



Spring 2018

PUBLIC HEALTH AGENCY OF CANADA: FOODNET CANADA 2017 STAKEHOLDER UPDATE

The Public Health Agency of Canada's FoodNet Canada surveillance system had another exciting year in 2017, and is continuing to work closely with key partners and stakeholders in 2018.

In 2017, in an effort to more effectively and efficiently share our information, FoodNet Canada began implementing improvements to the production and distribution of knowledge products based on key stakeholder feedback. We have been taking steps to improve the timeliness of data sharing, and to integrating data from across the various program components, placing a stronger emphasis on public health significance. For 2018, we will continue to explore additional opportunities to meet stakeholder information needs.

FoodNet Canada held a stakeholder meeting in February 2018 that brought together partners and key stakeholders to share their organization's priorities on food and water safety activities of common interest, to discuss how the surveillance work is changing, and to share and reflect on how our collective work has informed food and water safety policy in Canada. A significant point of discussion was that with changing laboratory methodologies, including whole genome sequencing and culture independent diagnostic testing, FoodNet Canada must continue to work closely with partners and explore potential future programmatic impacts.

FoodNet Canada continues to work closely with the Public Health Agency of Canada's Canadian Integrated Program for Antimicrobial Resistance Surveillance (CIPARS), including sharing farm, retail, human, and environment samples. In addition, the Public Health Agency of Canada is excited to have begun taking steps to develop a plan to expand FoodNet Canada with the implementation of a new sentinel site in Québec.

In closing, I want to take this opportunity to acknowledge and express our great appreciation for the incredible devotion and contributions of both Frank Pollari and Barbara Marshall. They have been with FoodNet Canada since its inception in 2005, and have helped to make the program an important pillar of food safety in Canada today. Both Frank and Barbara will be retiring later this Spring, and we will miss them greatly. We wish them all the very best in their future plans.

Finally, as always, we would like to sincerely thank all of our partners and stakeholders for their support and contributions. We look forward to continuing this collaboration in 2018 and beyond.

Lisa Landry
Director, Food-borne Disease and Antimicrobial Resistance Surveillance Division,
Centre for Food-borne, Environmental and Zoonotic Infectious Diseases,
Public Health Agency of Canada

DATA IN ACTION

Whole genome sequencing (WGS) was implemented in May 2017 for conducting surveillance of human *Salmonella* in Canada. Simultaneously, WGS was also introduced as a further subtyping tool of FoodNet Canada's retail and farm *Salmonella* isolates. The integration of FoodNet Canada's WGS non-human data with the national human WGS information has provided new opportunities to understand the farm to fork continuum and enabled a better understanding of the role and the burden that chicken and frozen breaded chicken products have on human salmonellosis. This information assisted in the identification of sources of infection among cases that were found to be highly related by WGS and provided the evidence required to conduct several recalls for products associated with human illness. Furthermore, the enhanced human case level information collected by FoodNet Canada is contributing to the understanding of travel infections and how these compare to the endemic cases of *Salmonella* in Canada, and is information currently used for assessing clusters of disease for further follow-up.

COMPONENT HIGHLIGHTS

HUMAN COMPONENT UPDATE:

- As part of the FoodNet Canada data quality improvement plan, a case questionnaire evaluation meeting is held every 3-5 years to review each data element collected for intent, usefulness, clarity and rationale. FoodNet Canada held a Full Questionnaire Review Meeting on October 24th and 25th, 2017.
 - Additions, deletions and other changes were made to the questionnaire based on group consensus.
 - Several questions were added about high risk food consumption (i.e. beef, seafood, unpasteurized cheese, fresh cantaloupe/honeydew/watermelon, fresh raspberries/strawberries/blueberries/blackberries, fresh mango/papaya) as well as adding food handling/preparation questions for eggs, chicken, and frozen, breaded chicken products.
- FoodNet Canada also continues to conduct various research activities in collaboration with the sites, such as the analysis of the antibiotic treatment questions collected through the FoodNet Canada questionnaire across all three sites in order to explore which case-level factors are associated with antimicrobial prescribing for enteric illnesses: *Campylobacter*, *Salmonella*, VTEC, *Shigella*, *Yersinia*, *Giardia*, *Cryptosporidium*, and *Cyclospora*.

RETAIL, AGRICULTURE AND WATER COMPONENT UPDATES (see table below):

- FoodNet Canada continues to sample core and targeted meats, with the following targeted sampling additions:
 - In 2017, veal and frozen strawberries and raspberries.
 - In 2018, pork sausage and mussels and oysters.
- For the farm component, sampling additions included:
 - In 2017, a CIPARS research project in the ON site to look at nursery piglets and sows.
 - In 2018, turkey farms in the AB site, and a CIPARS broiler breeder abattoir project in ON, AB, BC and QC.
- FoodNet Canada continues to sample irrigation water canals in British Columbia and Alberta in 2018. In September 2017, a one year well water pilot study was implemented in the Ontario sentinel site.

Year	Retail ¹	Farm ²	Water ³
2017	All Sites: Core: Ground beef, skinless chicken breast Targeted: Uncooked chicken nuggets, veal Produce: Frozen strawberries & raspberries	BC: Broiler chickens, turkey AB: Broiler chickens, swine, & feedlot beef (April-December) ON: Broiler chickens, swine, & turkeys <i>Research project:</i> Nursery piglets & sows	BC: 5 sampling locations: Sumas & Serpentine irrigation canals (bi-weekly from April-October) AB: 8 sampling locations: Western Irrigation District (in collaboration with sentinel site partners; monthly from June-September) ON: Well water pilot study: Sampling from private wells (Started September 2017)
2018 (ongoing)	All Sites: Core: Ground beef, skinless chicken breast Targeted: Uncooked breaded chicken nuggets and burgers, pork sausage Seafood: Mussels & oysters	BC: Broiler chickens, turkey AB: Broiler chickens, turkey, swine, & feedlot beef ON: Broiler chickens, swine, & turkeys	BC: 5 sampling locations: Sumas & Serpentine irrigation canals (bi-weekly from April-October) AB: 8 sampling locations: Western Irrigation District (in collaboration with sentinel site partners; monthly from May-August) ON: Well water pilot study: Sampling from private wells (Started September 2017 with an end date of September 2018)

¹ AMR testing for *Salmonella*, non-typed *E.coli*, and *Campylobacter* (in collaboration with CIPARS); AMR results to be included in CIPARS Annual Reports

² Broiler chickens, turkey, swine, and feedlot beef samples tested for *Campylobacter*, *Salmonella* and non-typed *E.coli* feedlot beef samples also tested for VTEC

³ In BC site, samples tested for water chemistry, indicator bacteria (e.g. total coliforms), VTEC, *Salmonella* and *Campylobacter*; in AB site, samples tested for *Campylobacter*, *Salmonella*, VTEC, and traditional water quality indicators; in ON site, pilot study well water samples to be tested for indicator bacteria including Bacteroidales, generic *E. coli* and total coliforms (by Public Health Ontario Laboratory)

SOURCE ATTRIBUTION ACTIVITIES

- FoodNet Canada data continue to be used to better understand what is causing enteric disease in Canada.
- Ongoing efforts also focused on work (in progress) attributing salmonellosis cases to monitored sources:
 - Describing the level of exposure to *Salmonella* in key sources (various retail meats, produce, water contact, and farm contact, etc.).
 - Comparing the pathways of transmission, identifying risk factors and using our historical database of serotype and phage type to rank importance of exposure sources.
- PHAC's burden of illness work continues to use FoodNet Canada data and is developing estimates of costs associated with foodborne illnesses and burden of foodborne illness-related chronic sequelae (e.g. Guillain-Barre syndrome, reactive arthritis, irritable bowel syndrome, etc.) in Canada.
- Stay tuned for project updates on these efforts throughout 2018.

KNOWLEDGE TRANSLATION

- The Public Health Agency of Canada continues to prioritize the dissemination and use of FoodNet Canada information to inform action in various ways (i.e. through informal communication updates, meetings, reports, publications, and presentations).
- In 2017 and into 2018, various efforts have been and are being undertaken to improve our KT approach, including to improve timeliness of data sharing, providing a more integrated overview to information shared with a greater emphasis on public health significance of findings, and better targeting information to key stakeholders, as well as continuing to explore best practices and approaches for sharing information.
- KT products released in 2017 included the FoodNet Canada 2015 Short Report and related infographic highlighting key findings from the report, as well as the 2013 Annual (Long) Report.
- The FNC 2016 Report (formerly Short Report) will be released later this year and will include a more comprehensive and integrated summary of 2016 data along with a related key findings infographic.
- In addition, the Public Health Agency of Canada continues to present on its FoodNet Canada findings at various meetings and conferences.

KEEPING YOU INFORMED: FOODNET CANADA AND COLLABORATOR PUBLICATIONS FOR 2017

- **Pollari F**, Pintar K, Christidis T, **Nesbitt A**, Farber J, Lavoie MC, Gill A, Kirsch P, Johnson R. Evidence for the benefits of food chain interventions on *E. coli* O157:H7/NN prevalence in retail ground beef and human disease incidence: a success story. Canadian Journal of Public Health. 2017 Vol.108, No.1
- Ravel A, **Hurst M**, Petrica N, David J, Mutschall SK, Pintar K, Taboada EN, **Pollari F**. Source attribution of human campylobacteriosis at the point of exposure by combining comparative exposure assessment and subtype comparison based on comparative genomic fingerprinting. PLoS One. 2017 Aug 24;12(8).
- David JM, **Pollari F**, Pintar K, **Nesbitt A**, Butler AJ, Ravel A. Do contamination of and exposure to chicken meat and water drive the temporal dynamics of Campylobacter cases? Epidemiology and Infection. 2017 Oct 12:1-13.
- Swirski AL, Pearl DL, Peregrine AS, Thomas J, Pintar K. Temporal trends in Giardia occurrence in the Grand River and surrounding tributaries, Waterloo, Ontario (2005-2013), a retrospective analysis of surveillance data. Zoonoses and Public Health. Epub: 2017 Oct 5.
- Murray R, Glass-Kaasta S, Gardhouse C, **Marshall B**, **Ciampa N**, Franklin K, **Hurst M**, Thomas MK, **Nesbitt A**. Canadian Consumer Food Safety Practices and Knowledge: Foodbook Study. Journal of Food Protection. 2017 Oct;80(10):1711-1718.
- Turgeon P, Murray R, **Nesbitt A**. Hospitalizations associated with salmonellosis among seniors in Canada, 2000-2010. Epidemiology and Infection. 2017 Jun; 145(8):1527-1534.

We welcome data requests.

If interested in requesting data, obtaining additional information about the Public Health Agency of Canada's FoodNet Canada surveillance system, or to obtain a copy of a FoodNet Canada Report, please contact:

phac.foodnet.canada.aspc@canada.ca