



C-EnterNet News

Volume 7, Summer 2009

C-EnterNet - Canada's National Integrated Enteric Pathogen Surveillance System

Editor's Note

This year, C-EnterNet transitioned from Agricultural Policy Framework funding to Food Safety Action Plan funding (Health Canada). This new funding allows continued operation at the original sentinel site and the expansion to a second site. Additionally, sampling of retail imported bagged leafy greens will commence at both sites.

The strong networks that C-EnterNet has built with various collaborators, have proven invaluable for surveillance work, and present great resources for a multidisciplinary approach to address enteric diseases in Canada and internationally. To help with this work, C-EnterNet is pleased to welcome new staff members, Connie Bernard, Kevin Smith and Yemisi Dare.

C-EnterNet continues to utilize the multiple approaches to source attribution as we work towards Canada specific estimates. A collaborative study, involving expert opinion for foodborne source attribution was conducted and analyses of these data are currently underway.

As well, C-EnterNet collaborated on the development and publication of several quantitative microbial risk assessment (QMRA) models, including *Salmonella* and retail meats, and *Cryptosporidium* and recreational/drinking water.

Taking microbial source tracking approach another step forward, C-EnterNet data, along with other Canadian data sources, was used in the Danish model for source attribution. Finally, C-EnterNet and other collaborators have looked at outbreak data from Canada and international sources and are publishing findings from these analyses.

In 2009, C-EnterNet will collect risk factor data from healthy controls in the sentinel site area in order to detect and compare exposures shared by human cases of enteric disease.

I hope that you enjoy reading about the activities highlighted in this newsletter. Feel free to contact us for further information.

Dr Frank Pollari
C-EnterNet Program Lead

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Notes from C-EnterNet Central

The annual Advisory Committee meeting was held on February 11 and 12 in Toronto, Ontario. The Committee also listened to guest speakers representing the local, provincial, federal, international and Centre for Disease Control (CDC) perspectives, and received valuable feedback on the current evaluation plan for the C-EnterNet program. The guest speakers included Yvonne Whitfield, Ontario Ministry of Health and Long Term Care; Dr. Michael Cassidy, Ontario Ministry of Agriculture Foods and Rural Affairs; Dr. Murray Fyfe, Vancouver Island Health Authority; Dr. Olga Henao, US CDC FoodNet and Dr. Shannon Majowicz, Public Health Agency of Canada.

Stacey Prieur from Program Evaluation and Performance Measurement Services, described the upcoming evaluation of C-EnterNet.

The C-EnterNet scientific team updated the committee on the many



C-EnterNet Advisory Committee February 11-12, 2009

productive activities and plans for the upcoming year.

Dr. Frank Pollari and Barb Marshall attended a scientific meeting on *Clostridium difficile* infection on March 4, hosted by the CDC in Atlanta, GA and immediately afterward, attended the annual CDC FoodNet Vision meeting, where they shared updates on C-EnterNet's ongoing activities and participated in discussions on the FoodNet Vision's program goals and priorities.

C-EnterNet's objectives lie at the forefront of new global initiatives: Frank Pollari attended the One World One Health expert consultation meeting in Winnipeg, MA from March 16-19, hosted by the Centre for Food-borne, Environmental and Zoonotic Infectious Diseases (CFEZID).



Representatives of the six international organizations of the One World One Health Strategic Framework—Photo by PHAC.

The focus of the meeting was to discuss and validate the strategic framework for reducing risks of infectious diseases at the animal-human-ecosystems interface.

C-EnterNet continues to build close partnerships with the community medical labs, regional hospital lab and the Ontario Agency for Health Protection and Promotion's Public Health Laboratories. Certificates of appreciation were presented to all participating laboratories in 2008.



Presentation of Certificate to Ontario Agency for Health Protection and Promotion: Toronto Public Health Lab

Looking ahead:

A progressive expansion plan to a second sentinel site in Western Canada is currently underway with preliminary discussions with stakeholders.

A Healthy Control Survey will be launched in the Region of Waterloo in the summer of 2009, to facilitate case-control analysis for source attribution initiatives and to use the standardized risk factor database to quantitatively assess statistically significant risk factors for enteric illness.

C-EnterNet collaboration with federal field epidemiologist Jennifer May-Hadford has lead to a report on severity of enteric disease symptoms, and with Erin Leonard (Ph.D. candidate) toward the development of new research initiatives on risk factors for community-associated infection with *Salmonella*, *Campylobacter* and *Giardia* in dogs in the region of Waterloo.

The Public Health Agency of Canada (PHAC) recently

has become a member of the Partnership for Consumer Food Safety Education (<http://www.canfightbac.org/en/>). As well, C-EnterNet supports the new post-graduate degree program (Masters of Public Health) and the Centre for Public Health and Zoonoses (CPHAZ) at the University of Guelph.

In the coming months, PHAC will

undertake an evaluation of the C-EnterNet Program. The objective of the evaluation will be to gather information on the design



Meeting with Brenda Watson, Executive Director of the Canadian Partnership for Consumer Food Safety Education

and delivery of the surveillance program as well as impacts and challenges. The information gathered through the evaluation will be critical to informing future program decision-making.

As part of the evaluation, PHAC will be surveying those who receive information generated and circulated by the C-EnterNet Surveillance team (e.g., annual reports, newsletters). The survey will be used to help gauge the usefulness of the information, as well as its impact on you and your organization. During the month of July, you may receive an e-mail inviting you to participate in this survey. We encourage you to take the time to fill-out the survey and provide your input into the evaluation. The survey will be conducted on behalf of PHAC by Government Consulting Services (GCS) of Public Works and Government Consulting Services Canada (PWGSC). The results of the survey will be confidential and only researchers at GCS will have access to the raw data. Only aggregate responses will be reported.

Please do not hesitate to contact Barb Marshall if you have any questions about the evaluation of

the C-EnterNet Program or the survey itself. If you would prefer not to receive this survey, please telephone (519 826 2357) or by e-mail (barbara_marshall@phac.aspc.gc.ca).

We look forward to obtaining your input!

C-EnterNet welcomes Connie Bernard, Kevin Smith and Yemisi Dare to the team!



Kevin Smith, Connie Bernard and Yemisi Dare

Connie joined the team in November with a degree from the University of Guelph and over 10 years of administrative experience. Connie demonstrates exceptional organizational and multitasking skills as she provides administrative support for sampling projects, coordinates all travel/hospitality arrangements, is the on-site contact for new employees and works with the team to coordinate the ROWPH workshop #8 for this spring.

Kevin Smith joined the team in January and contributes his expertise in human geography and data analysis to ensure high quality data management. Kevin's strong quantitative skills and Masters degree in human health impacts of environmental exposure align directly with his roles in maintaining the high quality of C-EnterNet data, preparing data for C-EnterNet's presentations and research publications, managing data requests from various

stakeholders, and liaising with internal and external laboratories to coordinate data reporting.

While Dr. Katarina Pintar is on leave, C-EnterNet welcomes Dr. Yemisi Dare to lead the water surveillance component, starting in April. With a Masters degree from the Institute of Parasitology, McGill University, on host-parasite population transmission dynamics and a PhD from Carleton University on host-parasite interactions in fluvial and wetland systems, Yemisi contributes strong research and precision laboratory expertise to C-EnterNet.

Notes from C-EnterNet Sentinel Site 1: The Region of Waterloo

In concert with ROWPH, C-EnterNet continues to improve upon the standardized enteric questionnaires at the sentinel site, to incorporate the needs of the



"Exploring Antimicrobial Resistant Organisms" Cathy Egan, Nancy Sittler, Scott Weese, Rita Finley, Richard Reid-Smith and Barb Marshall

many stakeholders with diverse objectives for the data collected. The structure of the questionnaires also have been tailored to better suit the interviewing style of the investigators and enhance the flow of interviews conducted. The integration of various interests and enhancements of the questionnaires have contributed to the superior quality of the information received. Stakeholders

including Yvonne Whitfield, MOHLTC, who have used the data from the questionnaires for investigating provincial outbreaks, have commended the quality of data produced and highlighted the importance of linkages between industry, academia and public health sectors.

It was another very successful winter workshop with ROWPH where participants met to discuss new approaches to antimicrobial resistance. A spring workshop (#8) is planned for June with ROWPH taking the lead. This upcoming workshop will focus on vector-borne diseases (WNV, Lyme). C-EnterNet also consulted with ROWPH in the creation of their new monthly Communicable Disease Surveillance and State of Environment reports. Planning for analysis of the public health complaint line data is under way, using the new Hedgehog platform.

Note from C-EnterNet's Retail Food Component

The retail meat sampling component continued the core surveillance activities including enumeration of positive samples with pork, chicken and beef samples collected in 2008. In January 2008 the chicken breast sampling was changed from "skin-on" product to skinless chicken breast, to reflect consumer purchasing habits.

In April 2009, the retail sampling program expanded to include the testing of retail imported bagged leafy greens. Testing is being performed by the BMH and the pathogen list will include *Campylobacter*, *Salmonella*, VTEC, generic *E. coli*, *Listeria monocytogenes*, *Shigella*, *Cryptosporidium*, *Cyclospora*, *Giardia*, Rotavirus and Norovirus



**Alyssia Sunnucks,
Leafy Green Sampling Program**

Given that leafy greens are considered ready to eat, a strategy to respond to positive findings has been developed by C-EnterNet in consultation with the Canadian Food Inspection Agency (CFIA) and Bureau of Microbial Hazards, Health Canada.

Note from C-EnterNet's Agriculture Component

In 2008, the agricultural component included surveillance of all four major animal-food groups; dairy, swine, beef and broiler chickens. Analysis of on-farm risk factors has been explored in the 4 species. Results of the swine analysis are in press; analyses for the remaining species are ongoing.

Note from C-EnterNet's Water Component

Through a new collaboration with the Ontario Ministry of Environment (OMOE), C-EnterNet continues to collect surface water samples at five locations along the Grand River Watershed on a bi-weekly basis. Samples are sent to Laboratory Services Division (University of Guelph) and other private laboratories for parasite isolation and serotyping.

Recent episodic activities conducted within the water component include developing two quantitative risk assessment models, in partnership with Aamir Fazil, senior risk analyst from the Microbial Risk Assessment Unit at the Laboratory for Foodborne Zoonoses (PHAC), to compare the role of various exposure routes (drinking and recreational water) to the risk of *Cryptosporidium* infection in the Waterloo Region. These risk assessments serve as a means of informing our source attribution initiatives.

As well, a paper summarizing a water consumption survey in the Waterloo Region has been accepted for publication in the Journal of Water and Health (see list of new publications).

Note from C-EnterNet's Source Attribution Component

C-EnterNet's work on source attribution using foodborne outbreak data made a significant step forward at the end of 2008. The paper entitled 'Analysis of foodborne outbreak data reported internationally for source attribution' by J. Greig and A. Ravel was accepted for publication by the International Journal of Food Microbiology, and should be published in early 2009. Another paper lead by André Ravel, 'Exploring Historical Canadian Foodborne Outbreak Datasets For Human Illness Attribution', was accepted for publication in April 2009.

In October and November 2008 the opinions of 66 food safety experts were gathered for attributing 9 enteric pathogens to 12 food categories. This expert elicitation project on food attribution was undertaken in

partnership with the School of Engineering, University of Guelph (Dr. Valerie Davidson), Dr. Juliana Ruzante (Joint Institute for Food Safety and Applied Nutrition, University of Maryland) and Aamir Fazil. This project seeks opinions from Canadian food safety experts according to a methodology developed and applied in the US. Data analysis is in progress and findings are expected to be disseminated during the second half of 2009.

Both the outbreak data analysis and the expert elicitation approaches allow monitoring of several diseases and thorough multiple pathways concurrently. Hence, the year 2009 will provide more comprehensive source attribution estimates to the various stakeholders and decision-makers.

Attribution methods are ongoing and progressive: C-EnterNet continues its use and development of other approaches to complement the former methods and to refine the source attribution estimates.

Looking Ahead:

C-EnterNet 2008 Short and Long Reports: *** Look for these on our website***

C-EnterNet: Knowledge Exchange and Dissemination

Recent Publications and Reports by C-EnterNet scientists:

Hexemer, A.M., Bird, T.M., Garcia, H.P., Pintar, K., Pollari, F., Zentner, S.E. "An investigation of bacteriological and chemical water quality and the barriers to private well water sampling in a Southwestern Ontario Community". *J. Water Health*. 2008;6(4):521-525.

Nesbitt, A., Majowicz, S., Finley, R., Pollari, F., Pintar, K., Marshall, B., Cook, A., Sargeant, J., Wilson, J., Ribble, C., and Knowles, K. "Food consumption patterns in the Waterloo Region, Ontario, Canada: a cross-sectional telephone survey". *BMC Public Health*. 2008;8(370).

Pintar, K.D.M., Waltner-Toews, D., Charron, D., Pollari, F., Fazil, A., McEwen, S.A., Nesbitt, A., Majowicz, S. "Water consumption habits of a Southwestern Ontario community". *J. Water and Health*. 2008. (Accepted).

Pintar, K.D.M., Pollari, F., Waltner-Toews, D., Charron, D.F., McEwen, S.A., Fazil, A., Nesbitt, A. "A modified case-control study of cryptosporidiosis (using non-Cryptosporidium infected enteric cases as controls) in a Southwestern, Ontario community". *Epidemiology and Infection*. 2009. (Accepted).

Ravel, A., Grieg, J. "Analysis of foodborne outbreak data reported internationally for source attribution". *Int J Food Micro*. 2009;130:77-87.

Ravel, A., Grieg, J., Tinga, C.,

Todd, E., Campbell, G., Cassidy, M., Marshall, B., Pollari, F. "Exploring Historical Canadian Foodborne Outbreak Datasets For Human Illness Attribution Through Food". *J. of Food Protection*. 2008. (Accepted).

Thomas, M.K., Majowicz, S.E., Pollari, F., Sockett, P.N., "Burden of Acute Gastrointestinal Illness in Canada, 1999-2007: Interim summary of NSAGI activities". *CCDR* 2008; 34(5):8-13

Conferences and Meetings Attended:

- Alberta Health and Wellness, November 2008. Edmonton, AB.
- Epi in Action. CFEP. September 2008. Ottawa, ON
- Guelph Food Safety Symposium. September 2008. Guelph, ON
- Canadian Campylobacter Conference. September 2008 Montreal, PQ
- Health Canada Science Forum. October 2008. Montreal, PQ
- Knowledge Management in Public Health. November 2008. Hamilton, ON.
- Ontario Food Protection Association Annual Meeting. November 2008. Mississauga, ON.
- NSERC Water Meeting. University of Waterloo. December 2008. Waterloo, ON.
- A New Approach to Resistance "Exploring Antimicrobial Resistant Organisms" Workshop # 7 December 3, 2008, Waterloo.
- C-EnterNet National Advisory Committee Meeting. February 2009. Toronto, ON.



C-EnterNet team-building and volunteer activity with Green Legacy

- One World One Health
Winnipeg, March 2009.
Winnipeg, MA.

Presentations and Posters:

- CIPHI Ontario Conference
September 2008. Mississauga,
Ontario
- CIPHI National conference.
July, 2008. St. John's, NFLD

- National Drinking Water
Conference. October 4, 2008.
Quebec City, Quebec.
- American Association of
Swine Veterinarians (AASV)
Annual Meeting. March 7,
2009. Dallas, Texas.
- CDC FoodNet Vision Meeting,
March, 2009. Atlanta, GA..

For further details on C-EnterNet, please contact:

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