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Enhanced Surveillance of Potentially Foodborne Enteric Disease within a New Zealand Public Health Service

Thesis presented in partial fulfilment of the requirements for the degree of Master of Veterinary Studies in Public Health

At Massey University, Palmerston North, New Zealand

Tui Louise Shadbolt
2009
Disclaimer:

This report has been completed by Tui Shadbolt on behalf of the MidCentral Public Health Service for the benefit of the New Zealand Food Safety Authority (NZFSA).

Neither MidCentral Public Health Service nor their staff involved in this project assume any legal liability or responsibility for use of this report or its contents by others.
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Most of all I look forward (with the end of this project) to becoming a less distracted Mum and a more enlightened Health Protection Officer.
## Glossary

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ARPH</td>
<td>Auckland Regional Public Health</td>
</tr>
<tr>
<td>CDC</td>
<td>Centres for Disease Control and Prevention</td>
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<tr>
<td>CMP</td>
<td><em>Campylobacter</em> in the Manawatu project</td>
</tr>
<tr>
<td>Common enteric diseases</td>
<td>Salmonellosis, Yersiniosis, Cryptosporidiosis, Giardiasis, Campylobacteriosis</td>
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<tr>
<td>CRF</td>
<td>EpiSurv Case Report Form</td>
</tr>
<tr>
<td>DHB</td>
<td>District Health Boards</td>
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<tr>
<td>EARS</td>
<td>ESR’s Early Aberration Reporting System</td>
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<tr>
<td>ECC</td>
<td>Early Child Care Centre</td>
</tr>
<tr>
<td>EHO</td>
<td>Environmental Health Officer</td>
</tr>
<tr>
<td>EpiSurv</td>
<td>New Zealand’s Notifiable Disease Database</td>
</tr>
<tr>
<td>ESR</td>
<td>Institute of Environmental Science and Research Limited</td>
</tr>
<tr>
<td>FBI</td>
<td>Foodborne Illness</td>
</tr>
<tr>
<td>FDA</td>
<td>United States Food and Drug Administration</td>
</tr>
<tr>
<td>GP</td>
<td>General Medical Practitioner</td>
</tr>
<tr>
<td>MCPHS</td>
<td>MidCentral Public Health Service</td>
</tr>
<tr>
<td>MoH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MOoH</td>
<td>Medical Officer of Health</td>
</tr>
<tr>
<td>NHI</td>
<td>National Health Index number</td>
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<tr>
<td>NZDep 06</td>
<td>New Zealand Deprivation Index 2006</td>
</tr>
<tr>
<td>NZFSA</td>
<td>New Zealand Food Safety Authority</td>
</tr>
<tr>
<td>PHS</td>
<td>Public Health Service</td>
</tr>
<tr>
<td>RPH</td>
<td>Regional Public Health (Greater Wellington Region)</td>
</tr>
<tr>
<td>TLA</td>
<td>Territorial Local Authority</td>
</tr>
<tr>
<td>TO</td>
<td>Technical Officer</td>
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<tr>
<td>USDA</td>
<td>United States Department of Agriculture</td>
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Abstract

An enhanced notified enteric disease surveillance trial began on 1 July 2007 and continued until 30 June 2008. The aim of the trial was to measure the quality, timeliness and completeness of data collected and submitted by a regional Public Health Service (PHS) to the Institute of Environmental Science and Research Limited (ESR), via the national disease database (EpiSurv) for notified cases of enteric diseases. The trial evaluated two different methods of data collection: postal questionnaires and telephone interviews.

Telephone interview techniques were used to improve the contact rate, timeliness and completeness of data gathered from all notified cases of campylobacteriosis in the Manawatu, Horowhenua and Tararua regions. The target set for the project was to achieve a 95% contact rate with 90% full completion of all EpiSurv data fields. For all notified cases of campylobacteriosis a 97% contact rate was achieved in a time frame of between zero to 20 days (three day median) and completeness of all the EpiSurv case report fields ranged between 96 – 100% in the final data. Prior to the commencement of the study, between 1 July 2004 to 30 June 2005, MidCentral PHS (MCPHS) made contact with around 58% of all notified cases of campylobacteriosis and 77% of all other notified enteric disease cases1.

A short pre-screen mail questionnaire, with reply-paid envelope, was sent to all notified cases of cryptosporidiosis, giardiasis, salmonellosis and yersiniosis in the MCPHS regions. EpiSurv case report fields were completed using information supplied in the returned questionnaires. Return rate, timeliness, and completeness were compared with the telephone interview group. Fifty three percent of cases we attempted to contact via mail questionnaire responded within two to 63 days (six day median) and completeness of all the EpiSurv case report fields ranged between 81 – 100%.

In addition, we monitored the newly introduced ESR Early Aberration Reporting System (EARS) flags for increased levels of disease compared to historical disease rates, and assessed its usefulness as a tool to identify potential outbreaks in the

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1 Contact rates for the 2005 to 2006 period were not comparable as MCPHS had enhanced its data collection methods for campylobacteriosis in June 2006 to support the Campylobacter in the Manawatu project.
region. While no outbreaks that had not already been identified by PHS staff were found by monitoring the EARS system, EARS has become an important tool in the MCPHS for comparing our rates of disease with bordering PHSs. EARS also provided a good quick reference tool for media enquiries and the graphs produced in EARS have been well utilised as visual aids for training and seminars presented during the trial period.

The results of the surveillance trial initiatives were compared to the rest of New Zealand (NZ) over the same time frame and with a comparable, medium-sized, PHS. While the results of the telephone interviews from the MCPHS trial were close to the comparable PHS, they were significantly higher than for the rest of NZ. The postal questionnaires achieved a lower contact rate than the comparable PHS but similar to the rest of NZ. However, the quality of data gathered in the returned MCPHS postal questionnaire was significantly higher in most fields. Additional analysis was undertaken which indicated that those cases living in higher deprivation and rural areas were less likely to respond to a postal questionnaire. An over-representation of common enteric disease notifications from rural areas in the MCPHS was also highlighted by our research.

This trial has shown the effectiveness of utilising telephone interviews and telemarketing techniques for gathering timely and complete data for human enteric disease surveillance within the MCPHS. It has also demonstrated that a short pre-screen questionnaire can be effective in collecting good quality data needed to complete the standard EpiSurv case report form.