is happening around the nation and instigate rapid investigation and action.

Submission 4: The operations of OzFoodNet over the last two years have greatly improved Australia's understanding of foodborne disease, and enhanced the capacity of state and territory health authorities to develop and implement effective risk reduction policies. Through better communication, the establishment of OzFoodNet and its recent extension to national coverage provides a more comprehensive and systematic overview of foodborne disease. Compilation of a national data set provides greater opportunities to detect patterns and trends that may be missed when information is held in fragmented form by different jurisdictions, and is not communicated and assessed in a consistent manner.

Submission 6: OzFoodNet has made a major contribution to foodborne illness surveillance and response initiatives. OzFoodNet has created a comprehensive national foodborne disease surveillance system in Australia. OzFoodNet has achieved unprecedented coordination and collaboration across all jurisdictions. Research generated by OzFoodNet collaborations has allowed thorough review and testing of methodologies to identify those best suited to the investigation of the aetiology of foodborne illnesses.

The net gain is that the integration of these national surveillance activities has greatly extended Australia's capacity to identify, interpret and respond to foodborne illness events.

It is remarkable that this level of achievement has been gained in only two years of operation.

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Submission 7: Attention is drawn to complementary developments in national foodborne disease surveillance so care must be taken in future planning to avoid duplication of effort. NNDSS will include data on organisms including serovar and phage type on each case. Each notified case will include data on resident location by a locality code which will allow more accurate geographical mapping of the spread of endemic and epidemic foodborne diseases. It will be possible to identify cases in the NNDSS which are linked to a recognised disease outbreak and to identify nationwide changes in the distribution of serovars. The place of acquisition of disease will be more clearly stated in the NNDSS.

Submission 11: We strongly support the OzFoodNet concept. OzFoodNet is regarded as an important initiative that complements the network of public health laboratories and it deserves active support. While laboratories are keen to, and do, collaborate with OzFoodNet, they wish to be fully engaged whenever laboratory aspects are under consideration. The concept of OzFoodNet generating new national data for action was strongly supported. OzFoodNet funding arrangements should include an allowance for new laboratory work generated by that network and by laboratory-based surveillance activities, for example IT infrastructure.

Submission 16: [Agency] strongly supports OzFoodNet which, in its first two years, has already demonstrated important benefits which will continue to grow over time.

Submission 17: [OzFoodNet is] seen as a valuable contributor and critical component of our paddock to plate regulatory system and has already supplied data for Australian risk assessments.

Submissions 20 and 21: [Agencies] strongly support vertical integration of surveillance across the entire food production chain. Greater inclusion of primary industry input will lead to benefits in reduction of foodborne illness. Such integration would also be consistent with international systems that utilise veterinary expertise at the primary production stage.

Question 1: Does OzFoodNet add value to existing foodborne illness surveillance initiatives? If so, how?

Submission 1: OzFoodNet stimulates surveillance nationally, including collection and cross-jurisdictional investigations.

Epidemiology in each site improves surveillance.

Submission 2: In its one year of operation, it has improved and enhanced the existing state surveillance system and better integrated it with the national systems. The existing small complement in the Public and Environmental Health Branch prevented the development of specialist expertise. The national network of OzFoodNet epidemiologists allows for peer education and program improvement of most benefit to small states. The national network has helped the tracing and investigation of cases of a local endemic *Salmonella* serovar.

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Submission 3: Yes, both with regard to surveillance and to research. Improved communication and more detailed communications between jurisdictions through cluster reports, teleconferences and face-to-face meetings. More timely communications and more person-to-person communications in different jurisdictions. OzFoodNet has informally provided standards for surveillance and investigation practice. OzFoodNet has improved the coordination of investigation of outbreaks of national significance. It has instituted a national collection of outbreak data. Gaps in communication between health, food safety and agriculture have been highlighted. More attention is being focused on an ecological model of agents of infection.

Submission 4: The operations of OzFoodNet over the last two years have greatly improved Australia's understanding of foodborne disease, and enhanced the capacity of state and territory health authorities to develop and implement effective risk reduction policies.

Submission 5: Yes. OzFoodNet has enhanced existing foodborne disease surveillance systems, providing greater resources for data collection, routine analysis of data, active surveillance, public health action and epidemiological data that can be used for the development of industry knowledge, evidence-based food safety policy and regulatory development.

OzFoodNet provides a central benchmarking point against which jurisdictions can compare their individual situations.

Submission 6: Yes—improved awareness of using information from existing data systems to detect foodborne outbreaks using dedicated personnel, improved communications, sharing experience, peer education and peer pressure to investigate events that would otherwise have been ignored. Encouraging other wider uses of the data, such as surveillance of foodborne disease, better *Listeria* reporting, investigation of links between climate and foodborne disease, and economic analyses. Extending data systems, especially the outbreak register, and establishing trust between jurisdictions. Attention to improving the quality of the existing data systems, already improving laboratory turnaround times, improved case definitions, collaboration with universities to explore aspects of the efficiency of the surveillance systems.

Improved action in response to the data, but it is not clear how to evaluate this.

Submission 7: Yes—it represents a wide network of epidemiologists. It provides important links between DoHA and AQIS [Australian Quarantine and Inspection Service], AFFA and FSANZ, thereby linking human health and food safety agencies. OzFoodNet engages in applied research that will supply important information for food safety.

Submission 8: Yes—significant enhancement at state level but patchy improvements at public health unit level. This includes the routine day-to-day surveillance activities. OzFoodNet provides a national focus and has fostered sharing of data and coordinated surveillance. Strengthened links in the state between health laboratories, food safety and environmental health workers. OzFoodNet is contributing to the collection of better national data than have existed in the past. This is important for estimations of impact of food safety initiatives.

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Submission 9: Yes. The majority of foodborne disease surveillance and control occurs at the jurisdictional level and the existing national systems of surveillance, NEPSS, NNDSS and the Australian Paediatric Surveillance Unit have minimal capacity for interpretation or applied research. One of OzFoodNet's greatest strengths has been in providing an active forum for communicating about foodborne disease across Australia and an ability to feed information into national policy committees. OzFoodNet has also provided intelligence about foodborne disease incidence, surveillance and data for risk assessment.

Submissions 11 and 12: Yes, at the broader food microbiology and surveillance level, bridging the gap between epidemiologists and the laboratory. OzFoodNet has not necessarily identified and built on existing strengths but has tended to reinvent or duplicate on occasion, for example *Salmonella* surveillance. Laboratories generally have not received any of the allocated Commonwealth funding. Thus, workload associated with new studies has increased without new resources.

Submission 16: OzFoodNet has made significant contributions to the surveillance and control of foodborne and other enteric infections. It provides epidemiological and content expertise, and partnerships with experts around Australia.

Submission 17: Yes. Our Food Standards are now outcome-based and require OzFoodNet data on disease incidence and sources for priority determinations, level of risk and drafting management strategies.

Assists with food recall by virtue of its coordinating role in the states and territories.

Question 2: What value has the Commonwealth's contribution added to existing state and territory activities as measured by population health outcomes?

Submission 1: Probably little impact. Most disease is sporadic. Perhaps some outbreaks were terminated and so reduced case numbers.

Submission 2: Too early to judge. Specifically targeted funding which is protected from state budgetary constraints.

Submission 3: A national focus has been given to foodborne disease. Specialist support has become available. Requirements for activities such as outbreak registration has brought about improvements in state operations.

Submission 5: The resources have clearly enhanced surveillance capacity and public health responses.

Improved understanding of foodborne illness in Australia. Further justification for proposed national regulatory food safety activities. Too soon to be able to measure a difference.

Submission 6: Some investigations have lead to identification of contamination early in the food production chain, but failures at the environmental health level of investigations

Appendix A: SUMMARY OF SUBMISSIONS

still thwart prevention measures. Public health units have an increased capacity to detect and respond to foodborne diseases. Public health units can now take the action required to enforce regulation and create or improve legislation as a result of increased expertise and capacity in foodborne diseases surveillance. Many MAE students are employed in this area. OzFoodNet has not been engaged in any activities around health promotion in the community, or advice for medical practitioners or others in the food industry. Feedback of information from the case-control studies, GP survey and the outbreak register may prove useful for informing consideration of such activities. Information will also be very relevant to those involved in inspection of food premises, since the register should help identify types of functions, premises and food vehicles that present recurring problems. It is probably the role of OzFoodNet to ensure that such findings are communicated effectively to those engaged in such health promotion or regulatory activities, rather than OzFoodNet undertaking such activities for itself.

Submission 7: OzFoodNet has enhanced foodborne disease control and food safety across the country by coordinating data collection and investigations across jurisdictions.

Submission 8: Too soon to estimate. It may be 10 years before real effects can be measured.

Submission 9: OzFoodNet has been going for two years, making it difficult to evaluate population health outcomes at this early stage. Many of the studies into the burden and cause of diseases potentially due to food are only now being completed. These studies may not have quantifiable benefits in terms of disease control, but set the baseline for our epidemiological understanding on a national scale. The Commonwealth has contributed resources to the states and territories but the OzFoodNet activities have also demanded some resources from the recipients. One area where there has been a quantifiable benefit for the community is in the area of outbreak investigation and control. OzFoodNet has coordinated several multi-jurisdictional cluster investigations. Outbreak investigations have prompted moves to better integrate animal, food and human surveillance; and to draft guidelines for national cluster investigation. OzFoodNet has supplemented the state role of surveillance and control by conducting applied research that will yield important insights into foodborne disease control. This population-based research includes studies into gastrointestinal illness, campylobacteriosis and salmonellosis.

Question 3: Given that Australia is a federation, how does Australia's system for foodborne illness surveillance compare with other federations?

Submission 1: Well—could be measured by the timeliness of reporting of *Salmonella* sero- and phage typing data.

Submission 3: We continue to lack a National Centre for Communicable Disease Control.

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Submission 5: We perform poorly in comparison with the Centers for Disease Control in the US. The situation in Europe still lacks cohesiveness but the Rapid Alert System, designed to pass information in the event of a possible food safety emergency, is operational.

Submission 6: Can't comment; however, the model has been successful in establishing inter-jurisdictional cooperation and management from a central unit.

Submission 7: Canadian and US models are being used to develop Australia's surveillance systems.

Submission 8: Can't comment without knowing the hit to miss/timeliness ratios of other systems.

Submission 9: Needs further study. Unlike most other countries in that there is no central authority, though OzFoodNet partly fills that role.

Submissions 11 and 12: Australian laboratory data compare favourably with other international jurisdictions and have contributed to detecting and controlling international outbreaks.

Submission 17: OzFoodNet has added value through its coordination activities especially with NNDSS, CDNA and the Bi-National Surveillance and Enforcement Strategy (BSES). This is an appropriate national role. OzFoodNet had also contributed to more timely detection of problems and enabled more comprehensive investigations.

Question 4: Is OzFoodNet cost-effective?

- ◇ What quantifiable marginal benefits can be attributed to OzFoodNet?
- ◇ Can such benefits be expressed in terms of premature deaths and/or disability averted?
- ◇ What is the ratio of marginal benefits to marginal costs?
- ◇ Does OzFoodNet represent value for money?

Submission 1: Not known—tackling food contamination effectively would lead to benefit.

Submission 2: Too early to judge.

Submission 3: This evaluation needs more work, for example evaluation of deaths and disability averted due to the effect of control measures introduced as a result of outbreak investigations. Food safety risk assessment approach, estimation of death and disability averted due to changes in specific food policy and regulatory changes.

Submission 6: Too early for formal evaluation. These first years have concentrated on repairing the existing systems.

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Submission 9: Probably, but needs to run longer before effective evaluation can be done.

Submission 16: It is important that OzFoodNet continues after such a large initial investment in human and financial resources.

Submission 17: Results to date indicate that OzFoodNet can be cost-effective, based upon, say, the S. Stanley investigation and recall. It will be invaluable if it provides information that meets the needs of regulators and policy makers. OzFoodNet will be able to set priorities for action across the whole of the food chain.

Question 5: Do epidemiological data on foodborne illness in Australia get translated into action?

Submission 1: Yes, in that cluster detection leads to investigation, but that is not necessarily translated into effective environmental health action.

Submission 2: Yes—EHO [environmental health officer] now increasingly involved in all cases of notified foodborne disease, allowing more effective public health intervention. This has been evident even with *Campylobacter* cases and the definition of high prevalence areas and of a potentially contaminated water supply.

More timely interstate cooperation with investigations has occurred.

Now able to start some research that would not have been possible otherwise.

Submission 3: Yes—OzFoodNet has fostered cooperation between epidemiologists and EHO. OzFoodNet has demonstrated the benefit of collaboration between human and animal epidemiologists.

The need for better national level partnerships between health, food safety authorities, agriculture and AQIS has been demonstrated.

Submission 5: Not evident to date. Should be effective in the long term if supported by food safety and other public health structures.

Submission 7: On a number of occasions, OzFoodNet has been responsible for identifying a contaminated food vehicle and prompting the withdrawal of the food from the market.

Outcomes from the case-control studies will permit the identification of foods, practices and groups of people at greater risk of contamination or infection with certain foodborne disease pathogens.

The estimation of the incidence of gastrointestinal disease and the proportion caused by food will allow an estimation of economic costs of foodborne disease and provide inducements to improving food safety in Australia.

Submission 8: Yes—instances are quoted including a fast-food product and the poultry industry.

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More is expected with OzFoodNet's strategic role in linking epidemiology to food safety being important.

Submission 9: OzFoodNet is part of the food safety system in Australia providing surveillance information to CDNA, and to local food safety sections in state and territory departments. OzFoodNet sites have conducted local work with other agencies to prevent human infections.

Submission 11: Yes, but variably. It is felt that closer collaboration between epidemiologists and laboratory workers re. subtleties differentiating organisms and their patterns of isolation could further enhance epidemiological investigations.

Submission 17: Yes. Examples include the *Listeria* risk assessment, NSW work on exempting some businesses from the Food Safety Standards and the National Risk Validation Project. Data from a proposed survey of retail meats would also be valuable for regulators.

Question 6. Does OzFoodNet promote the take-up of epidemiological data by regulatory and policy setting?

Submission 1: Yes, policy changes have brought about improvements in surveillance.

Submission 2: Better data are valuable as a basis for policy setting. *Cryptosporidium* and animal contact is a local example.

Submission 3: Yes, with regard to escolar sales but not in the area of infectious agents.

Submission 5: There should be a better connection between the collection and analysis of epidemiological data and practical action at an industry and consumer level to reduce the incidence of foodborne illness

But data on the cost of foodborne outbreaks are not being collected in a systematic fashion and much of the data essential to the risk assessment and cost benefit processes are not being collected. OzFoodNet had the potential to provide valuable assistance to the National Risk Validation Project which attempts to establish priorities for the implementation of HACCP-based food safety programs in Australia. But when information was requested for the project only a short summary was provided which added little to the data used for the risk assessment.

Submission 6: Yes, as judged by some of the activities that have involved MAE students.

Submission 7: An area that requires strengthened ties between surveillance units and food safety groups.

Submission 8: Yes—OzFoodNet is expected to enhance the uptake of epidemiological data by environmental health authorities. The international outbreaks related to halva and peanuts are cited as examples of this process.

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Submission 9: Yes, information from OzFoodNet has contributed substantially to policy formulation in the last two years. An example of this is where OzFoodNet collected data on human *Listeria* infections for the FSANZ risk assessment on *Listeria* in ready-to-eat seafood

OzFoodNet has also been able to contribute data to policy formulation in the areas of foodborne disease in nursing homes arising from eggs and as a result of takeaway kebabs, and *Salmonella* outbreaks associated with chicken meat. This has led to changes in public health practice, such as trace back of suspected vehicles, and the possibility of statistically directed monitoring of foods for *Salmonella* and *Campylobacter* by states and territories. The practice of summarising outbreaks has also yielded benefits by revealing patterns of like occurrences, for example *Clostridium perfringens* poisonings and escolar-related diarrhoea.

Submission 17: An important function that needs enhancement and should be aligned to the needs of the stakeholders.

Question 7. What initiatives should be put into place to ensure greater use of epidemiological data on foodborne illness?

Submission 1: Improve NNDSS to take over OzFoodNet reporting system.

Automate data analysis system for foodborne disease, for example use Salmonella Outbreak Detection Algorithm (SODA).

Improve feedback to collectors.

Act on sources/causes of contaminated food.

Submission 2: There is room for improvement in the communication of OzFoodNet data to stakeholders within and beyond public health.

OzFoodNet makes the compilation of a national picture of foodborne disease possible.

Submission 3: Credible surveillance should extend to all Australian populations.

Submission 5: It is recommended that:

- ◇ OzFoodNet should revisit their objectives and get a clearer picture of what is to be achieved and the suitability of their current programs and instruments
- ◇ OzFoodNet epidemiologists consult widely with policy makers and risk assessment professionals in the development of data collection instruments
- ◇ OzFoodNet data be published anonymously under the OzFoodNet name; that protocols for early dissemination of information are established; and that data collected are placed in the public domain with the exception of patient or business identifying details.

Appendix A: SUMMARY OF SUBMISSIONS

Submission 6: It is recommended that:

- ◇ Utilise linkages between existing surveillance schemes and other data sources such as LabVise, hospital separations and mortality data to achieve new uses of data.
- ◇ Improve laboratory surveillance data and LabVise to help fill some data gaps, especially on viral gastrointestinal disease.
- ◇ Increase data availability to researchers and organisations to allow further analysis of the data.
- ◇ Regularly evaluate the existing surveillance schemes to help improve data quality and make the data generally more useful.
- ◇ Improve communication between OzFoodNet and those involved in the food production chain.
- ◇ Collection and analysis of animal and food production surveillance data could complement and inform the human illness data.
- ◇ Pursue innovative approaches to data analysis and interpretation. The financing of work of this nature could be facilitated by a collaborative grant application by the National Centre for Epidemiology and Population Health (NCEPH)/OzFoodNet.
- ◇ Develop a data management policy to ensure the appropriate distribution of data, ranging from open access on a website to more restricted access as appropriate. The custodianship and means to acquire such data should be clearly defined.
- ◇ There may be certain projects involving epidemiological data that are suitable for masters or doctoral students; such project areas could be advertised to appropriate institutions.

Submission 7: Make maximum use of research and surveillance data and improve feedback to food safety authorities and primary industry.

Submission 8: Standardisation of operating systems would be important. Summary outbreak reports could be standardised so that standard data are collected and reported. Guidelines including appropriate time lines to complete outbreak reports could assist this process. Tools for data collection could be standardised and a bank of these standardised tools be made available to facilitate standard collection and ensure a readiness to commence investigations. Continue to explore and enhance mechanisms to share data and report on investigations within and across states. OzFoodNet could also facilitate the means to enhance laboratory capacity, especially as regards typing for *Campylobacter*. Maintain representation of OzFoodNet on the CDNA to ensure dissemination of information.

Submission 9: A national meeting could be held each six months that would involve surveillance experts from health, food and agricultural areas to summarise data on

Appendix A: SUMMARY OF SUBMISSIONS

foodborne disease and investigations. The meeting would have a role in establishing integrated surveillance and data sharing. To encourage the uptake of information into the policy arena, this committee would report to the Food Regulation Standing Committee, or some other appropriate national level committee.

Submission 17: More trend data on foodborne illness would help regulators in planning. Attention must be given to developing links with animal surveillance systems to improve the national surveillance and monitoring of activities related to food.

Question 8: In a post–September 11 environment, does OzFoodNet provide Australia with added capacity to identify and combat contaminated food, be it due to accidental or malevolent contamination?

Submissions 1, 2, 3, 5, 6 and 7: Broad agreement: several respondents said yes.

Submission 1: Yes—better foodborne surveillance improves our ability to detect a bioterrorism event.

Submission 8: Yes, provided undifferentiated clusters are fully investigated and OzFoodNet is included in state bioterrorism response plans.

Submission 9: OzFoodNet does provide Australia with added capacity to identify and combat contaminated food. This increased capacity has been due to heightened surveillance at the local level and the introduction of the cluster reports. Both of these show an ability to detect events that were previously not recognisable in Australia. These events would have happened in the past but state and territory agencies rarely identified them as connected.

Submissions 11 and 12: Enhancing the capture of non-human foodborne disease data by encouraging data-owners to contribute existing (i.e. not newly generated for the purpose) data should add value. Likewise, OzFoodNet should strive to ensure the most timely transmission of isolates to typing laboratories and transmission of epidemiological data to central surveillance systems.

Submission 11: Identify: probably not; this may require specific initiatives such as lab recognition of clusters or local reporting (for example to local government authorities) of clusters, etc.

Combat: possibly, as there is now a knowledgeable competent infrastructure in place to supplement the jurisdictional capacity which has the authority for action.

Submission 12: OzFoodNet, with dedicated members in each jurisdiction, was seen as a good model for other cross-jurisdictional issues such as bio-preparedness.

Submission 17: OzFoodNet is a key part of the national approach to surveillance and investigation capacity to link illness to contaminated vehicles within the food supply.

Appendix A: SUMMARY OF SUBMISSIONS

Question 9: Are the research and investigatory activities undertaken by OzFoodNet appropriate?

Submission 1: Probably not. Greater attention should be placed on the need to reduce contamination of food.

Submission 2: Yes, the investigations have proven useful. Research has begun into areas where no data existed and is promising.

Submission 3: Yes—OzFoodNet needs a clear focus on the wider issue of etiology of foodborne disease and other gastroenteritis as well as the narrower focus of counting of human cases of specific pathogens.

Submission 5: OzFoodNet support for existing structures should be promoted but more effort needs to be given to implicated industry sectors, causal factors, food technology limitations, and issues and cost of the incident both for public health agencies, the food industry and the community.

Submission 6: The investigation of outbreaks is of obvious relevance to control the spread of illness, and additional efforts to uncover the source of an outbreak is of benefit not only to control the acute situation, but also for longer term planning. Research is another matter.

The initial research agenda of OzFoodNet was largely set prior to the group starting to work together. The initial pilot site in the Hunter had been modelled to some extent off the sites in the US, and the Hunter site was then a model for the other states to follow when doing their initial contracts.

Because of the nature of the formation of the group, the logical sequence of investigation of ideas was not always carried out systematically as might be. For example, the case-control studies on *Campylobacter* and *Salmonella* were agreed to in the state contracts before a thorough literature search and compilation of all existing information was carried out to see if these studies were needed.

Research priorities were set out in an internal report on OzFoodNet's future directions. This report represented the thinking of the collaboration at early-mid-2001. The areas prioritised by the group were:

- ◇ human illness surveillance
- ◇ outbreak management
- ◇ estimation of the amount of foodborne illness
- ◇ causation of foodborne illness.

All of these areas are of relevance and importance and OzFoodNet is doing some work in each of these domains, although there are loopholes. Additional projects have been undertaken when particular circumstances have allowed. Assuming that OzFoodNet is ongoing, the approach to the ongoing work plan could be made more systematic and to have input from outside the group about other ideas for consideration.

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It would be very helpful to have the next round of contracts drawn up after a work agenda has been agreed to by the group and drivers for each project identified.

Submission 7: Yes, but beware of duplication of surveillance activities, and balance investigation and research efforts.

Submission 8: Yes, but we should be sure that we do not just repeat studies done elsewhere for no further gain. The population survey for disease burden is to be commended.

Submission 9: Yes, though the research and investigation activities may have been too ambitious to complete the planning, data collection, analysis and writing up within two years.

Submissions 11 and 12: Research initiatives need to ensure they are of a size which will produce useable meaningful data. To date, no OzFoodNet initiatives have led to any rationale for altering existing routine laboratory practices which might lead to improved detection and understanding of foodborne diseases.

Submission 16: Yes. The studies linked with increased liaison with general practitioners and EHO has enhanced gastrointestinal outbreak investigations and contributed to a national approach to disease control.

Submission 17: Yes, but future synergies could be developed between epidemiological data and food regulation activities to increase the value of the OzFoodNet work plan.

Question 10: What additional research or other investigatory activities should be undertaken?

Submission 1: As for Question 9.

Submission 2: We need to build better links with primary industry and food authorities so as to enhance our current research programs.

We need to standardise what is reported as clusters. The current reporting reflects the different priorities put on investigation by the various states.

Submission 3: We need a mix of low- and high-risk research.

Better definition of agents of gastrointestinal illness.

Definition of the notification fraction.

Better definition of the epidemiology/ecology of *Salmonellae* by strain.

Development of novel tools for data gathering for risk assessments, for analysis and for characterisation of foodborne disease agents.

Submission 4: Collaborate with Cooperative Research Centre for Water Quality and Treatment in a second study to assess the contribution of pathogens in drinking water to endemic gastroenteritis.

Establish a national waterborne disease surveillance network.

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Submission 5: A training program to support outbreak investigation and reporting by the states and territories would assist in the attainment of OzFoodNet objectives and to standardise state and territory operations.

Submission 6: A number of potential activities were suggested by the OzFoodNet group in its internal report on future directions; it would be useful to revisit these ideas and add new perspectives to prioritise a work program for the future.

Submission 7: Evaluation of the surveillance process and basic research:

- ◇ Estimation of the notified fraction of various foodborne diseases
- ◇ Identification of delays or gaps in the notification process
- ◇ Research into antibiotic resistance of enteric pathogens to contribute to the reduction of antibiotic resistance in Australia.
- ◇ Development of sentinel surveillance for viral gastroenteritis pathogens (for example Norwalk-like virus).

Submission 8: Some important issues:

- ◇ Nationally, review and provide a standard method to set thresholds for identifying potential clusters that require investigation; and thereby standardise protocols to identify potential clusters.
- ◇ Perform cost effectiveness study of foodborne illness surveillance.
- ◇ Standardise laboratory methods and enhance laboratory capacity.
- ◇ Develop a bank of standard questionnaires.
- ◇ Provide mechanisms to provide information on non-human pathogens that may be related to outbreaks of human disease, for example access to non-human epidemiological data on foodborne pathogens collected by primary industry and increase links with veterinary laboratories for surveillance of non-human enteric organisms to investigate carriage issues.
- ◇ Collaborate with health promotion services to enhance translation of epidemiological data into preventative public health action including development of risk communication strategies.
- ◇ New surveillance tools such as molecular techniques need to be introduced at a national level and standardised across states to enhance detection of multi-state outbreaks.

Submission 9: There are several areas where future research should concentrate, which include:

- ◇ Expansion of the *Listeria* case-control study to all sites
- ◇ Repeat the gastrointestinal survey in two years time to track the incidence of community gastroenteritis in years to come
- ◇ Establish sentinel testing for shiga toxin producing *E. coli* in state and territory reference laboratories to contribute to a national case-control study for these infections

Appendix A: SUMMARY OF SUBMISSIONS

- ◇ Quantifying the burden of chronic sequelae of foodborne infections
- ◇ Determining the sources and costs of information about foodborne disease outbreaks
- ◇ Collaborative research to determine the under notification of foodborne pathogens to state and territory surveillance systems.

Submission 11: Capture and analyse existing information from testers of imported foods or authorities receiving the results. Consider cost benefit and practicalities of implementing irradiation of risky raw foods. This may have a marked impact on foodborne disease, once accepted by consumers.

Submission 16: Having identified needs, set priorities and implanted some major studies there is a foundation for further development of foodborne disease prevention and control strategies in Australia. Future activities should concentrate on public health implications of the studies that have been performed.

Submission 17: Work on antibiotic resistance would be useful. Such projects may be able to leverage extra funds from NHMRC grants. Further quantification work on organisms involved in foodborne outbreaks would be useful.

Question 11: What changes should be introduced to enhance the capacity of OzFoodNet (in an era of budgetary restraint)?

Submission 1: Three things:

- ◇ Improve the education of professionals and the public re. foodborne disease.
- ◇ Keep enhancing data quality in the jurisdictions.
- ◇ Keep enhancing the quality of investigations.

Submission 2: The face-to-face meetings are necessary should be at present frequency. Funding should be linked to:

- (i) the number of notifications of enteric disease
- (ii) the necessity to upgrade protocols and systems in smaller states
- (iii) the level of involvement in the wide range of OzFoodNet projects.

Submission 3: Formulate aims for OzFoodNet and introduce measurable objectives. Introduce scientific review of proposals for projects. Promote better investigation and multidisciplinary investigation teams. Automate data collection and reporting as much as possible.

Submission 5: OzFoodNet could:

- ◇ Assist existing authorities by providing information on resources (including laboratory) to enhance investigatory capacity.
- ◇ Improve links between itself and food regulators in states and territories.
- ◇ Seek involvement of a diverse range of expertise at national level.

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Submission 6: Attention to careful planning of future projects should ensure that the most important projects are done first and that an efficient method is followed to answer research and investigatory questions.

Literature reviews may be less costly than data collection. A single site might yield data that are relevant to the whole of the country without need to do a nationwide study. The face-to-face meetings could be held less frequently, which would also allow more progress to be made between meetings. (The meetings are very important, however.) Other means of financing specific projects may be possible, such as research grants. Postgraduate students may be able to take on specific projects. Perhaps OzFoodNet could sponsor a PhD stipend.

Submission 7: Establish the gains in surveillance practice under OzFoodNet as routine practice by governments at all levels.

Submission 8: Several issues relate to large states:

- ◇ The distribution of resources should be based on the burden of disease in jurisdictions.
- ◇ It is important that OzFoodNet has statewide relevance and coverage. There are differing features and needs to consider in the different areas.
- ◇ Develop and implement training packages in surveillance and outbreak investigation methods for public health staff to standardise, expand and sustain the surveillance of foodborne disease, as resources funded by OzFoodNet do not cover all required activities.
- ◇ Locally defined issues could be investigated, in particular the burden of diarrhoea in the tropical North in general and in Indigenous communities. There needs to be work into how to investigate and use this information with a collaborative effort to improve the living conditions of remote communities.

Submission 9: There are several areas where the capacity of OzFoodNet could be enhanced. These are:

- ◇ Conduct surveillance for non-notifiable foodborne diseases
- ◇ Enhance cluster reports, and refine the use of the listserv
- ◇ Employ an epidemiologist to identify clusters, and coordinate their investigation
- ◇ Develop and establish an enhanced data set for foodborne diseases notified to NNDSS
- ◇ Conduct surveillance of travel-related infections and routinely record on surveillance data sets
- ◇ Develop a network of laboratories to share molecular information about foodborne pathogens to supplement traditional epidemiological investigation, and employ a coordinator
- ◇ Produce guidelines for investigating and recording outbreaks of foodborne disease to assist jurisdictions, public health units and local government

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- ◇ Facilitate integration of human, animal, food and environmental surveillance.

Submission 12: The laboratory component of OzFoodNet projects should encourage sharing of existing and new technology between jurisdictions, with a view to mutual capacity building. It was considered important that existing strengths in Australia are identified and built upon, for example the expertise represented by the PHLN laboratory staff, NEPSS and the PHLN experience in electronically sharing pulsed field gel electrophoresis (PFGE) patterns of organisms of interest.

Submission 17: Improvements should be in the context of a paddock to plate approach to monitoring and surveillance.

Improve linkages with academic experts, industry the states and territories (including primary industry portfolios) and other nationally coordinated activities such as BSES, CDNA, NNDSS, NEPSS and animal surveillance.

Ensure strong linkages at state level between communicable disease and food regulators as well as ensuring sufficient state support for state-based epidemiology.

Ensure consistent national approach to notifications.

Improve international linkages with other expert bodies and regulators.

Question 12: How could the management of OzFoodNet be more effective?

Submission 1: Three things:

- ◇ Hold fewer face-to-face meetings
- ◇ Improve NNDSS
- ◇ Prioritise objectives for future development.

Submission 2: Two things:

- ◇ Closer monitoring of achievements with agreed outputs and tie funding to workload
- ◇ Review the role of MAE students in OzFoodNet.

Submission 3: Three things:

- ◇ Confidentiality of data needs should be examined formally in view of an increasing national focus on privacy. The sharing of identified data across jurisdictions is an issue that arises in relation to outbreak investigations. Is national legislation required in order for this to occur?
- ◇ Access to OzFoodNet databases needs to be established. We support the notion that all those contributing to databases should have equal and timely access. It would also be appropriate to review the issue of publication and authorship.
- ◇ A review of reporting requirements including the purpose of each report, the target audience of each report, extent of dissemination of such reports and required data set would be useful to maximise the value of such reporting while minimising the resources that are required in the preparation of reports.

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Submission 5: Establish clear objectives following wide consultation with all stakeholders.

Improve information access through early publication on a restricted or open website. This relates to both the central function of OzFoodNet and also the operation at the local level.

Submission 6: The general management of OzFoodNet has been very effective to date, in that collaboration has been fostered and projects have been progressing. Support from the central coordinating epidemiologist has been good. The consultation phase of projects should be sped up with an agreed process to allow progression from discussion to decision making. The drawing up of contracts proved very time consuming; any improvements to streamline the process would be beneficial.

Submission 8: More collaboration with partners, for example industry, PHLN, CDNA, infection control.

Submission 9: The location of OzFoodNet within the Food Safety Section of DoHA is advantageous. Areas where OzFoodNet management could be improved include:

- ◇ formalising the DoHA management committee to include epidemiological and managerial oversight into OzFoodNet activities
- ◇ employing an epidemiologist centrally to assist with backup for coordinating epidemiologist and cluster investigation
- ◇ providing a limited allocation of the central OzFoodNet budget for laboratory testing in research and outbreak settings
- ◇ closely monitoring contractual outputs by OzFoodNet sites
- ◇ clarifying membership of the OzFoodNet Working Party
- ◇ outlining the longer term role of NCEPH in OzFoodNet
- ◇ reviewing the frequency and format of regular reports and face-to-face meetings.

Submission 11: Identify and build upon existing initiatives and work closely with collaborators, heeding knowledge and their expertise, for example the proposed survey of how laboratories test for foodborne disease.

Submission 17: Two measures are suggested:

- ◇ Have an overall advisory group of experts and others with links to related national mechanisms as in the UK and USA. Such a group needs epidemiological expertise.
- ◇ The demands on the coordinating epidemiologist are excessive. Split the duties between a manager and the epidemiologist.

Question 13: What additional activities (if any) should OzFoodNet undertake?

Submission 1: Reduce cases of foodborne disease by investigations into potential for failures in food processing and by public education.

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Submission 3: Three things:

- ◇ Establish a national surveillance system. This should include emphasis on timely and effective investigation of outbreaks including multi-state and national outbreaks, leading to effective public health action.
- ◇ Strengthen the relationship between epidemiology, food safety and policy so that there is greater capacity for epidemiological data to drive policy.
- ◇ Expand OzFoodNet collections to include gastroenteritis outbreaks.

Submission 5: Establish mean human incidence data for specific serovars and phage types of foodborne pathogens for Australia, individual states and territories and regions on annual, monthly and weekly basis.

Submission 6: Three things:

- ◇ Further development of the website with consideration to more open data access.
- ◇ Develop strategies to engage PhD students to undertake relevant projects.
- ◇ Develop strategies to encourage collaborative grant applications from other funding bodies.

Submission 8: Establish a long-term strategy.

Sustainability is vital.

Ensure sustainable mechanisms are in place locally and nationally.

Establish mechanisms to deal with cross-border issues that can be used for non-food diseases as well.

Enhance national communication processes.

Better define how state OzFoodNet positions link with public health units in decentralised states.

New surveillance tools such as molecular techniques need to be introduced at a national level and standardised across states to enhance detection of multi-state outbreaks.

Define what vigilance and information is required from medical practitioners with regard to cases of diarrhoea and raise awareness of these events as important for public health action.

OzFoodNet may provide a model for enhancing surveillance of other conditions.

Submission 9: Build upon the linking of state and territory health departments with regard to foodborne disease surveillance and further liaisons with international agencies and other countries conducting similar work into enteric disease. OzFoodNet should continue to develop these links both nationally and internationally.

Submission 16: Develop relationships with industry, actively promote food safety and hygiene with the public and pursue further education of clinicians about notification and disease management. There is a need for a standardising of the investigation of foodborne disease outbreaks, reviews of methods and intensive training of field staff, especially EHO. A nationally accredited training course would be supported.

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Submission 17: See above response for Question 12. Improving notification of foodborne disease would also yield value as well as exploring other means of surveillance of foodborne disease.

OZFOODNET REVIEW MEETING LIST

Canberra, Monday 9 September 2002

Richard Souness, AFFA

Peter Maple, AQIS

Robyn Leader, DoHA

Ian McKay, DoHA

Paul Roche, DoHA

Craig Shadbolt, DoHA

Jenean Spencer, DoHA

Scott Crerar, FSANZ

Greg Roche, FSANZ

Jenny Williams, FSANZ

Gillian Hall, NCEPH

Charles Guest, ACT Department of Health and Community Care

Martyn Kirk, OzFoodNet

Sydney, Tuesday 10 September

Craig Shadbolt, DoHA

Ian Bell, NSW Department of Agriculture

Stefan Fabiansson, NSW Health Department

Jeremy Mcanulty, NSW Health Department

Jennie Musto, NSW Health Department

Marianne Tegel, NSW Health Department

Craig Dalton, Hunter Public Health Unit, NSW Health Department

Ed Kraa, SafeFood NSW

Martyn Kirk, OzFoodNet

Leanne Unicomb, Hunter OzFoodNet

Newcastle, Wednesday 11 and Thursday 12 September

Ian McKay, DoHA

Craig Shadbolt, DoHA

Jenny Williams, FSANZ

Gillian Hall, NCEPH

Phillip Bird, Hunter Public Health Unit, NSW Health Department

Craig Dalton, Hunter Public Health Unit, NSW Health Department

Appendix B: PARTICIPANTS AT MEETINGS AND TELECONFERENCES

Dot Little, Hunter Public Health Unit, NSW Health Department
Tony Merritt, Hunter Public Health Unit, NSW Health Department
Rebecca Hundy, MAE
Martyn Kirk, OzFoodNet
Nola Tomaska, OzFoodNet
Leonie Neville, NSW OzFoodNet
Leanne Unicomb, Hunter OzFoodNet
Joy Gregory, Victorian OzFoodNet
Karin Lalor, Victorian OzFoodNet
Russell Stafford, Queensland OzFoodNet
Minda Sarna, WA OzFoodNet
Jane Raupach, SA OzFoodNet
Rosie Ashbolt, Tasmanian OzFoodNet
Geoff Millard, ACT OzFoodNet

Melbourne, Friday 13 September

Craig Shadbolt, DoHA
John Carney, Victorian Department of Human Services
Robert Hall, Victorian Department of Human Services
Heather O'Donnell, Victorian Department of Human Services
Victor di Paola, Victorian Department of Human Services
Graham Tallis, Victorian Department of Human Services
Kaye Coates, Victorian Department of Natural Resources and Environment
David Coleman, Tasmanian Department of Health and Human Services
Geoff Hogg, Microbiological Diagnostic Unit (MDU), University of Melbourne
Joan Powling, MDU
Agnes Tan, MDU
Mark Veitch, MDU
Mary Vulcanis, MDU
Martyn Kirk, OzFoodNet
Joy Gregory, Victorian OzFoodNet
Karin Lalor, Victorian OzFoodNet
Rosie Ashbolt, Tasmanian OzFoodNet

Appendix B: PARTICIPANTS AT MEETINGS AND TELECONFERENCES

TELECONFERENCE ATTENDANCE LIST

Western Australia, Monday 9 September 2002

Walter Arrow, WA Department of Health

Tony Watson, WA Department of Health

Minda Sarna, WA OzFoodNet

Northern Territory, Tuesday 10 September

Peter Markey, NT Department of Health and Community Services

Tracy Ward, NT Department of Health and Community Services

Queensland, Tuesday 10 September

John Bates, Queensland Health

Kerry Bell, Queensland Health

Craig Davis, Queensland Health

Robyn Pugh, Queensland Health

Margaret Young, Queensland Health

Phil Pond, SafeFood Queensland

Des Underwood, SafeFood Queensland

South Australia, Friday 13 September

Paul Dowsett, Primary Industry and Resources South Australia (PIRSA)

Chris Etherton, PIRSA

Rod Giveny, SA Department of Human Services

Jane Raupach, SA Department of Human Services

Andrew Pointon, SA Research and Development Institute (SARDI)

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