FOODNET CANADA BULLETIN

MESSAGE FROM FOODNET CANADA

2014 has been a busy and exciting year for FoodNet Canada, including the launch of two new sites in Alberta and Ontario.

FoodNet Canada was excited to expand to its third sentinel site in Alberta, comprising part of the city of Calgary and the Central Zone, with data collection beginning for the human, retail, farm and water components in 2014. The addition of this third site will help FoodNet Canada account for a greater portion of the Canadian population and therefore better inform Canadian source attribution and surveillance activities.

FoodNet Canada welcomed a new Ontario site in the Middlesex-London area. The Region of Waterloo Public Health was FoodNet Canada’s Ontario (pilot) site, since 2005, and made substantial contributions to the program’s success. After several years helping to build and develop FoodNet Canada, the Region of Waterloo stepped down to provide the opportunity for another health unit to represent Ontario in this nation-wide initiative. We thank the Region of Waterloo for their support and involvement over the past nine years.

We extend a warm welcome to our new sites and look forward to working together in 2015 and beyond.

In addition to the program’s expansion, FoodNet Canada has been engaged in numerous activities throughout 2014, including the initiation of a targeted research study looking at verotoxigenic *Escherichia coli* (VTEC) prevalence in ground pork and swine and the completion of a Healthy Control survey in our British Columbia and Alberta sites. FoodNet Canada also continues to collaborate with the Canadian Program for Antimicrobial Resistance Surveillance (CIPARS), including sharing farm and retail samples and testing of antimicrobial resistance in selected bacteria from FoodNet Canada samples.

As we head into 2015, I am excited to be celebrating FoodNet Canada’s 10th year and would like to sincerely thank all of our collaborators and partners for their contributions made throughout the years to help make FoodNet Canada a continued success. We look forward to building upon these successes and collaborations throughout 2015 and beyond.

Dr. Frank Pollari, FoodNet Canada Lead
FEATURE: FOODNET CANADA LABORATORY TESTING

FoodNet Canada and the Canadian Integrated Program for Antimicrobial Resistance Surveillance (CIPARS) continue to collaborate around retail sample collection and data management to leverage investments, with great success. All water, farm and food samples tested for E. coli, Salmonella and Campylobacter are also tested for susceptibility to the standard CIPARS antimicrobial panel. Results will be reported in the upcoming year through CIPARS.

FoodNet Canada also continues to test and validate novel molecular methods to determine their usefulness in identifying and distinguishing enteric pathogens. The implementation of these methods into the FoodNet Canada surveillance platform aims to improve the timeliness of results, provide improved subtyping for source attribution and better position FoodNet Canada for the transition to whole genome sequencing technologies (WGS) and culture-independent diagnostic testing (CIDT).

FOODNET CANADA COMPONENT HIGHLIGHTS

RETAIL FOOD COMPONENT UPDATE

FoodNet Canada's retail meat and produce sampling is an integral component of enteric pathogen surveillance as it is the endpoint of the production system and the closest point of exposure to the Canadian consumer. This rich source of information on pathogen contamination provides food safety information in support of policy decision-making and priority setting at the federal, provincial/territorial and local levels.

FoodNet Canada sampling in 2014 included core commodities (i.e., ground beef and chicken breasts), focused meat products (i.e., pork chops and chicken nuggets) and produce (i.e., fresh cut fruit and soft berries), in each of the three sentinel sites. In response to the 2014 E. coli O157 outbreak linked to ground pork in Alberta, FoodNet Canada is also conducting a targeted research study to assess the prevalence of E. coli O157 and VTEC in raw ground pork.

In November 2014, weekly FoodNet Canada sampling of ground beef resulted in the identification of product containing VTEC E. coli O157:H7, initiating a recall by the Canadian Food Inspection Agency, and assisting in the prevention of any associated human infections.

In addition to core meat commodity testing, produce testing in 2015 will include fresh berries and fresh herbs. Uncooked chicken nuggets will be the focused meat commodity tested in 2015.

AGRICULTURE COMPONENT UPDATE

Farm sampling in the Region of Waterloo finished at the end of March 2014. During these first three months, 120 manure samples (FoodNet Canada's usual yearly target) from each of beef, broiler chicken, and dairy farms were collected. Sampling began for FoodNet Canada's new Ontario site in mid-2014. Swine sampling began with the creation of the site in July and broiler sampling began in August. In 2015, sampling of layer chickens and dairy farms is also planned.

Farm sampling also began in 2014 in the Alberta site. Broiler and swine farm sampling was conducted throughout the year in the new site and beef (cow-calf) sampling began in October. A special research project was also initiated in 2014 due to the large E. coli outbreak in Alberta. All swine samples collected from November 2014 to March 2015 in both Alberta and Ontario are being tested for VTEC and E. coli O157 in addition to the usual pathogens. Plans are also underway to include additional commodities such as feedlot beef in this site.

In the British Columbia site, farm sampling continued as in 2013. Broiler, layer, and turkey farms were all sampled throughout the year. In December, sampling in these industry sectors was discontinued in response to the Avian Influenza outbreak. As a result of the outbreak, sampling may be further delayed in 2015. Plans are also underway to include dairy farm sampling in 2015.
Across the sites, all manure samples were tested for *Campylobacter* and *Salmonella*, with the beef and dairy samples additionally being tested for VTEC and *E. coli* O157.

**WATER COMPONENT UPDATE**

In the British Columbia site, sample and data collection is ongoing at five sampling locations in the Sumas and Matsqui watersheds. Samples are tested for water chemistry, indicator bacteria, VTEC, *Salmonella* and *Campylobacter*.

Sampling of irrigation water was successfully implemented during the summer of 2014 at ten sites in the Alberta sentinel site area thanks to collaboration with colleagues in Agriculture and Rural Development (ARD), the Alberta Provincial Lab, and Alberta Health Services. Samples were tested for *Campylobacter, Salmonella* and VTEC, along with traditional water quality indicators.

FoodNet Canada and Middlesex-London Health Unit are developing a plan for the implementation of the water component by leveraging existing projects in the Ontario sentinel site area that focus on private well water quality.

**PUBLIC HEALTH UPDATE**

FoodNet Canada continues to build and strengthen partnerships within each of its sentinel sites. In 2014, the new Alberta and Ontario sites both initiated FoodNet Canada’s enhanced standardized case questionnaire and laboratory subtyping of pathogens.

In preparation for implementing the questionnaire in the new Alberta and Ontario sites, FoodNet Canada held a questionnaire review meeting in March 2014 to address emerging needs and to ensure consistency across the sites. An end of year questionnaire consolidation meeting was held in December 2014 with the sites to review any outstanding questions regarding the questionnaire, to make changes to the questionnaire as appropriate and to ensure standardized coding and interpretation going into the new surveillance year.

FoodNet Canada also continues to conduct research activities in collaboration with the sites. For example, a collaborative research project with the British Columbia site analyzing the “most likely source of infection” data from FoodNet Canada’s questionnaire was recently published in the journal BMC Public Health ([http://www.biomedcentral.com/1471-2458/14/1258/abstract](http://www.biomedcentral.com/1471-2458/14/1258/abstract)). This research builds upon previous work completed by FoodNet Canada (Dumoulin *et al.*, 2012) and contributes to FoodNet Canada’s ongoing work to strengthen source attribution knowledge of enteric diseases.

In addition, a Healthy Control Survey, launched in the British Columbia and Alberta sites in 2013, has concluded data collection in December 2014. The purpose of this survey is to facilitate case-control analyses for source attribution initiatives and to quantitatively assess statistically significant risk factors for enteric illness. Data from the study are currently being prepared for analyses, including a multi-pathogen case-control study focused on understanding environmental risk exposures and a *Salmonella Enteritidis* (SE) case-control study to assist in informing the risk exposures associated with an ongoing and sustained increase in SE in Canada.

**SOURCE ATTRIBUTION ACTIVITIES**

FoodNet Canada continues to be engaged in multiple analytical studies and knowledge translation activities to tell the story of what is causing enteric disease in Canada. This includes work completed on a national attribution estimate for waterborne illness (acute gastrointestinal illness). This work is currently being finalized and will be published in early 2015. In addition, FoodNet Canada, in collaboration with the Burden of Illness group within CFEZID, are in the process of publishing the third of four manuscripts that describe the results of a national expert elicitation study that was completed in early 2014 on the transmission of enteric pathogens. FoodNet Canada also continues to work with Dr. André Ravel at the University of Montreal, who is using comparative genomic fingerprinting data to attribute human infections of *Campylobacter* to possible sources. Tanya Christidis, a Research Affiliate Program (RAP) student with FoodNet Canada and a PhD student at the University of Waterloo, is also working with FoodNet Canada to publish the
results of the *Campylobacter* Comparative Exposure Assessment project that was supported with funding from the Ontario Ministry of Agriculture, Food and Rural Affairs. Two manuscripts have been submitted for publication. Stay tuned for project updates on these efforts in 2015.

**KEEPING YOU INFORMED:**

**FOODNET CANADA AND COLLABORATOR PUBLICATIONS FOR 2014**

- Butler A, Pintar K, Thomas K. “Expert elicitation as a means to attribute 28 enteric pathogens to foodborne, waterborne, animal contact and person-to-person transmission routes.” Foodborne Pathogens and Disease. Accepted Dec 2014.
We welcome data requests. If interested, please contact Frank Pollari.

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