



C-EnterNet News

Volume 5, Winter 2008

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

Editor's Note

The last few months have been very busy for the C-EnterNet team. As we integrated the more detailed microbiological data with the epidemiological data of 2006, we were able to show the strength of our approach. The 2006 Annual report, http://www.phac-aspc.gc.ca/publicat/2007/c-enternet06/areport06_e.html released in November, highlights these findings. We are also receiving more requests from decision makers and disease modellers for this Canada-specific information.

We had a very productive C-EnterNet advisory committee meeting in November and received solid recommendations for priorities as we move ahead in 2008.

We are currently developing the 2007 Annual Report, in which we hope to show the true value of our program.

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

In this issue:

- Editor's Note
- C-EnterNet Central
- Sentinel Site 1
- Retail Food & Agriculture
- Water
- Source Attribution
- Knowledge Exchange

Notes from C-EnterNet Central

C-EnterNet is uniquely situated within two centres in the Public Health Agency of Canada: the Laboratory for Foodborne Zoonoses (LFZ), led by **Dr. Mohamed Karmali**, and the new Centre for Foodborne, Environmental and Zoonotic Infectious Diseases (CFEZID), led by **Dr. Mark Raizenne**. The new CFZID was formerly known as the Foodborne, Waterborne, Zoonotic Infections Division, but in December of 2007 officially became a Centre, led by new Director General, Dr. Raizenne. C-EnterNet is fortunate to be a part of both organisations and looks forward to continued success within the Public Health Agency of Canada as a model of intersectoral and interjurisdictional collaboration on complex issues.



PHAC's C-EnterNet and Population Studies group -planning together for 2008.

Back Row L: Andrea Nesbitt, Shannon Majowicz, Frank Pollari, Katarina Pintar, Nancy Sittler, Barb Marshall & Susanna Ogunnaike-Cooke.

Front Row L: Kate Thomas, Andre Ravel & Angela Cook.
(Missing-Rosa Kliese - photographer)

In early October, C-EnterNet was pleased to host **Carlota Medus**, PhD, MPH, an epidemiologist with Minnesota Department of Health (MDH) and CDC FoodNet. Carlota provided an informative and inspiring lecture, "Foodborne Disease Surveillance and Outbreak Investigations, the Minnesota Experience", to Public Health Agency of Canada staff in Guelph, Ontario. Dr. Medus was also the keynote speaker at the 5th Training workshop held with the Region of Waterloo Public Health.

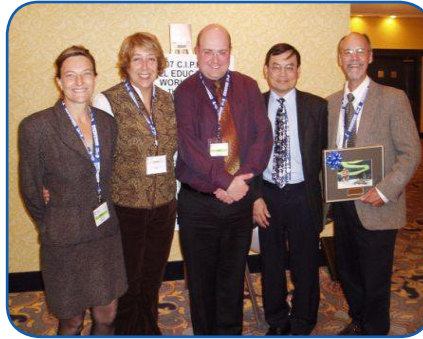


Welcoming Carlota to Canada:

Katy Pintar, Carlota Medus, André Ravel and Victoria Edge.

In October, Dr. Frank Pollari and Barb Marshall were invited to speak at the Canadian Institute of Public Health Inspectors - Alberta Branch educational conference in Edmonton, Alberta. While there, they spoke with **Greg Orris**, Alberta Food Safety Strategy, **John Berezowski**, Alberta Veterinary Surveillance Network, **Kim Whitehead** from Alberta Agriculture, Food and Rural Development and **Ron de Burger**, Director, City of Toronto Public Health and President, Canadian Public Health Association. Frank and Barb also met with **Nelson Fok**, **Lance Hornish** and **Ingrid Zazulak**, from Capital Health regarding Edmonton's unique syndromic surveillance system. Dr. Pollari noted that Ingrid, the sole investigator for the follow-up of all reported cases of enteric

illness for the Capital Health region, who has been doing this job for over 18 years, is a true expert and an invaluable resource for enteric disease surveillance! C-EnterNet is grateful for the opportunity to connect with this enthusiastic group and look forward to learning more from them in the future.



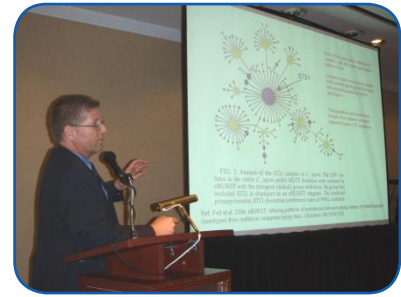
Alberta CIPHI Conference:

Ingrid Zazulak, Barb Marshall, Lance Hornish, Nelson Fok and Frank Pollari

Ottawa was the site for C-EnterNet's annual Advisory Committee meeting, held on November 8. Committee members, representing different areas of expertise in Canadian agri-food, water and public health issues gathered to guide C-EnterNet as it tackles the complex goal of source attribution. They also provided recommendations for prioritizing the potential future expansion of C-EnterNet activities. Guests **Tracy Ayers** and **Hannah Gould**, from CDC Atlanta, also participated in the day.



C-EnterNet Advisory Committee, Ottawa



Dr. Cliff Clark presenting C-EnterNet Campylobacter results at the Advisory meeting



Advisory Committee Small Groups:

L: Mike Cassidy, Frank Pollari, Diane Medeiros, Katy Pintar, Matthew Gilmour, Jamie Hockin, Hannah Gould & Pierre Payment (standing).

Advisory Committee members, who attended the meeting, received advance copies of the C-EnterNet 2006 Annual Report, which was officially released on the C-EnterNet website on November 21. The 2006 report highlights the integrated microbiological and epidemiological data, providing new insights into the importance of travel and enteric disease, especially for some subtypes, as well as the likely sources of exposure for some of the endemic cases.

C-EnterNet teamed up with the Health Risk Modelling group members - **Anna Lammerding**, **Aamir Fazil**, and **Ainsley Otten** from PHAC's Microbial Food Safety Risk Assessment Unit, Laboratory for Foodborne Zoonoses, to begin to develop a risk assessment model for salmonellosis based on Canada-specific information.



C-EnterNet meets with LFZ's Health Risk Modelling experts.

L: Angie Cook, Katy Pintar, Frank Pollari, Barb Marshall, Andrea Nesbitt, Ainsley Otten & Aamir Fazil. (André Ravel on telephone from St. Hyacinthe)

The risk assessment model will include C-EnterNet data collected from 2005 through 2006 on *Salmonella* contamination rates and levels on retail meat as well as the number of reported endemic cases of salmonellosis in the Waterloo Region, while also incorporating consumption and food safety practice results from the Food Consumption Study conducted in the Region. Information from this collaborative research initiative will assist C-EnterNet in estimating the risk of salmonellosis from each of the retail food sources separately and as a total for the Region of Waterloo.

In December, Barb Marshall and Andrea Nesbitt were invited, along with **Sandy Isaacs** and **Kathryn Doré** (PHAC), to a meeting, *Food Safety and Immigration: Integrating our Understanding of Food Safety Across Cultures*, held at Ryerson Univer-

sity. **Daniela Seskar-Hencic**, with Region of Waterloo Public Health's Health Determinants Planning & Evaluation, attended and was instrumental in helping to frame the research priorities, along with Ryerson professor, **Dr. Mustafa Koc** and other academic, government and community agency stakeholders. The focus of the meeting was to develop a work plan for a research program on food safety concerns and issues dealing with the immigrant community. C-EnterNet is interested in working with representatives from community groups and agencies that serve immigrants to gain a better understanding of food safety knowledge and practices among new immigrant communities that may increase the risk of foodborne infections. **Ozlem Guclu-Ustundag**, PhD, Ryerson research associate is co-ordinating the work.

Dr. Jan Sargeant, the new Director of the Centre for Public Health and Zoonoses, University of Guelph spoke at a Lunch and Learn session at CFEZID-Guelph, and then met with C-EnterNet to explore potential collaborative research projects linked to public health and agri-food policy.

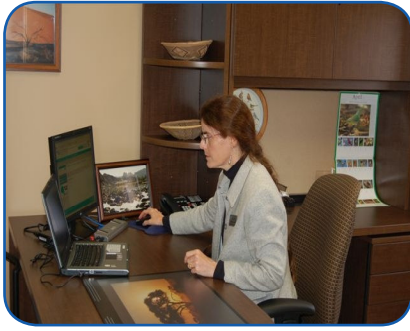
In November, Frank Pollari and Barb Marshall met with **Dr. Dean Middleton** and staff from the Enteric and Zoonotic Diseases Unit, Ontario Ministry of Health and Long Term Care to provide an update and highlight

the usefulness of the C-EnterNet integrated results and sub-typing information. Frank and Barb also met with **Peter Boleschuk**, (Manager Enteric, Environmental, Molecular Surveillance and S.T.I.) at the Ontario Ministry of Health and Long Term Care's Central Public Health Laboratory (CPHL), to update on the C-EnterNet program. Peter is C-EnterNet's contact, while Anne Maki is on leave.

C-EnterNet and PHAC are excited to collaborate with lead researcher, **Dr. Scott Weese**, University of Guelph, **Dr. Martha Fulford**, Infectious Disease Consultant and **Cathy Egan**, Coordinator, Waterloo Wellington Infection Control Network <http://www.ricn.on.ca/waterloowellingtonhomec46.php> along with area physicians and others in a research project that hopes to learn more about community associated *C. difficile*.



Dr. Scott Weese
Centre for Public Health and Zoonoses,
OVC, U of G
*Photo credit of University of Guelph's
2007 President's Report
<http://www.uoguelph.ca/president/report/catalyst.shtml>



Dr. Martha Fulford, Medical Coordinator, Waterloo Wellington Infection Control Network
 *Photo credit of WWICN Network News May/June 2007
<http://ricn.on.ca/photos/custom/WWICNfiles/WWICNnews07MayJun.pdf>

Susanna Ogunnaike-Cooke, who joined the Populations Studies section during **Shannon Majowicz's** maternity leave, is working on the further development of a community etiology study of acute gastrointestinal illness. Susanna's background includes work in microbiology and immunology, national surveillance in Jamaica, and as an epidemiologist with HIV and AIDS surveillance at the Caribbean Epidemiology Center in Trinidad.

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

The Region of Waterloo Public Health (ROWPH) welcomed **Carlota Medus**, Minnesota CDC FoodNet to speak at the 5th training workshop for public health inspectors and staff. The workshop, *Enhancing Investigation Skills*, focused on strengthening investigative skills for following up reported cases of enteric communicable diseases. The Region's **Dr. Hsiu-Li Wang** welcomed participants, and recognized PHAC and the Region of Waterloo for their leadership in providing a high calibre of training. Speakers included **Brenda Miller** and **Nancy Sit-**

ter, Region of Waterloo, on *Communicable Disease Data Collection: Past & Present*; Sgt. David Obermeyer, Waterloo Regional Police Department on *Investigation Experiences*; and Andrea Nesbitt on *Strengthening Our Information - the importance of complete data*. **Barbara Lewis**, from First Nations and Inuit Health Branch, was a special guest and participated in the day. The next training workshop will be held in the Spring 2008 and will focus on emerging knowledge on enteric pathogens, with accompanying fact sheets that will be developed for the ROWPH staff. This workshop concept was developed based on recommendations from the 5th training workshop.



Region of Waterloo Workshop #5:
 Carlota Medus, André Ravel, Peter Heywood, Kathryn Mulrooney Marla Rocca, and Vittoria Vecchiarelli



Post Workshop.
 L: Angie, Katy, André, Barb Lewis (FNIB), Frank, Carlota (MDP), Barb & Andrea.

Region of Waterloo Public Health released a 10 year retrospective communicable disease report, *Waterloo Region Communicable Disease Status Report 1995-2004*, which was presented to Regional Council in December, and was well received. [http://www.region.waterloo.on.ca/web/region.nsf/8ef02c0fdd0c82a85256e590071a3ce/A168667C26CE9EA0852573A300503D14/\\$file/APDXB-PH-07-060.pdf?openelement](http://www.region.waterloo.on.ca/web/region.nsf/8ef02c0fdd0c82a85256e590071a3ce/A168667C26CE9EA0852573A300503D14/$file/APDXB-PH-07-060.pdf?openelement) ROWPH acknowledges the assistance provided by the C-EnterNet team for their expertise and input into the enteric disease sections of the report. C-EnterNet has been invited to present travel-related data to ROWPH travel clinic staff - public health nurses, registered nurses and community partners, in January 2008. **Popy Dimoulas-Graham** (a graduate of Population Medicine at OVC, University of Guelph) joined the epi team at ROWPH and is C-EnterNet's epidemiology support at the sentinel site. ROWPH epidemiology staff plan to produce a monthly surveillance report in 2008 using, in part, the data collected for C-EnterNet.

Note from C-EnterNet's Retail Food and Agriculture Component

David Quaile, C-EnterNet's retail sampler since the surveillance program began in mid-2005 is moving on to other opportunities. Dave was instrumental in the development of C-EnterNet's systematic program for the collection of retail samples and C-EnterNet wishes him all the best in his future work. **Melanie Quist Moyer**, a M.Sc. graduate from the Department of Population Medicine at the Ontario Veterinary College, has assumed the retail sampling role on the team.

In December, C-EnterNet will conclude a year long study comparing the types and levels of pathogen found on raw skin-on chicken breast and raw skinless chicken breast. This study was conducted to inform C-EnterNet's core sampling program. Results of this study will be made available in the 2007 report.

C-EnterNet, in partnership with **Manon Fleury**, who works on environmental issues, climate change and health in the Centre for Foodborne, Environmental and Zoonotic Infectious Diseases (CFEZID), has begun to explore ways to combine C-EnterNet's surveillance data with climate data. As a first step, we are looking at the relationship of mean monthly temperature and rainfall with human *Campylobacter* cases and the level of *Campylobacter* on chicken breasts in our sentinel site.



Angela Cook presenting agri-food results at Advisory Committee meeting, Ottawa

Note from C-EnterNet's Water Component

During the fall of 2007, the water component of the program continued to deliver important information on exposure sources within the Region of Waterloo. Katarina Pintar returned from her maternity leave at the end of September and she has been busy working with Andrea Nesbitt to manage and coordinate the activities related to the

source water sampling and analysis, as well as data integration for future analyses. Some key activities that should be mentioned include:

- Analyses of the drinking water consumption survey questions (that were included on the larger food consumption survey of 2006) are completed and a draft manuscript is in the works. This study evaluated water consumption practices among residents in the Region of Waterloo, particularly evaluating how much plain tap water is consumed, how much bottled water is consumed, and whether home treatment systems are being used.
- The private well water study that was performed in collaboration with the Region of Waterloo Public Health has been published in the *Journal of Water and Health*. This study evaluated why residents in the Region of Waterloo chose to participate or not in an intensive private well water sampling initiative that C-EnterNet launched with Region staff, with a goal of better understanding the barriers that currently exist for residents with regards to the frequency of private well water testing for both bacteria and nitrates.

- Our partners at the University of Waterloo NSERC Chair in Drinking Water are leading an interesting study to determine the contribution that wild birds have on the types of *Campylobacter* spp and *Salmonella* spp detected in the Grand River. Bird stool

samples are being collected at the five water sampling locations along the river for *Campylobacter* and *Salmonella* identification. These isolates (along with those found in the river, on farms and in retail food) are then being sent to our partners at the National Microbiology Laboratory in Winnipeg for additional molecular subtyping, based on the typing methods that Dr. Cliff Clark is comparing for applications in cluster identification.



Water Testing at Ontario Ministry's CPHL. Peter Boleschuk, and technologist Kam Yin Lee.



Katy Pintar presents QMRA of cryptosporidiosis

Note from C-EnterNet's Source Attribution Component

Dr. Ravel has been focusing on the final analysis of Canadian foodborne outbreak data and reports of foodborne outbreaks that occurred worldwide. The next task will be to apply the Monte Carlo Marko Chain Bayesian model developed in Denmark (Hald et al., 2005) to historical Canadian data in order to derive comprehensive results for human salmonellosis attribution.

In mid October, C-EnterNet attended a Canadian Food Inspection Agency (CFIA) & PHAC meeting, Canadian Meat Hygiene Standard: Development of Regulatory Impact Assessment Statement to Support Regulatory Amendment. This is a FPT initiative to develop a unique Canadian Meat and Poultry Hygiene Standard for Canada, including non federally-registered establishments. To effect policy change in the federal legislation on meat and poultry hygiene, the CFIA must provide Treasury Board with a Regulatory Impact Assessment Statement that will explain:

- what the proposed changes are,
- their rationale and
- the operational plan for their implementation, including costs.

To achieve these three things, the CFIA needs attribution values related to the targeted commodities in their justification. C-EnterNet will aim to provide some of this information in the coming year. In addition, this initiative seeks to advocate for standards for contamination levels of meat and

poultry by human pathogens. Accordingly, the CFIA needs a base line study before the implementation of the new Canada Meat Hygiene Standard, as well as continuous surveillance following its implementation to monitor its effectiveness. Surveillance is particularly useful for assessing whether the new policy is able reduce meat and poultry contamination rates and the burden of diseases attributable to these commodities. It is hoped that C-EnterNet will directly help in this matter.

C-EnterNet: Knowledge Exchange and Dissemination

Recent C-EnterNet publications and reports:

- Government of Canada. C-EnterNet Annual Report 2006 National Integrated Enteric Pathogen Surveillance Program. Guelph, ON: Public Health Agency of Canada, 2007.
- P. Heywood, K. Burrows, J. Cutler, C. Komorowski, B. Marshall and H.L.Wang. A Community Outbreak of Travel-Acquired Hepatitis A Transmitted By An Infected Food Handler. CCDC November 2007. Volume 33. Number 12.
- C-EnterNet Sampling Standard Operating Procedures. <http://www.phac-aspc.gc.ca/c-enternet/index.html>

Conferences and Meetings Attended:

- CIPARS Poultry Meeting. Ottawa. October 19.
- C-EnterNet National Advisory Committee Meeting. Ottawa. November 8
- Ontario Ministry of Health and Long Term Care, Enteric and Zoonotic Diseases Unit Infectious Diseases Branch, Toronto. November 14.
- CFIA St Hyacinthe, Quebec. Nov.14.
- Canadian Water Network and Ontario Centres of Excellence. National Research Consortium. Toronto. Nov. 28
- Ontario Ministry of Health and Long Term Care, Central Public Health Laboratory. November 29.
- *C. difficile* meeting. Waterloo-Wellington Regional Infection Control Network. Cambridge. Dec.10

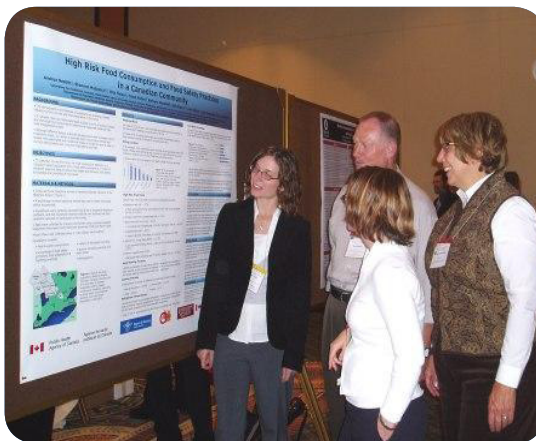
Presentations and Posters:

- Guelph Food Safety Symposium. Guelph. Sept 13.
- Canadian Public Health Association Conference. Ottawa. Sept 17 (poster & presentation)
- Canadian Animal Health Coalition. Guelph. Oct. 2
- Canadian Institute of Public Health Inspectors - Alberta Branch. Edmonton. Oct. 4

- Region of Waterloo Training Workshop. Oct. 16.
- Federal Food Safety and Nutrition Meeting. Winnipeg. Oct. 18 -19.
- Algoma Regional Infection Control. Sault Ste Marie. November 1

Looking Ahead

- 2007 Annual Report



2006 CPHA Conference: admiring Andrea's Food Consumption poster.
A. Nesbitt, Ron de Burger, (President CPHA), B. Marshall and Lea Barrang-Ford (McGill University)

For further details on C-EnterNet, please contact:

Anglophone spokesperson

Dr. Frank Pollari,
Project Lead
C-EnterNet Surveillance
Centre for Foodborne,
Environmental and Zoonotic
Infectious Diseases (CFEZID)
Public Health Agency of Canada
(519) 826-2184
Fax: (519) 826-2244
frank_pollari@phac-aspc.gc.ca

<http://www.phac-aspc.gc.ca/c-enternet/index.html>

Porte-parole francophone

Dr. André Ravel,
Projet de surveillance
Laboratoire de lutte contre les
zoonoses d'origine alimentaire
Agence de la santé publique du Canada
Tel: +1 (450) 773-8521
(poste / ext. 0144)
Fax: +1 (450) 778-8129
andre_ravel@phac-aspc.gc.ca

http://www.phac-aspc.gc.ca/c-enternet/index_f.html