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OzFoodNet—Enhancing Foodborne Disease Surveillance Across Australia.

Second Quarter Summary, 2009 Western Australia

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Overview of quarter

During this quarter, the Western Australia (WA) OzFoodNet team conducted enteric disease surveillance and investigations, and was involved with on-going enteric disease research projects. The WA OzFoodNet team investigated sporadic cases of *Listeria monocytogenes*, Shiga toxin producing *E. coli*, *Yersinia* and *Salmonella* Enteritidis infection, two clusters of *Salmonella* infection, one cluster of hepatitis A infection, three *Salmonella* outbreaks, and monitored 34 non-foodborne outbreaks in institutional settings. Research projects included “Burden of gastrointestinal illness in Aboriginal people”, “Norovirus genotyping”, and developing the projects “Case control study of sporadic cases of Cryptosporidiosis in WA” and “Effect of hepatitis A vaccination program for Indigenous children on the epidemiology of hepatitis A infection in Western Australia”. In addition, the OzFoodNet team conducted educational talks at two meetings and co-authored two enteric disease journal publications.

Incidence of foodborne disease

Notifications for enteric diseases were extracted from the Western Australian Notifiable Infectious Diseases Database (WANIDD) by Optimal Date of Onset (ODOO) for the years 2004 to 2009 (the ODOO is a composite of the ‘true’ date of onset provided by the notifying doctor, the date of specimen collection for laboratory notified cases, and when neither of these dates are available, the date of notification by the doctor or laboratory, or the date of receipt of notification, whichever is earliest).

In the second quarter of 2009 *Campylobacter* infection was the most commonly notified enteric disease in WA, with 634 notifications. In the previous five years the number of *Campylobacter* notifications was lower in the second quarter compared to the other three quarters. However, in 2009 there was an increase in *Campylobacter* notifications from the first quarter (n=587) to the second quarter (n=634). The number of *Campylobacter* notifications was also higher in the second quarter of 2009 than in the second quarter for each of the previous five years. Over the whole of the State there was a 50% increase in *Campylobacter* notifications for the second quarter of 2009 when compared to the mean second quarter notifications from the previous five years (x=421). This increase above the mean occurred in all regions of WA with the exception of the Kimberley region. The greatest increase was in the two Metropolitan regions with increases of 63% in the North Metropolitan region and 57% in the South Metropolitan region.

The second most commonly notified enteric disease in the second quarter of 2009 was *Salmonella* infection, with 250 notifications. This was a 40% increase when compared to the mean number of second quarter notifications from the previous five years. The increase was greatest in the Metropolitan regions, with an increase of 74% in the North Metropolitan region, and 70% in

the South Metropolitan region. The increase in *Salmonella* notifications was primarily due to increased notifications for the two main serotypes, *S. Typhimurium* (25 more than average, 45% increase) and *S. Enteritidis* (12 more than average, 62% increase), and for *S. Singapore* (10 more than average, 388% increase).

Rotavirus has only been notifiable in WA since the third quarter of 2006, and the number of notifications in the second quarter of 2009 (n=108) was 20% greater than the second quarter average for the previous two years. When other enteric infections notified for this quarter were compared with the second quarter average for the previous five years, a 12% decrease in *Cryptosporidium* notifications (n=59), a 14% increase in *Shigella* (n=39), and a 24% decrease in hepatitis A (n=12) were identified.

Non-Foodborne disease outbreak Investigations

There were 34 outbreaks of disease in this quarter that appeared to be non-foodborne, 27 of which occurred in residential care facilities (RCFs) (79%), three in hospitals (9%), three in child care centres (9%) and a single outbreak on a cruise ship (3%). The causative agents for 23 (68%) of these outbreaks was confirmed as norovirus and one outbreak (3%) was caused by rotavirus. For 10 outbreaks (29%) the causative agent was unknown, either because a pathogen was not detected (n=1), specimens were not collected (n=7), or virology testing was not requested (n=2). A total of 1018 people were affected in the 34 outbreaks. The number of non-foodborne outbreaks in this quarter was approximately 140% higher than for the first quarter of 2009, when there were 14 non-food borne outbreaks affecting 262 people; and approximately 20% higher than the second quarter of 2008, when there were 28 non-foodborne outbreaks reported, affecting 669 people.

The mode of transmission and aetiology was unknown for two further outbreaks that were reported in May. The first of these was at a residential care facility (RCF). A total of 12 residents and two staff were ill with diarrhoea only, with onset of illness occurring over a 24 hour period. These residents and staff had eaten lunch at a restaurant approximately one hour prior to the onset of the first cases of diarrhoea. Two faecal specimens were negative for common viral and bacterial pathogens.

The second outbreak of unknown transmission and aetiology was among a school group that stayed at a residential recreation camp. A cohort study was conducted with responses from 66 of 105 (63%) attendees. The attack rate among respondents was 51%, with the 34 ill people reporting symptoms of vomiting, diarrhoea, fever and abdominal pain. The median duration of illness was two days, and people became ill within 24 to 48 hours of arriving at the camp. Three faecal samples were negative for pathogens. There was no significant relationship between illness and foods consumed. It was concluded that the aetiological agent was likely to be viral, as symptoms were consistent with viral gastroenteritis. It was also concluded that the cause of the outbreak

was a point source exposure at the camp site, which was more likely to be environmental than foodborne.

Foodborne/Suspected foodborne disease outbreaks

There were three suspected foodborne disease outbreaks investigated in this quarter.

***Salmonella* Typhimurium PFGE type 0003 (phage type 135)**

There were 17 cases of *Salmonella* Typhimurium (STM) pulsed field gel electrophoresis (PFGE) type 0003 cases (phage type 135) notified from April to early June. Of these cases, eight reported eating or attending the same Chinese food outlet located at a metropolitan food hall. Onset of illness ranged from the 3/4/09 to 18/05/09, with a median incubation period of 2 days. Four males and four females were affected, with a median age of 39 years. The cases ate a range of food from the food outlet including noodles, honey chicken, satay beef, chicken on a stick and omelettes. An environmental investigation found the premises to have satisfactory food preparation and hand hygiene practices. Food samples and swabs were negative for *Salmonella*. Although this outbreak was suspected to be foodborne, the mode of *Salmonella* transmission was not identified. No common exposure could be identified for the nine cases that had not eaten at the food outlet.

***Salmonella* Typhimurium PFGE type 0018 (phage type 6)**

Two cases of STM PFGE type 0018 (phage type 6) were part of an extended family party of 10 who attended a catered mother's day lunch on 10/5/09 at a European community function centre. Three other members of this party were also ill. The party of 10 included three family groups none of which shared common food in the week prior to the lunch or following the lunch. One male and four females were affected, with a median age of 43 years. The median incubation period was 2 days. Food at the luncheon was served as a buffet and included lamb, pasta, pork, chicken, salads and cakes. As there was no booking list other cases could not be identified. No further cases of this PFGE were notified in June or July. An environmental investigation found that the premise was not registered for food preparation. However, the premise was very clean and well organised, and the proprietor had satisfactory food preparation practices. Although this outbreak was suspected to be foodborne, the mode of *Salmonella* transmission was not identified.

***Salmonella* Typhimurium PFGE type 0200 (phage type 135a)**

Seven cases of STM PFGE 0200 notified between 22/5/09 and 29/06/09 were investigated and included three males and four females, with a median age of 17 years. Five cases attended a wedding reception on 3/05/2009 and two cases attended a christening on 17/05/2009 at the same function centre. The incubation period ranged from 1-7 days. An Italian buffet with similar foods was served at both functions. There were no further reports of illness. Foods eaten by cases from both functions were prosciutto (4/7), pizza (3/7), icecream

(3/7), and squid (2/7) and food garnished with parsley and snow pea sprouts. An environmental investigation found that the premises had satisfactory food storage, preparation and hand hygiene practices. Food samples including prosciutto, cheese, parsley and snow sprouts were negative for *Salmonella*. Although this outbreak was suspected to be foodborne, the mode of *Salmonella* transmission was not identified.

Cluster investigations

There were three cluster investigations conducted in this quarter.

***Salmonella* Singapore**

A *S. Singapore* cluster investigation that commenced in the first quarter of 2009 continued through this quarter. Seven cases with onset dates from 8/4/09 to 28/4/09 were investigated. There were four males and three females, with ages ranging from <1 to 74 years, median age 17 years. Five cases resided in metropolitan Perth, and two resided in rural areas. Cases were interviewed and no common exposure was identified. Isolates from these cases had three different PFGE types, indicating a common exposure was unlikely.

Hepatitis A

The seven locally acquired hepatitis A cases notified in this quarter were investigated, as this number of notifications was higher than expected. There were two males and five females, ranging in age from 3 to 50 years. One of the cases was found to have the outbreak genotype strain associated with a multi-state outbreak linked to semi-dried tomatoes. Five of the other cases were from one regional area of WA, and genetic sequencing of hepatitis A virus from three of these cases showed that they had the same genetic strain as each other. Four of the five cases reported that they had eaten frozen berries during the incubation period. Frozen raspberries were sampled from the home of one case and were negative for *E.coli* and hepatitis A virus. Traceback could not identify a common supplier for frozen berries consumed by the cases.

***Salmonella* Typhimurium PFGE Type 0039**

A cluster of four cases of STM PFGE type 0039 (not phage typed) in an extended family was investigated. The age of cases ranged from 26 to 82 years, with three males and one female. Onset dates for two of the cases were 1st and 2nd May, and onset dates for the other two cases were 5th and 6th May, indicating transmission may have been person to person.

Site activities

During the second quarter of 2009, the following activities were conducted at the WA OzFoodNet site:

- Ongoing surveillance of foodborne disease in WA.
- Investigation of six cases of *Listeria monocytogenes* infection. Two cases were a materno-foetal pair, with a baby who died at 15 weeks gestation. The mother had consumed high risk foods, including sushi. The other four cases were two males and two females, ranging in age from 58 to 91 years. One of the cases died as a result of their infection. These four cases had consumed high risk foods, including watermelon, rockmelon, ham and lettuce. Two of the cases had ulcerative colitis, one had chronic lymphocytic leukaemia and the other appeared to have no underlying health conditions, but was 91 years old. Of the six cases reported in this quarter, five had isolates with PFGE profiles that were distinct from previously recorded human and food isolates. One case had an isolate with a profile that was similar to that from a WA case that was notified in March, and this profile was similar to a number of food products that contained chicken.
- Collaborating with Department of Health Food Unit to provide educational information to Dialysis Clinics on *Listeria monocytogenes* risks.
- Ongoing monthly meetings with the Department of Health Food Unit to improve foodborne disease surveillance and investigation in WA
- Investigation of one case of STEC infection, in a 69 year old male. The case lived on a farm, and had been handling sheep during the exposure period.
- Investigation of one sporadic case of *Yersinia enterocolitica* infection in an 11 month old female. The case had exposure to pets, and had drunk from a rainwater tank.
- There were 32 cases of *S. Enteritidis* notified, of which 31 cases had travelled overseas prior to illness. One case had an on-going infection first notified in 2008, with no recent history of overseas travel prior to the first notification.
- As described above, three suspected foodborne outbreaks were investigated, all associated with restaurants.
- Investigation of 34 non-foodborne gastroenteritis outbreaks, 27 of which occurred in RCFs, three each in hospitals and childcare centres and one on a cruise ship.
- Investigation of two outbreaks of unknown transmission and aetiology, one at a RCF and one at a camp site

- An article co-authored by OzFoodNet epidemiologists was published in 'The Journal of Food Protection' in May 2009. The paper is titled 'An Outbreak of *Salmonella enterica* Serotype Litchfield Infection Linked to Consumption of Contaminated Papaya.'
- Presentation of an outbreak training exercise at a Disaster Preparedness Training Workshop, April 2009
- Presentation on 'Preventing Gastroenteritis' at Department of Mines and Petroleum, June 2009.
- One epidemiologist attended the May OzFoodNet Face-to-Face meeting and WHO Global Salm-Serv steering committee meeting in Canberra.
- Ongoing meetings with PathWest Clinical Microbiologists, Food & Environmental Laboratory Microbiologists and Environmental Health Food Unit to enhance foodborne disease surveillance, including the improvement of data sharing.
- Ongoing collaboration with Associate Professor Una Ryan at Murdoch University on the molecular typing of *Cryptosporidium* strains.
- Continued involvement in an OzFoodNet funded collaborative research project with PathWest Laboratory Medicine - a retrospective survey of Norovirus genotypes in faecal samples from 2005 to 2008.

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