

IN THIS ISSUE

Escherichia coli O157:H7
outbreak at a summer hockey
camp, Sudbury, 2004
pg. 139

Food Handler Course Evaluation:
Perspectives on Adult Learning
pg. 143

Statistics pg. 148-157

AIDS pg. 148-153

Summary of Reportable Diseases
Second Quarter 2004 pg. 154-155
August 2004 pg. 156-157

PHERO is published by the:
Public Health Division
Ministry of Health and Long-Term Care
8th Floor, 5700 Yonge Street,
Toronto, Ontario, M2M 4K5

email: phero@moh.gov.on.ca

Editorial Board: K. Barker, H. Brown, E. Chan,
G. Kettel, K. Kurji, R. Jin
Editor: M. Whelan

The contribution of scientific articles by the staff of local Boards of Health is invited. Please address all inquiries and submissions to the Editor. Submission of articles to PHERO does not preclude publication elsewhere. The material in this publication does not necessarily reflect the policies of the Ministry of Health and Long-Term Care. It can be reprinted, provided the source is credited.

***Escherichia coli* O157:H7 outbreak at a summer hockey camp, Sudbury, 2004**

Canada Communicable Disease Report Volume 30-22
15 November, 2004 with permission from the publisher. All rights reserved

Introduction

At 17:55h on 19 July 2004, a local paediatrician notified the Sudbury and District Health Unit of a case of bloody diarrhea being assessed in the local hospital's emergency department. The paediatrician also informed the health unit that the case was a camper and that she had heard of similar cases having been assessed over the preceding 24 hours.

Investigation by the health unit revealed that the outbreak began during the 12-16 July session at a rural summer hockey camp. This report summarizes the findings from the investigation, which confirmed that *E. coli* O157:H7 was the causative organism and that hamburger, purchased at a local retailer on 11 July and served undercooked at the camp on 16 July was the likely source of the outbreak. In total, 34 cases were investigated. The outbreak involved 27 camp-acquired cases and three cases due to secondary (family-like setting) transmission. These three secondary cases are not included in the camp outbreak analyses. Four additional non-camp-related community cases were discovered following a voluntary recall by the meat retailer.

Outbreak Cases

To determine the source and extent of the outbreak, a standardized questionnaire was administered in person, by e-mail, fax, or telephone to all campers (aged 6-13) and junior counsellors (aged 12-15) (collectively referred to as campers), to camp staff and operators (collectively referred to as staff), and to visitors. Follow-up interviews were conducted as re-

Mailing Label Goes Here

quired. The camp continued to operate until 24 July when it voluntarily ceased operation on the recommendation of the health unit. The sessions of 12-16 July (cohort 1) and 18-24 July (cohort 2) were investigated.

Campers were exclusive to either cohort 1 or 2. Most staff members worked during both weeks and were, therefore, included in both cohort 1 and 2. If a staff developed case-defining symptoms prior to or within 48 hours of the start of the second session (i.e. shorter than one minimum incubation period; before 21 July), they were only included in cohort 1 analysis. If a staff developed case-defining symptoms more than 8 days after the end of the first session (i.e. more than one maximum incubation period; after 24 July), they were included as a non-case for cohort 1 and as a case for cohort 2.⁽¹⁾ If the onset was between 21 July and 24 July inclusive, staff cases were included as cases for both cohort 1 and 2 analyses.

Cases were categorized as suspect, probable or confirmed. Cases were defined as a camper or staff who attended the camp on or after 12 July and who had an onset of a specific clinical history or with positive laboratory results for *E. coli* O157:H7 on or after 16 July. The case definition is outlined in [Table 1](#). All three categories of cases were included in the analysis.

All of the 123 campers, staff and visitors were contacted (56 from cohort 1 and 80 from cohort 2; 13 staff were in both cohorts). A total of 27 cases was identified of which four were suspect, 12 were probable, and 11 were confirmed. Of these cases, one was included in both cohort 1 and 2 analyses. There were 22 cases in cohort 1 and six cases in cohort 2. Overall rates for illness among campers in cohort 1 and 2 were 44% (15 of 34) and 11% (4 of 35) respectively, and among staff were 37% (7 of 19) and 15% (2 of 13). Of the 35 visitors to the camp, none became ill. The median age of cases was 12 (range 8 to 36). Onset dates ranged from 16 July through to 26 July. ([Figure 1](#)). The median duration of illness was 3.5 days (range 1 to 11). Fifteen cases (56%) had bloody diarrhea and nine (33%) were hospitalized. There was one report of hemolytic uremic syndrome (HUS) among the 27 camp-related cases.

Three additional cases related to secondary transmission within family-like settings were reported. Of these cases, one developed HUS.

Of the 19 camp cases for which clinical specimens were submitted, 12 had confirmation of *E. coli* O157:H7 (including three from cohort 2).

Site and Epidemiologic Investigation

Consumption of reportedly undercooked hamburger served

Table 1. Case definitions of the Escherichia coli O157:H7 outbreak, Sudbury, 2004

| Case type | Clinical symptoms* | Exposure † | Lab <i>E. coli</i> O157 |
|-----------|--------------------|------------|-------------------------|
| Suspect | x (a) | x | - |
| Probable | x (b) | x | - |
| Confirmed | - | x | x |

Details: All cases must have onset date 12 July or later.

* Clinical symptoms:

(a) Any of the following symptoms: abdominal cramps, diarrhea, nausea, vomiting, headache, muscle aches, fatigue, and fever.

(b) Requires: bloody diarrhea OR abdominal cramps AND at least one of fever, nausea, non-bloody diarrhea or vomiting.

† Exposure includes the following:
Attendance (including visitors) at the camp on or after 12 July (“outbreak case”);

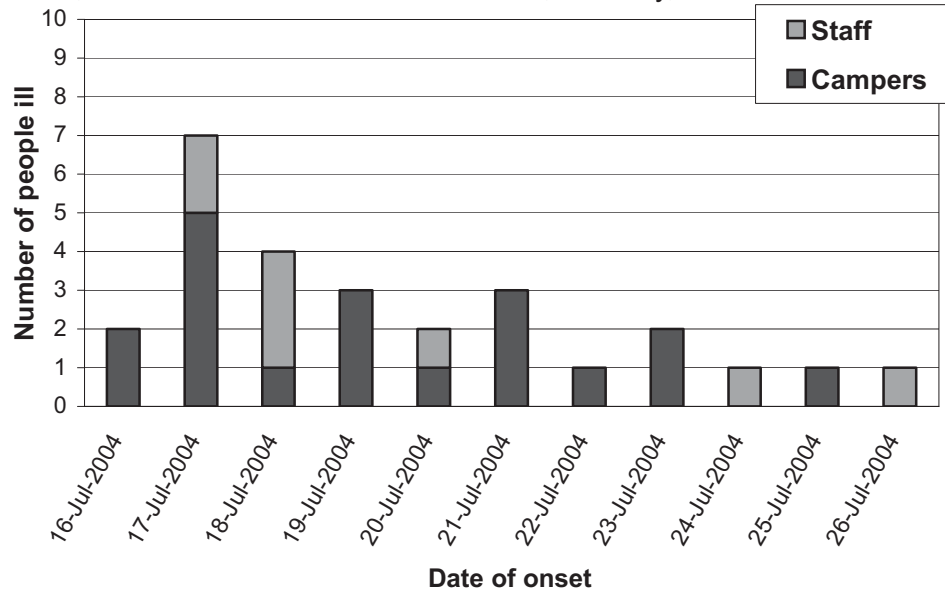
OR

Consumed ground beef purchased from retailer with specified brand name and pack date of 11 July (“community case”);

OR

Epidemiologic link to confirmed or probable case.

Figure 1. Epidemic curve for hockey camp, campers and staff, cohorts 1 and 2, *Escherichia coli* O157:H7 outbreak, Sudbury, 2004



at noon on 16 July was associated with substantially increased risk for illness for cohort 1 cases (attack rate: 57% [17 of 30] vs 20% [4 of 20]; relative risk: 2.83, 95% confidence interval 1.12 to 7.19). Hamburger consumption was unknown for one case and two non-cases.

The camp purchased the suspect ground beef from a local retailer on 11 July. Ground beef from the same lot was served as "sloppy joes" and beef fajitas during lunch and dinner on 14 July. Of the four cases that did not consume hamburger on 16 July, three consumed both "sloppy joes" and beef fajitas and one consumed only "sloppy joes". For the one case with unknown hamburger consumption, both beef fajitas and "sloppy joes" were consumed.

Increased risk for illness was not associated with consumption of other foods or beverages at the camp. Although a significant relative risk was associated with the consumption of water from the cabin taps (RR 2.56; [1.75, 3.76]), all five cases also ate hamburgers at the 16 July noon meal. The drinking water supply was not identified as a possible source of infection. Investigations revealed no other environmental sources or explanations for *E. coli* O157:H7 exposure.

With an assumed exposure date of noon on 16 July, the first two cases had incubation periods of only 6 and 7 hours respectively. Both cases were laboratory confirmed. Investigation did not yield any explanation for these short incubation periods. Both cases ate the hamburger on 16 July. One case also ate the two ground beef meals on 14 July. The other case also ate "sloppy joes" on 14 July. The median incubation period was 2.2 days (range 6 hours to 8 days; mean 2.6 days).

Cohort 2 cases are presumed to be the result of person-to-person transmission. Upon investigation, all reported some potential contact with a symptomatic cohort 1 case.

Ground Beef and Community Cases

No ground beef specimens from the meal consumed on 16 July were available at the camp for testing. However, the source of the meat was verified as packaged and sold from a local retailer on 11 July. The retailer participated in a voluntary recall that yielded four symptomatic individuals ("community cases") from whom three repackaged ground beef samples were obtained. In addition, four more meat samples from asymptomatic individuals were also returned for testing. All seven meat samples tested positive for *E. coli* O157:H7.

Samples of raw ground beef purchased on 16 July and used to prepare hamburgers at the camp for consumption on 18 July remained at the camp. Samples of this beef were seized from the camp freezer on 22 July. Unopened packages of this meat tested negative. Raw hamburgers prepared at the camp tested positive for *E. coli* O157:H7. Although all food handlers were asymptomatic and tested negative, other symptomatic camp staff were on-site and reported some involvement in meal preparation and/or cleanup. It is assumed that symptomatic camp staff were the source of these contaminated hamburgers.

Laboratory Results

Serotyping on all *E. coli* O157:H7 was conducted at the Central Public Health Laboratory, Toronto and the National Microbiology Laboratory, Winnipeg, and a summary of the results is presented in [Table 2](#).

Discussion

An outbreak of *E. coli* O157:H7 associated with the consumption of undercooked contaminated hamburgers occurred at a rural summer hockey camp. Of the 34 cases investigated, a total of 30 cases were directly or indirectly related to the outbreak. Investigation results support the conclusions that of the 30 cases, 21 were related to hamburger consumption, six to camp person-to-person transmission and three to secondary transmission.

None of the suspect ground beef was available at the camp for sampling. However, a voluntary community-wide recall on 11 July of suspect ground beef resulted in seven suspect beef returns, all of which were positive for *E. coli* O157:H7. The recall also yielded four clinical cases of *E. coli* O157:H7 infection of which one was laboratory confirmed. All laboratory-confirmed cases and meat samples had the same or closely related genetic typing.

Prompt action on the part of the health unit may have resulted in the prevention of further spread of *E. coli* O157:H7 infection both because contaminated meat was returned and because of the high profile of the outbreak in the community. The health unit ensured that all media messages included instructions on safe food handling practices.

Conclusions

The fact that the *E. coli* O157:H7 serotype of the ground beef samples from the community recall was identical or genetically closely related to that of the outbreak case

stool samples supports a common source of infection. Specifically, the investigation supports the following conclusions:

1. Ground beef packaged and sold by one local retailer on 11 July was contaminated with *E. coli* O157:H7 prior to handling at the local hockey camp; and
2. Consumption of undercooked ground beef from the 11 July lot is the likely source of the camp-related outbreak and at least one community case of *E. coli* O157:H7 infection.

Acknowledgements

The authors thank the following for their assistance: Dean Middleton, Public Health Division; and the staff of the Central Public Health Laboratory, Ontario Ministry of Health and Long-Term Care.

Reference

1. Chin J., (ed.) *Control of communicable diseases manual*. 17th ed. Washington, DC: American Public Health Association, 2000.

Source

P Sutcliffe, MD, MHSc; L Picard, RN, MSc; B Fortin, BA, CPHI (C); D Malaviarachchi, BSc, MSc; J Hohenadel, MSc; and B O'Donnell, CPHI (C); Sudbury & District Health Unit, Ontario.

Table 2. Summary table of laboratory results from samples from the Escherichia coli O157:H7 outbreak, Sudbury, 2004

| Sample | O157:H7 | VT** | PFGE†‡ | | Phage | Comments |
|--|---------|------|--|--|-------|--|
| | | | xba1 (#) | Bin 1 (#) | | |
| 12 outbreak cases* | Y | Y | A1.1043 (8) A1.1044 (1) A1.1045 (1) A1.1077 (1) | ECBNI.0175 (8) ECBNI.0175 (1) ECBNI.0175 (1) ECBNI.0175 (1) | 14a | Includes 3 cohort 2 cases |
| 1 community case | Y | Y | A1.1043 (1) | ECBNI.0175 (1) | 14a | Reported eating raw beef |
| 7 community ground beef samples from the 11 July obtained through voluntary recall | Y | Y | A1.1043 (7) | ECBNI.0175 (7) | 14a | 1 sample associated with positive community case |
| 8 patties prepared from ground beef purchased on 16 July | Y | Y | A1.1043 (8) | ECBNI.0175 (8) | 14a | Unopened ground beef negative |

* Does not include the 3 secondary cases

** Verotoxin producing

† Pulsed Field Gel Electrophoresis (PFGE) patterns A1.1044, A1.1045 and A1.1077 are closely related to A1.1043

‡ One case result outstanding

Food Handler Course Evaluation: Perspectives on Adult Learning

Introduction

Food and waterborne infections account for a significant number of illnesses among Canadians. A review by Lacroix and Lee, (2002) note that “there are about 10,000 cases of food borne illness reported annually in Canada, and an estimated 2 million cases each year; about 30 of these result in death”.¹

The goal of food handler training is to educate food premises personnel who prepare, cook, and serve food, to follow safe food preparation practices in order to prevent the possibility of a food borne illness outbreak. It can be argued that an effective food handler certification program, delivered by trained health unit personnel, may assist in meeting this goal. In order to reduce the incidence of food borne illness, the Ontario Ministry of Health and Long-Term Care mandates local health units to promote education strategies that include formal food handler-training sessions. This training is required for food preparation personnel working in high and medium risk food premises.

The Sudbury & District Health Unit (SDHU) Food Handler Certification (FHC) course has been delivered for a decade by the Public Health Inspection staff of the SDHU located in the City of Greater Sudbury (CGS), Ontario. Statistics Canada (2001) has reported that at least 6,000 people in the CGS are employed in the food service industry. In addition, more than 2,000 workers in the CGS reported working as food preparation staff, kitchen helpers, and other related food service occupations (Statistics Canada, 2001).² At the national level, annual turnover for food service workers was identified at over 100% for hourly workers in large chains and close to 30% for management and supervisory food related staff.³ A local needs assessment reported an annual food handler turnover rate of 85%.⁴

Interestingly, little information and research exist with respect to adult learner-focused food safety training initiatives in public health. Specific adult training needs for the food industry sector continue to be identified as problematic (Employment and Immigration Canada, 1990).⁵ Lynch, Elledge, Griffith, and Boatwright (2003) reported that food handlers in retail establishments contributed to the increased incidence of food borne illness. Lynch et al., (2003) advise that it is essential that workers and management staff have a thorough understanding of safe food practices.⁶ Vettoretti and Wierzbicki (1989) noted a lack of trained food handlers in the CGS in 1998.⁴

In response to the need for food handler training an evaluation of the FHC program was undertaken. This article reports on adult learning approaches, a key component of

the evaluation.

Evaluation Background

An evaluation of the SDHU Food Handler Certification course was conducted to increase its effectiveness and identify strategies to continue to improve the program. A major component of the SDHU evaluation emphasized recommended best practices for food handler training instruction looking at adult learning modalities. The goal of this evaluation was to focus on process.

The objectives were to:

- 1) Gather information from SDHU staff and other programs delivered in the province regarding planning, delivery, and evaluation of FHC programs;
- 2) Identify factors that affect the effectiveness of the program in changing the knowledge of safe food handling practices by program participants; and
- 3) Identify barriers to participation in the delivery of FHC programs.

This article reports on the evaluation process and key findings relative to adult learning principles. Additionally, it provides further insight into future research needs.

Literature Review

Food Handler Training Evaluation

In one of the few systematic reviews of food handler training programs (Campbell et al., 1998), higher scores on tests following training were reported. Studies also indicate that both managers and food handlers may benefit from training sessions.⁷

Studies by Mann et al., (2001) recognized that few evaluations of food handler training programs had been carried out; however, they identified that there is some evidence that “food handler training is effective in enhancing food safety knowledge and behavior among food handlers”.⁸ The majority of relevant studies “failed to provide clear evidence to show that knowledge and behavior were affected by the education intervention as target population, selection, confounders, withdrawals and dropouts were not described”.⁸ According to Lynch et al (2003) food handler training “was found to significantly affect the level of food safety knowledge”; however, increased instruction hours did not increase knowledge.⁶

Adult Education Learning Concepts

The effective teaching of adults is a key subject area of adult educational research (Szadkowski, 2003; Merriam and Caffarella, 1991).^{9,10} Szadkowski (2003) reported “adult learners respond more positively to learning approaches that are *learner centered* and that recognize learning *styles* of adults as “they bring a wide range of life experiences to the learning situation”.⁹ Renner (1993) explained that adult

learners “bring unique attitudes, interests and abilities; each comes for different reasons and separate expectations”.¹¹ The role of those who are responsible for helping adults to learn is “to create learning environments that promote self confidence of the learners and develop trusting relationships” (Szadkowski, 2003).⁹ The National Learning Laboratory for Applied Behavioral Science *pyramid of learning model* illustrates “that the learner’s ability to retain information increases with active involvement in training”.¹²

Studies by Severin (1995) to design an effective and efficient food handler training program and to assess the needs of adult learners found “that the *learning facilitator* must know the audience, have an understanding of basic adult education principles and use a variety of learning approaches to accommodate learning styles such as demonstrations, group learning and role playing”.¹³ Severin (1995) further advises that, “testing within the adult group may not be appropriate in every case and that testers should evaluate the purpose of testing as it is not used to measure changes in real behaviour”.¹³

Methodology

Using a combination of qualitative and quantitative approaches, researchers carried out interviews with past graduates, instructors, key informants from industry, community colleges, and other selected health units. Semi-structured interviews were conducted either face-to-face or by telephone. A random sample of SDHU program documents for 2002 including profiles of past participants, satisfaction survey results, and course success rates were reviewed. Frequency distributions were the main descriptive analysis technique used. Student workbooks, PowerPoint slides, and certification examinations were also examined. Investigators attended a live FHC course session for in-field confirmation of process and to note their observations of the class. The SDHU Research and Ethics Review Committee approved the process and instruments used in the evaluation including consent and interview guidelines.

Results

Participants’ Profile

An analysis of 2002 participants’ (Vettoretti et al., 2004) level of employment, education, age, and exam scores provided some insight into participant profiles.¹⁴ Seventy percent of the participants reported that they were employed while attending the course. Twenty percent were unemployed and ten percent were volunteers. Workers reported employment in restaurants, institutions (e.g. nursery schools, nursing homes and hospitals) food kiosks, and grocery stores. Among the random sample of 189 course participants surveyed for 2002 the majority had completed high school (40%) or college/university (36%). Twenty percent had some high school training while fewer than 2 % had less than an eighth grade education. Total participant ages ranged from 17 to 82 years of age with an average age of 37 years. Restaurant food handlers were found to have an average age of 26 years,

while volunteers averaged 66 years of age.

Recruitment and Promotion

Course participants indicated that attendance at the sessions was the result of requests by their employer. Others reported attending the course while unemployed to increase job opportunities. Graduates from culinary schools indicated that attendance at the health unit FHC session was required in part by their respective educational institution for third party testing requirements of food and hygiene related courses.

A review of SDHU health records indicated successful promotion and advertising efforts for recruitment through:

- 1) Flyers and brochures;
- 2) The *Food Watch* health unit newsletter;
- 3) The health unit web site; and
- 4) Other promotional aids such as posters to food establishments.

Industry informants advised that flyers were a useful reminder of the health unit’s scheduled sessions. Participants taking courses suggested that business owners, supervisors, and kitchen managers also be targeted to take the FHC course to support newly introduced back to work practice changes.

Graduates from outlying northern towns and communities identified transportation and childcare as barriers to registration. Graduates expressed a strong desire to be able to register over the phone. Night and weekend courses for rural communities were suggested as viable alternatives by attendees. Registration forms were seen by instructors as an important tool to plan optimal times for FHC course delivery.

Instructors Training and Preparation

FHC Program instructors reported a need for increased understanding of adult learning principles. The instructors recognized that different learning methods to suit different adult learning needs, (e.g. role playing, visual aids, models, group learning, puzzles, mazes, etc.) were options but that they identified a lack of formal or informal adult education training techniques to facilitate delivery. Instructors reported taking up to two hours to prepare for each session. This included preparation of the class at various locations for actual set-ups, assemblage of prepared materials and equipment (e.g. videos, PowerPoint set-up, black light display, brochures and pamphlets), evaluation/satisfaction forms, examination materials, and issuance of certificates. Most instructors did not see the quantity of time available for course preparation and delivery of activities as a deterrent in the effective delivery of community FHC programs.

Program Delivery and Testing

Lecture format was the predominant mode of delivery for most FHC sessions. PowerPoint slides in addition to videos

and live demonstrations by public health inspectors assisted in covering the prescribed Ministry of Health course content. Instructors advised that the presence of a second instructor was helpful and provided additional expertise.

Most instructors indicated that the optimal class size for teaching was between 20 and 30 individuals. Audio visual aids and demonstrations were deemed important in the understanding of the course content for those with lower educational levels. It was recommended by instructors that after test sessions, handouts with lists summarizing correct answers be used as a reference upon their return to the work environment.

General agreement existed among all participants that the exam adequately tested participants' knowledge of food safety as presented in the FHC course. However, no pretest was administered or required by most health units surveyed. The reading level for SDHU tests was found to be at a suitable literacy level (grade 6 level).

Attendee Satisfactions and Participation

High satisfaction rates were found in relation to course content and the times of day allocated for the delivery of the FHC course.

Attendees reported that the format allowed few questions and limited involvement of participants. Instructors noted reduced interaction resulted from a lack of adequate time to cover course content. Use of adult teaching methods that would fully engage participants in learning was seen as critical and valued among both instructors and attendees. However, few actual strategies could be identified.

Secondary school FHC graduates reported that there is value in the health unit's role in food handler training. Partnering with community colleges, high schools, and institutions to promote FHC was perceived to add credibility to student worker resumés due to the credentials acquired and recognized by local food industry operators. Employers felt it was vital that young adults be targeted for training in food safety. Employers recommended that courses targeted at student workers be held in early spring and summer during evening hours. These suggestions correlated well with student work schedules and employer preferences.

Barriers to Participation

The majority of FHC sessions were delivered in English. Courses were provided in the French language on a demand basis only. Requests were also reported for Cantonese, Italian, and Greek language courses. Difficulties during certification testing sessions were reported due to literacy and language barriers. A strategy that was reported to address the literacy barrier was a one-on-one oral exam with the examiner.

A need was expressed by students, volunteers, and others to reduce registration fees or provide workplace subsidies in

order to encourage registration for the FHC course. A flexible fee structure would assist in reducing financial barriers for some attendees (e.g. students, seniors, single parents, volunteers, etc.) and offset expenses for transportation and/or childcare.

Discussion on Adult Learning Approach

Adult education theories recognize and promote adult skills and abilities that are brought forward to learning situations.⁹ Interviews of past participants (Vettoretti & Wierzbicki, 1989; Vettoretti et al, 2004) noted that the FHC sessions were delivered mainly to adult target groups.^{4, 14} Consideration of the method by which adults learn and an assessment of specific attendee learning needs are key components of an FHC session. Such a strategy allows adults the opportunity to make informed decisions about their personal training experience. Ultimately, this adult *learner centred* engagement may create relevant and valued learning opportunities for adult FHC session attendees.¹⁴

Practical Implications and Best Practices

The evaluation findings highlight the need to further explore and build upon best practices. These practices include the following:

- 1) Consult with industry and local culinary schools in order to adequately respond to industry and specific adult learner needs;
- 2) Utilize satisfaction questionnaire data and adult student feedback to ensure curriculum is current and valued (e.g. surveys and follow up phone calls);
- 3) Review health unit course fees and provide a flexible fee structure;
- 4) Consider flexible course format to meet needs (e.g. one 7-hour session to a 2 day, 3.5 hour course);
- 5) Initiate registration for courses by phone and/or on-line without a *proviso* for immediate fee payment;
- 6) Enlist media/communications support to promote course delivery more broadly;
- 7) Recruit and provide additional health unit staff to deliver courses where large geographic health unit areas exist especially in the north;
- 8) Identify and address language barriers, literacy issues, and individual testing needs prior to course delivery;
- 9) Provide train-the-trainer sessions to promote interactive adult teaching strategies such as group discussions, role playing, demonstrations (proper use of cooking thermometers), and practice sessions (e.g. proper hand washing); and
- 10) Target business owners, supervisors, and kitchen managers to also take the FHC course in order to support newly introduced back to work practice changes.

Conclusion

The SDHU evaluation provided insights into a number of best practices for adult learners for successful delivery of future food handler training programs. Interview information derived from instructors, managers, graduates, and other stakeholders assisted in compiling recommendations sensitive to adult learning needs. The initial evaluation focused on process indicators and not outcomes. Further research to evaluate program effectiveness and explore practices in the areas of program planning, recruitment, and in the delivery of food handler certification training needs for adults is indicated. Given the increasing needs of the Canadian food service industry for workers coupled with high employee turnover rates, properly trained food handlers will continue to be a key factor in the prevention of food borne illness.

Acknowledgements

The author would like to thank health unit food handler training instructors, Stacey Pettigrew and Jeremy Roberts, who participated in the SDHU evaluation. Special thanks to Howard Machum, Howard Johnston Hotel, Franz Walpert, Cambrian College School of Hospitality, May-Anne Matichuk, Pioneer Manor Institutional Food Services of the City of Greater Sudbury, and Ed Wierzbicki, Environmental Support Officer, SDHU, whose cooperation and industry input were invaluable during the evaluation.

Source

Ido Vettoretti MHS, BPHE (H), CPHI(C)
Environmental Health Specialist,
Sudbury & District Health Unit

Mary-Ellen Szadkowski, BScN
(formerly)Health Consultant-ZAD Consulting
Sudbury & District Health Unit

Shelley Darling, BHSc
(formerly) Research Assistant
Sudbury & District Health Unit

Contact

Ido Vettoretti
Environmental Health Specialist,
Sudbury & District Health Unit
Resources, Research, Evaluation and Development Division,
1300 Paris Street
Sudbury Ontario, P3E 3A3
Phone (705) 522-9200 ext.213
Fax: (705) 677-9602
E-mail: vettoretti@sdhu.com

References

1. Lacroix J., Lee M. Lessons Learned from Developing a Food Safety Evaluation Kit for Students. *Canadian Home Economics Journal*. Vol. 52 (1), 2002.
2. Statistics Canada (2001) Top ten industries of direct employment for Greater City of Sudbury (1999 and 2001). *Industrial NAIS Classification categories*, 1997, CMA.
3. Health Canada Policy, Health Canada (2001) *Food safety assessment program*. <http://www.hs-sc.gc.ca/food-aliment/fsa-esa/e/policy.html> (19 February 2004).
4. Vettoreti, I., Wierzbicki, E. (1989). *Sudbury & District Health Unit food safety training needs assessment: A report on identified needs of local food handlers*. Unpublished report, Sudbury & District Health Unit (Health Protection Division). April 1989.
5. Employment and Immigration Canada (1990). Canadian Foodservices Industry: An Employment and Immigration Canada human resource study summary. A special report for the Steering Committee of the Canadian Food Services Industry. (Report No. LM121/12/90). Ottawa: Ernst and Young.pp.5, 14.
6. Lynch, R.A., Elledge, B.L., Griffith, G.C., & Boatright D. T. (2003). A Comparison of food safety knowledge among restaurant managers and experience in Oklahoma. *Journal of Environmental Health*. September Issue: 9-14.
7. Campbell, Monica E., Gardner, Charles E., Dwyer, John J., Isaacs, Sandy M., Drueger, Paul D., Ying, Jane Y. (1998) Effectiveness of public health interventions in food safety: a systematic review. *Canadian Journal of Public Health*. Vol. 89 (3), 197-202.
8. Mann, V., DeWolfe, Judy, Hart, Robert, Hollands, Hussein, LeFrance, Rene, Lee, Marilyn, Ying, Jane. (2001). *Effectiveness of food safety interventions*. Prepared by the Effective Public Health Practice Project for the Public Health Branch, Ontario Ministry of Health. pg.17.
9. Szadkowski, Mary Ellen (2003). *Tips and tricks for trainers*. ZAD Consulting Inc.: Sault Ste. Marie, ON.
10. Merrian, S., and Caffarella, R. (1991). *Learning in adulthood*. San Francisco: Jossey-Bass Inc, Publishers.

-
11. Renner, Peter. (1993). *The art of teaching adults*. PFR Training Associates Ltd., Vancouver, B.C.
 12. Learning Pyramid, National Training Laboratory Institute for Applied Behavioural Science <http://www.cofc.edu/bellsandwhistles/research/pyramid.pdf> (1 Feb.2004).
 13. Severin, C. Education of food premises personnel. Number 37 in a series of *Reports on Environmental Health Issues*. Metropolitan Toronto Teaching Health Unit and Ryerson Polytechnic University. Toronto: 1995.
 14. Vettoretti, I., Szadowski, M., & Darling, S. (2004). *Food handler certification program evaluation report*. Unpublished report, Sudbury & District Health Unit, Public Health Research, Education and Development Program.

Editor's Note:

Call for papers: Readers are hereby requested to submit articles for publication in future issues of PHERO. Should you require information as to the submission requirements please call:

Michael Whelan 416 326-8308.

PHERO is now available on the website:

http://www.health.gov.on.ca/english/providers/pub/pub_menus/pub_phero.html

The electronic version appears several days after issuance of the print version.

Please email all changes of address to <<phero@moh.gov.on.ca>>

Statistics

The remainder of this issue contains the semi-annual AIDS statistics for Ontario in 2004 (pg 148-153), by geographic region and demographic characteristics. Following these figures is the Summary of Reportable Diseases in Ontario for the second quarter of 2004 (pg 154-155) and the month of August, 2004 (pg 156-157).

AIDS in Ontario

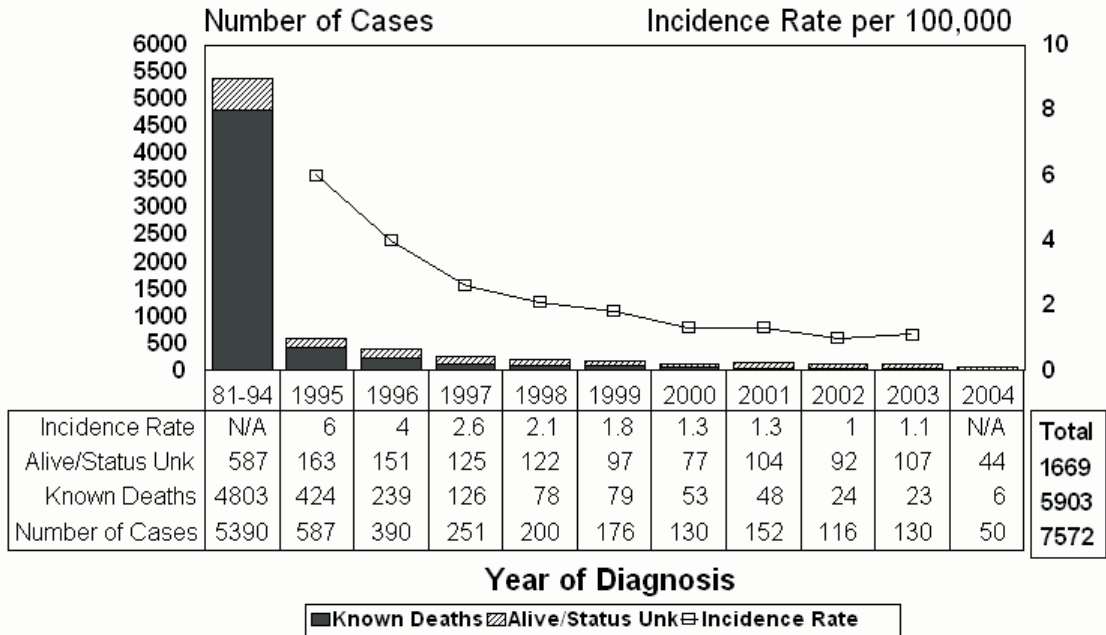
Cumulative Number of Cases per Health Unit Area of Residence at time of Onset/Diagnosis

| Responsible Health Unit | Number | Percent |
|----------------------------|--------------|---------------|
| Algoma | 12 | 0.2% |
| Brant County | 38 | 0.5% |
| Grey-Bruce | 28 | 0.4% |
| Durham Region | 120 | 1.6% |
| Eastern Ontario | 33 | 0.4% |
| Elgin-St. Thomas | 13 | 0.2% |
| Haldimand-Norfolk | 21 | 0.3% |
| Haliburton, KPR | 18 | 0.2% |
| Halton Region | 94 | 1.2% |
| City of Hamilton | 221 | 2.9% |
| Hastings & Prince Edward | 53 | 0.7% |
| Huron County | 11 | 0.1% |
| Chatham-Kent | 34 | 0.4% |
| Kingston, FL&A | 75 | 1.0% |
| Lambton | 28 | 0.4% |
| Leeds, Grenville & Lanark | 29 | 0.4% |
| Middlesex-London | 240 | 3.2% |
| Muskoka-Parry Sound | 19 | 0.3% |
| Niagara Region | 143 | 1.9% |
| North Bay & District | 31 | 0.4% |
| Northwestern | 14 | 0.2% |
| Ottawa | 620 | 8.2% |
| Oxford County | 22 | 0.3% |
| Peel Region | 288 | 3.8% |
| Perth District | 19 | 0.3% |
| Peterborough | 35 | 0.5% |
| Porcupine | 11 | 0.1% |
| Renfrew County & District | 18 | 0.2% |
| Simcoe | 92 | 1.2% |
| Sudbury and District | 69 | 0.9% |
| Thunder Bay District | 41 | 0.5% |
| Timiskaming | 10 | 0.1% |
| Toronto City - total | 4588 | 60.6% |
| <i>North</i> | 291 | 3.8% |
| <i>South</i> | 3574 | 47.2% |
| <i>East</i> | 407 | 5.4% |
| <i>West</i> | 316 | 4.2% |
| Waterloo Region | 91 | 1.2% |
| Wellington-Dufferin-Guelph | 55 | 0.7% |
| Windsor-Essex County | 204 | 2.7% |
| York Region | 134 | 1.8% |
| Totals | 7,572 | 100.0% |

Ministry of Health and Long-Term Care
Public Health Division
Cumulative cases diagnosed to June 30, 2004

AIDS in Ontario

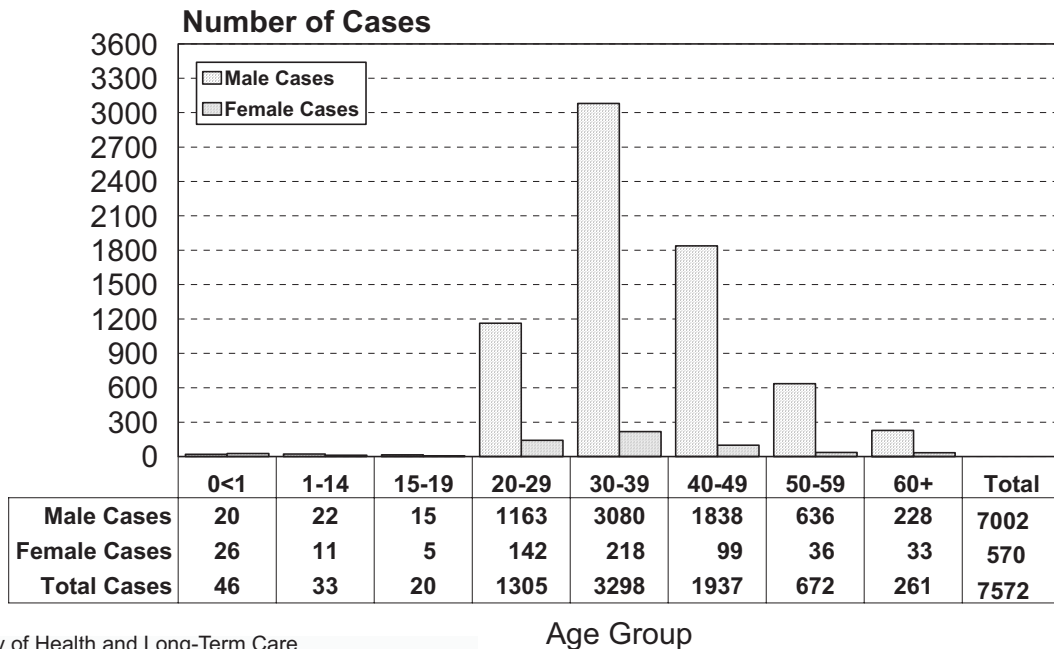
Incidence by Year of Diagnosis



Ministry of Health and Long-Term Care
 Public Health Division
 Cumulative cases diagnosed to June 30, 2004

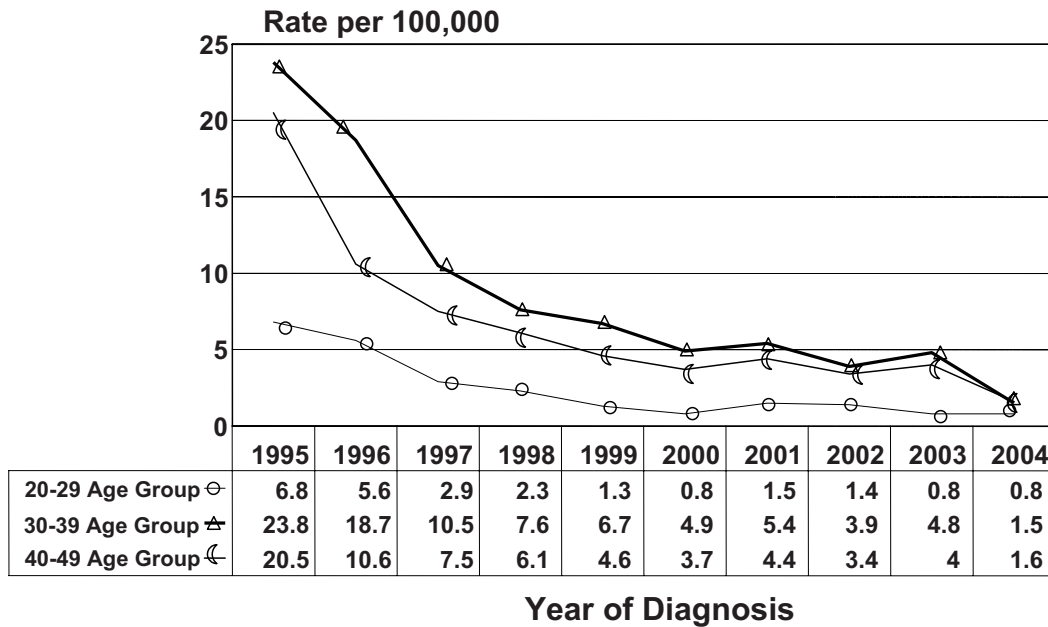
AIDS in Ontario

Cases by Age and Sex



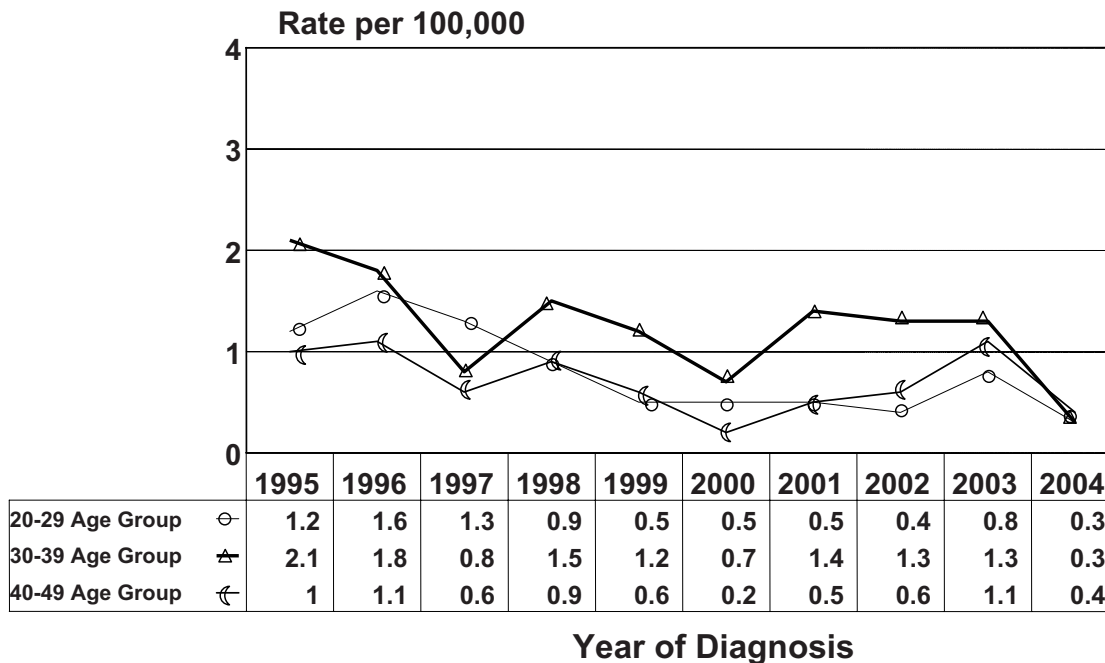
Ministry of Health and Long-Term Care
 Public Health Division
 Cumulative cases diagnosed to June 30, 2004

Males AIDS Rates for Selected Age Group Ontario, 1995-2004



Ministry of Health and Long-Term Care
Public Health Division
Cumulative cases diagnosed to June 30, 2004

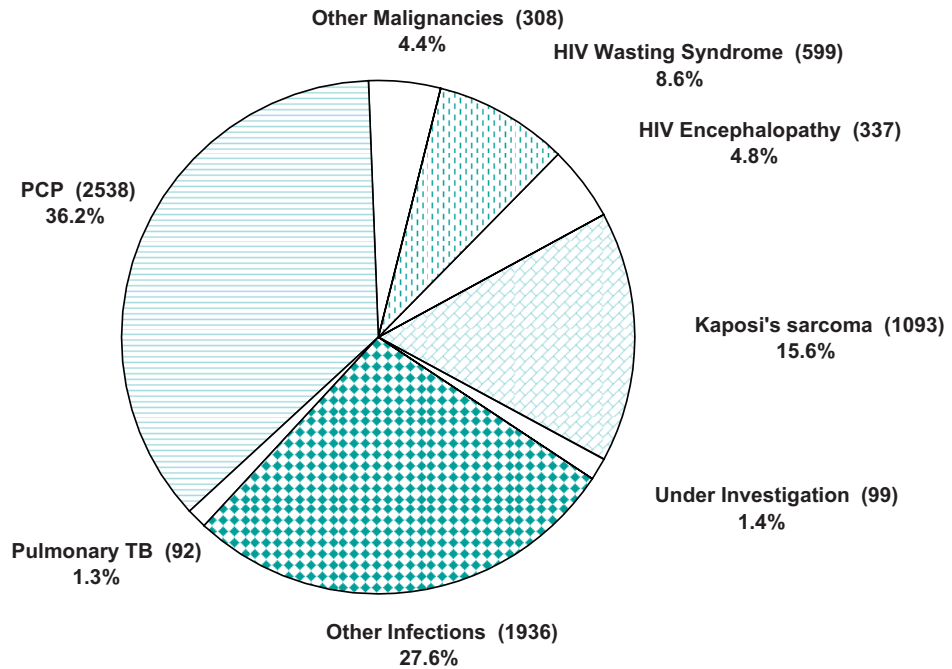
Females AIDS Rates for Selected Age Group Ontario, 1995-2004



Ministry of Health and Long-Term Care
Public Health Division
Cumulative cases diagnosed to June 30, 2004

AIDS in Ontario

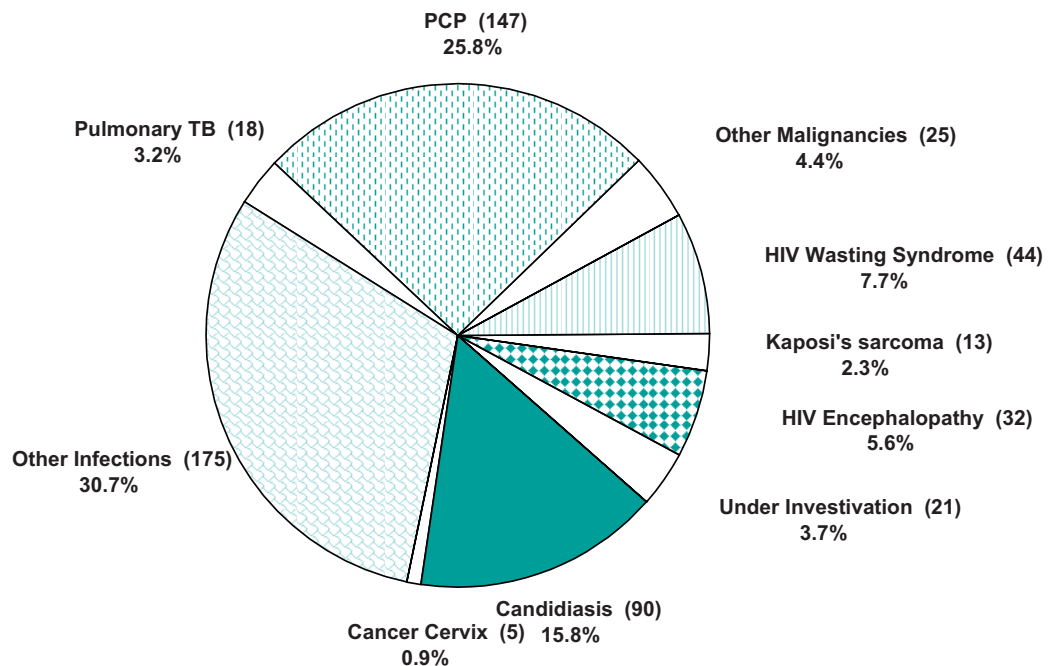
Primary Disease for Males



n=7002
 Ministry of Health and Long-Term Care
 Public Health Division
 Cumulative cases diagnosed to June 30, 2004

AIDS in Ontario

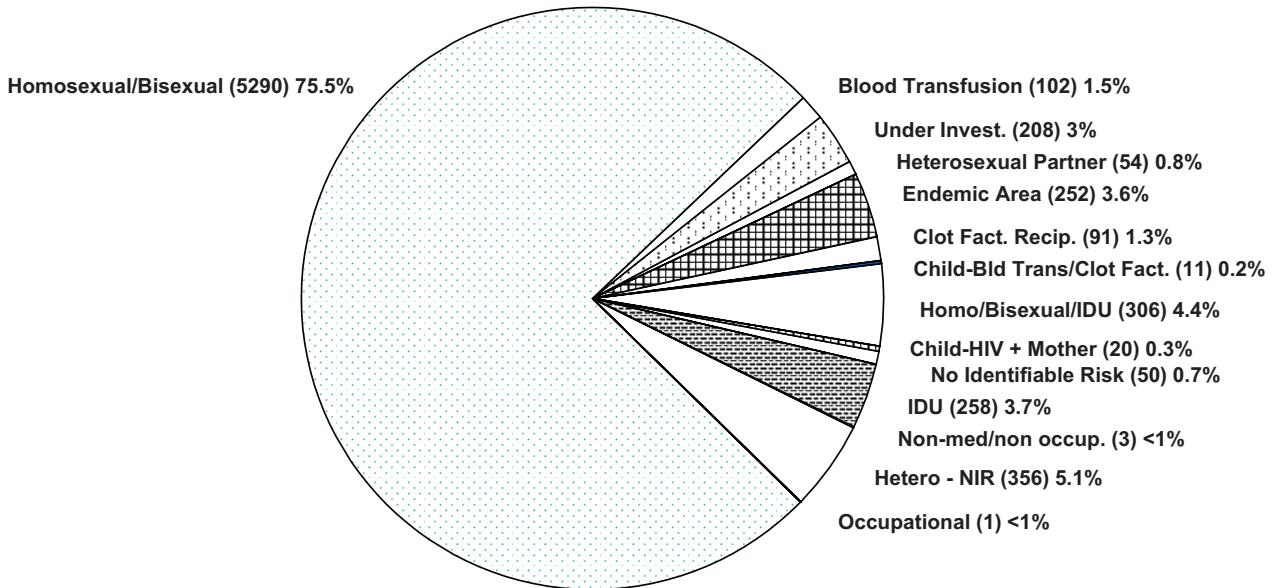
Primary Disease for Females



n= 570
 Ministry of Health and Long-Term Care
 Public Health Division
 Cumulative cases diagnosed to June 30, 2004

AIDS in Ontario

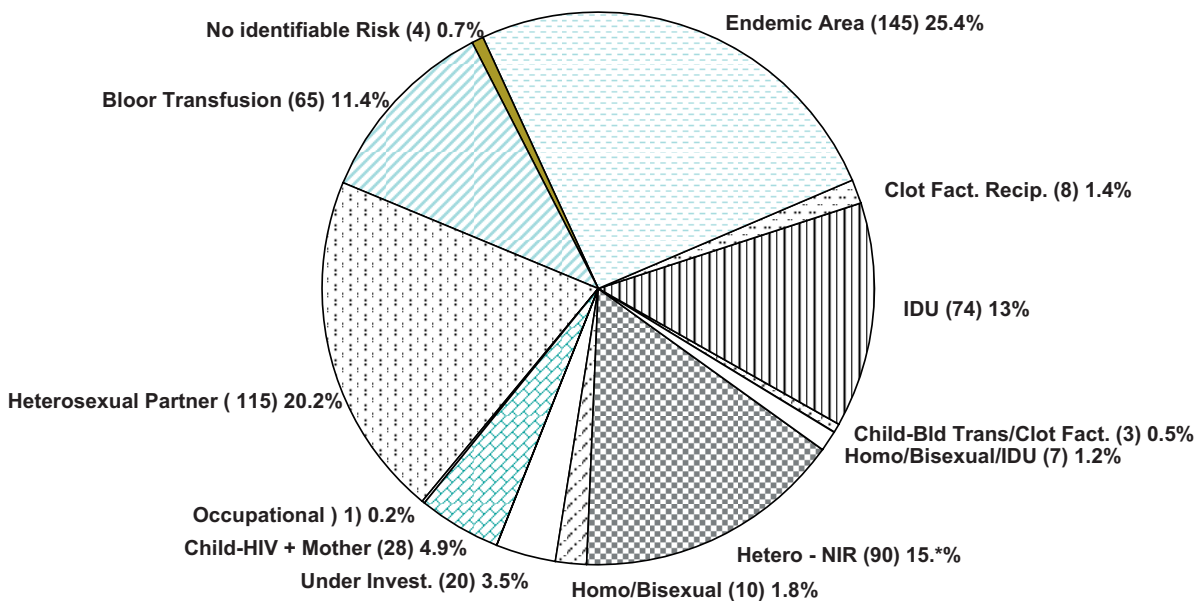
Risk Exposure Categories for Males



n= 7002
 Ministry of Health and Long-Term Care
 Public Health Division
 Cumulative cases diagnosed to June 30, 2004

AIDS in Ontario

Risk Exposure Categories for Females



n= 570
 Ministry of Health and Long-Term Care
 Public Health Division
 Cumulative cases diagnosed to June 30, 2004

AIDS Risk Exposure by Year in Males

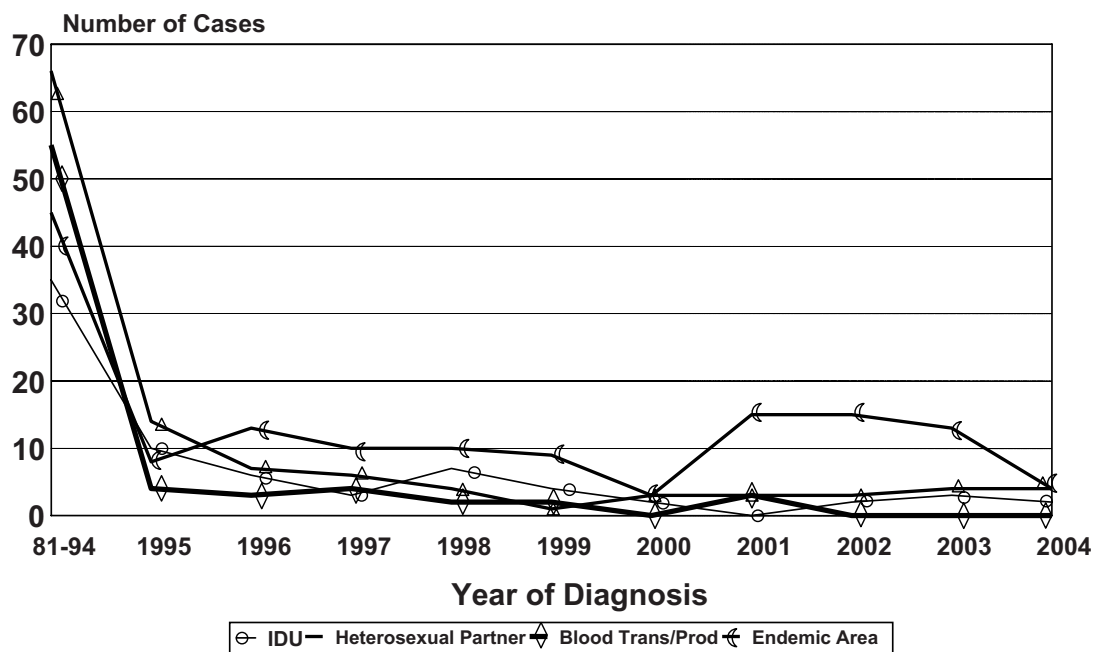
Ontario, 1981- 2004

| Risk Exposure | 81-94 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | Totals |
|---------------------------|-------|------|------|------|------|------|------|------|------|------|------|--------|
| Homosexual/Bisexual | 4090 | 387 | 235 | 146 | 108 | 89 | 62 | 64 | 44 | 46 | 19 | 5290 |
| IDU | 141 | 21 | 22 | 16 | 9 | 10 | 9 | 10 | 7 | 9 | 4 | 258 |
| Homo/Bisexual/IDU | 227 | 30 | 19 | 6 | 5 | 5 | 4 | 4 | 3 | 0 | 3 | 306 |
| Clot Fact Recip | 73 | 9 | 3 | 3 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 91 |
| Endemic Area | 93 | 19 | 25 | 17 | 12 | 15 | 11 | 16 | 21 | 18 | 5 | 252 |
| Heterosexual Partner | 30 | 3 | 2 | 2 | 4 | 1 | 2 | 4 | 1 | 4 | 1 | 54 |
| Blood Transfusion | 79 | 6 | 3 | 4 | 4 | 2 | 3 | 1 | 0 | 0 | 0 | 102 |
| Occupational (possible) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Child-HIV + Mother | 11 | 3 | 3 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 20 |
| Child-Bld Trans/Clot Fact | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| Hetero-NIR | 184 | 37 | 26 | 18 | 14 | 15 | 18 | 13 | 10 | 16 | 5 | 356 |
| No Identifiable Risk | 39 | 3 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 2 | 0 | 50 |
| Under Investigation | 138 | 18 | 9 | 9 | 4 | 11 | 4 | 7 | 3 | 4 | 1 | 208 |
| Non-med/non occup | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3 |

Ministry of Health and Long-Term Care
Public Health Division
Cumulative cases diagnosed to June 30, 2004

AIDS in Ontario

Selected Risk Factors for Females



Ministry of Health and Long-Term Care
Public Health Division
Cumulative cases diagnosed to June 30, 2004

Summary of Reportable Diseases in Ontario - 2nd Quarter 2004

| Health Units by Region | Population Projections 2003 | AIDS | Campylo. | Chicken-pox | Chlamydia | Enceph./Meningitis | GAS | Gonorrhea | Hepatitis A | Hepatitis B | Hepatitis C | Hib |
|-----------------------------|-----------------------------|-----------|--------------|---------------|---------------|--------------------|------------|--------------|-------------|-------------|--------------|----------|
| Northern Region | 864,731 | 1 | 25 | 708 | 428 | 1 | 8 | 16 | 1 | | 83 | |
| Algoma | 119,929 | | 3 | 36 | 60 | 1 | | 1 | | | 18 | |
| Muskoka-Parry Sound | 86,383 | | 4 | 116 | 13 | | | | 1 | | 1 | |
| North Bay | 94,875 | 1 | 2 | 371 | 49 | | | 6 | | | 6 | |
| Northwestern | 81,874 | | 3 | 18 | 55 | | 3 | 2 | | | 3 | |
| Porcupine | 89,876 | | 1 | | 45 | | 2 | | | | 2 | |
| Sudbury | 196,787 | | 8 | 96 | 76 | | 1 | 2 | | | 22 | |
| Thunder Bay | 159,592 | | 3 | 71 | 101 | | 2 | 5 | | | 29 | |
| Timiskaming | 35,415 | | 1 | | 29 | | | | | | 2 | |
| Eastern Region | 1,637,692 | 2 | 89 | 651 | 578 | 12 | 14 | 52 | 4 | | 173 | |
| Eastern Ontario | 197,370 | | 12 | 14 | 54 | | | 4 | 1 | | 12 | |
| Hastings & Prince Ed. | 160,658 | | 5 | 115 | 58 | | 1 | 4 | 2 | | 4 | |
| Kingston, Fron. & Len. | 188,219 | | 12 | | 88 | | | 3 | | | 68 | |
| Leeds, Gren. & Lan. | 167,762 | | 8 | | 23 | | 4 | | | | 13 | |
| Ottawa | 823,608 | 2 | 51 | 516 | 335 | 12 | 9 | 41 | 1 | | 75 | |
| Renfrew | 100,075 | | 1 | 6 | 20 | | | | | | 1 | |
| Central East Region | 2,114,060 | 2 | 141 | 1,306 | 532 | 23 | 7 | 59 | 2 | 2 | 182 | 1 |
| Durham | 547,759 | 2 | 33 | 469 | 180 | 4 | 2 | 23 | 1 | | 47 | |
| Haliburton-Kawartha | 170,627 | | 8 | | 37 | 2 | 1 | 5 | | | 35 | |
| Peterborough | 132,615 | | 5 | 236 | 58 | 3 | 1 | 2 | | | 21 | |
| Simcoe | 411,024 | | 14 | 269 | 129 | 3 | 2 | 9 | | | 38 | 1 |
| York | 852,035 | | 81 | 332 | 128 | 11 | 1 | 20 | 1 | 2 | 41 | |
| Toronto Region* | 2,611,661 | 9 | 221 | 974 | 1,551 | 19 | 14 | 416 | 14 | 8 | 348 | |
| North | | | 59 | 207 | 324 | 3 | 3 | 73 | 5 | 2 | 77 | |
| South | | 7 | 87 | 157 | 561 | 10 | 6 | 198 | 3 | 2 | 132 | |
| East | | 2 | 44 | 456 | 426 | 3 | 3 | 84 | 1 | 2 | 75 | |
| West | | | 31 | 154 | 240 | 3 | 2 | 61 | 5 | 2 | 64 | |
| Central West Region | 2,260,237 | 2 | 163 | 1,491 | 741 | 21 | 8 | 117 | 13 | 4 | 185 | |
| Halton | 413,454 | | 29 | 61 | 33 | 2 | 1 | 6 | 2 | | 34 | |
| Peel | 1,122,959 | 1 | 80 | 1,340 | 415 | 13 | 2 | 83 | 10 | 2 | 98 | |
| Waterloo | 470,022 | 1 | 23 | | 215 | 2 | 5 | 26 | | | 41 | |
| Wellington-Duff. | 253,802 | | 31 | 90 | 78 | 4 | | 2 | 1 | 2 | 12 | |
| Central South Region | 1,188,202 | 2 | 77 | 851 | 523 | 4 | 6 | 91 | 5 | 2 | 140 | |
| Brant | 131,721 | 1 | 8 | 120 | 60 | 1 | 1 | 20 | | | 10 | |
| Haldimand-Norfolk | 109,756 | | 6 | 44 | 35 | 1 | 1 | 5 | | | 5 | |
| Hamilton | 516,776 | 1 | 24 | 128 | 253 | 2 | 2 | 45 | 3 | 1 | 71 | |
| Niagara | 429,949 | | 39 | 559 | 175 | | 2 | 21 | 2 | 1 | 54 | |
| Southwest Region | 1,561,717 | | 114 | 381 | 543 | 30 | 13 | 87 | 9 | 2 | 137 | |
| Grey Bruce | 160,624 | | 25 | 11 | 43 | 1 | | 6 | | | 18 | |
| Elgin-St. Thomas | 86,096 | | 6 | 44 | 30 | 2 | | 2 | | | 8 | |
| Huron | 61,896 | | 7 | 49 | 12 | | 1 | 2 | | | 2 | |
| Chatham-Kent | 110,124 | | 8 | 10 | 41 | | 1 | 3 | | | 9 | |
| Lambton | 132,664 | | | | 29 | | | 1 | | 1 | 5 | |
| Middlesex-London | 428,628 | | 10 | | 191 | 9 | 3 | 45 | 4 | 1 | 46 | |
| Oxford | 103,880 | | 5 | | 23 | 6 | 4 | 4 | | | 3 | |
| Perth | 77,265 | | 17 | 38 | 24 | | | 1 | | | 3 | |
| Windsor-Essex | 400,540 | | 36 | 229 | 150 | 12 | 4 | 23 | 5 | | 43 | |
| Quarter 2, 2004 | 12,238,300 | 18 | 830 | 6,362 | 4,896 | 110 | 70 | 838 | 48 | 18 | 1,248 | 1 |
| *** Total YTD 2004 | - | 49 | 1,549 | 12,007 | 10,103 | 197 | 170 | 1,731 | 107 | 61 | 2,589 | 3 |
| *** Total YTD 2003 | - | 63 | 1,456 | 10,244 | 9,029 | 174 | 271 | 1,466 | 65 | 64 | 2,729 | 4 |

* The Toronto City regions above are now defined as: North - former North York; South - former City of Toronto; West - former Etobicoke and City of York; East - former Scarborough and East York

** Infectious Syphilis cases include 'Primary, Secondary and Early Latent' staging effective January 1, 2003

*** Adjusted for deletions and late reports.

Summary of Reportable Diseases in Ontario - 2nd Quarter 2004 cont'd

| Health Units by Region | Influenza | IPD | Measles | Meningo-coccal | Mumps | Pertussis | Rubella | Salmon. | Shigellosis | Syphilis Infectious** | TB | VTEC |
|-----------------------------|------------|------------|----------|----------------|-----------|------------|----------|------------|-------------|-----------------------|------------|------------|
| Northern Region | 3 | 16 | | | | 13 | 1 | 36 | | | 3 | 3 |
| Algoma | | 5 | | | | | | 9 | | | | |
| Muskoka-Parry Sound | | 1 | | | | 10 | | 6 | | | | |
| North Bay | | 1 | | | | 1 | | 5 | | | | |
| Northwestern | 2 | 1 | | | | 1 | 1 | 2 | | | 2 | |
| Porcupine | 1 | | | | | | | 4 | | | | |
| Sudbury | | 7 | | | | 1 | | 4 | | | | |
| Thunder Bay | | | | | | | | 5 | | | 1 | 3 |
| Timiskaming | | 1 | | | | | | 1 | | | | |
| Eastern Region | 4 | 34 | | | 7 | 7 | | 67 | 6 | 8 | 5 | 7 |
| Eastern Ontario | | 6 | | | 6 | | | 5 | 1 | | 1 | 2 |
| Hastings & Prince Ed. | 1 | 3 | | | | | | 5 | | | | 1 |
| Kingston, Fron. & Len. | 1 | 4 | | | | | | 5 | | | | 1 |
| Leeds, Gren. & Lan. | | 2 | | | | | | 3 | | | | |
| Ottawa | 2 | 19 | | | 1 | 7 | | 47 | 5 | 8 | 4 | 3 |
| Renfrew | | | | | | | | 2 | | | | |
| Central East Region | 5 | 39 | | 2 | 1 | 50 | | 110 | 11 | 7 | 9 | 11 |
| Durham | 1 | 9 | | | | 16 | | 17 | 2 | | 2 | 1 |
| Haliburton-Kawartha | 1 | 7 | | | | | | 10 | 1 | | | |
| Peterborough | | 5 | | 1 | 1 | 8 | | 2 | 1 | | | 1 |
| Simcoe | 2 | 10 | | 1 | | 9 | | 26 | | 3 | 1 | 3 |
| York | 1 | 8 | | | | 17 | | 55 | 7 | 4 | 6 | 6 |
| Toronto Region* | 6 | 81 | 1 | 2 | 1 | 24 | 2 | 131 | 16 | 86 | 66 | 9 |
| North | 2 | 18 | | | | 7 | | 37 | 6 | 10 | 15 | 2 |
| South | 1 | 33 | | 1 | 1 | 7 | 1 | 28 | 4 | 63 | 19 | 3 |
| East | 1 | 19 | 1 | | | 9 | 1 | 46 | 3 | 8 | 24 | 1 |
| West | 2 | 11 | | 1 | | 1 | | 20 | 3 | 5 | 8 | 3 |
| Central West Region | 2 | 22 | 5 | 2 | 2 | 31 | | 118 | 11 | 6 | 36 | 14 |
| Halton | | 2 | | | | 1 | | 21 | 2 | 1 | 2 | 5 |
| Peel | 2 | 11 | 4 | 1 | 2 | 7 | | 56 | 6 | 4 | 32 | 6 |
| Waterloo | | 6 | | | | 16 | | 26 | 3 | 1 | | 2 |
| Wellington-Duff. | | 3 | 1 | 1 | | 7 | | 15 | | | 2 | 1 |
| Central South Region | | 41 | | 1 | 1 | 17 | | 40 | 7 | 4 | 5 | 3 |
| Brant | | 2 | | | | 2 | | 5 | 1 | 1 | | 2 |
| Haldimand-Norfolk | | 2 | | | | | | 4 | | 1 | | |
| Hamilton | | 26 | | 1 | 1 | 10 | | 16 | 5 | 2 | 4 | |
| Niagara | | 11 | | | | 5 | | 15 | 1 | | 1 | 1 |
| Southwest Region | 2 | 29 | | 1 | | 8 | 1 | 44 | 8 | 2 | 3 | 10 |
| Grey Bruce | 1 | 3 | | | | | | 6 | | | | 1 |
| Elgin-St. Thomas | | 3 | | | | | | 2 | | | | |
| Huron | 1 | 4 | | | | | 1 | 1 | | | | |
| Chatham-Kent | | 3 | | | | | | 2 | | 1 | | 4 |
| Lambton | | | | | | | | | 1 | | | |
| Middlesex-London | | 6 | | | | 1 | | 5 | 1 | | 2 | 1 |
| Oxford | | | | | | 3 | | 5 | | | | |
| Perth | | 2 | | | | | | 3 | 6 | | | 3 |
| Windsor-Essex | | 8 | | 1 | | 4 | | 20 | | 1 | 1 | 1 |
| Quarter 2, 2004 | 22 | 262 | 6 | 8 | 12 | 150 | 4 | 546 | 59 | 113 | 127 | 57 |
| *** Total YTD 2004 | 869 | 262 | 6 | 26 | 18 | 238 | 4 | 970 | 153 | 89 | 127 | 76 |
| *** Total YTD 2003 | 458 | 254 | 9 | 26 | 10 | 145 | 5 | 872 | 143 | 113 | 167 | 257 |

*The Toronto City regions above are now defined as: North - former North York; South - former City of Toronto; West - former Etobicoke and City of York; East - former Scarborough and East York

** Infectious Syphilis cases include 'Primary, Secondary and Early Latent' staging effective January 1, 2003

*** Adjusted for deletions and late reports.

Summary of Reportable Diseases in Ontario - August 2004

| Health Units by Region | Population Projections 2003 | AIDS | Campylo. | Chicken-pox | Chlamydia | Enceph./Meningitis | GAS | Gonorrhea | Hepatitis A | Hepatitis B | Hepatitis C | Hib |
|-----------------------------|-----------------------------|-----------|--------------|---------------|---------------|--------------------|------------|--------------|-------------|-------------|--------------|----------|
| Northern Region | 864,731 | | 12 | 11 | 145 | 2 | | 6 | | 3 | 15 | |
| Algoma | 119,929 | | 6 | | 23 | | | | | 3 | 2 | |
| Muskoka-Parry Sound | 86,383 | | 1 | 2 | 7 | | | | | | | |
| North Bay | 94,875 | | 1 | 5 | 15 | | | | | | 1 | |
| Northwestern | 81,874 | | | | 21 | | | 1 | | | | |
| Porcupine | 89,876 | | 1 | | 19 | | | | | | | |
| Sudbury | 196,787 | | | 1 | 25 | 1 | | 2 | | | 8 | |
| Thunder Bay | 159,592 | | 2 | 3 | 35 | 1 | | 3 | | | 3 | |
| Timiskaming | 35,415 | | 1 | | | | | | | | 1 | |
| Eastern Region | 1,637,692 | | 41 | 2 | 188 | 7 | | 13 | 1 | | 55 | |
| Eastern Ontario | 197,370 | | 8 | | 13 | 1 | | | | | 1 | |
| Hastings & Prince Ed. | 160,658 | | 5 | 2 | 12 | 1 | | 1 | | | | |
| Kingston, Fron. & Len. | 188,219 | | 1 | | 32 | | | 2 | | | 29 | |
| Leeds, Gren. & Lan. | 167,762 | | 2 | | | | | | | | 2 | |
| Ottawa | 823,608 | | 21 | | 119 | 5 | | 10 | 1 | | 22 | |
| Renfrew | 100,075 | | 4 | | 12 | | | | | | 1 | |
| Central East Region | 2,114,060 | 1 | 104 | 7 | 110 | 7 | 2 | 10 | 1 | | 46 | |
| Durham | 547,759 | 1 | 19 | | 59 | | 1 | 6 | | | 4 | |
| Haliburton-Kawartha | 170,627 | | 8 | | 17 | | | 2 | | | 9 | |
| Peterborough | 132,615 | | 5 | 5 | 12 | 4 | | 1 | | | 8 | |
| Simcoe | 411,024 | | 10 | 2 | 7 | | 1 | | | | 12 | |
| York | 852,035 | | 62 | | 15 | 3 | | 1 | 1 | | 13 | |
| Toronto Region* | 2,611,661 | 4 | 124 | 27 | 453 | 9 | 2 | 143 | 4 | 2 | 120 | |
| North | | | 24 | 5 | 100 | 2 | | 22 | 1 | | 24 | |
| South | | 4 | 43 | 3 | 168 | 4 | 1 | 63 | 1 | 1 | 58 | |
| East | | | 31 | 16 | 116 | 2 | 1 | 38 | 2 | 1 | 26 | |
| West | | | 26 | 3 | 69 | 1 | | 20 | | | 12 | |
| Central West Region | 2,260,237 | | 130 | 24 | 230 | 9 | 1 | 32 | 6 | | 39 | |
| Halton | 413,454 | | 18 | | | | | | | | 6 | |
| Peel | 1,122,959 | | 82 | 24 | 147 | 5 | 1 | 19 | 6 | | 19 | |
| Waterloo | 470,022 | | 19 | | 64 | 2 | | 13 | | | 14 | |
| Wellington-Duff. | 253,802 | | 11 | | 19 | 2 | | | | | | |
| Central South Region | 1,188,202 | 2 | 36 | 18 | 156 | 7 | 4 | 26 | | | 43 | |
| Brant | 131,721 | 1 | 3 | 5 | 24 | 2 | | 6 | | | 1 | |
| Haldimand-Norfolk | 109,756 | | 3 | 1 | 8 | 1 | | | | | | |
| Hamilton | 516,776 | 1 | 15 | | 72 | 3 | 2 | 14 | | | 22 | |
| Niagara | 429,949 | | 15 | 12 | 52 | 1 | 2 | 6 | | | 20 | |
| Southwest Region | 1,561,717 | | 57 | 1 | 148 | 9 | 2 | 41 | 1 | 1 | 23 | |
| Grey Bruce | 160,624 | | 3 | | 10 | | | | | | 4 | |
| Elgin-St. Thomas | 86,096 | | 3 | | 8 | | | 4 | | | | |
| Huron | 61,896 | | 8 | | 6 | | | 1 | | | | |
| Chatham-Kent | 110,124 | | 2 | | 13 | | | 4 | | | 1 | |
| Lambton | 132,664 | | | | 8 | | | | | | 1 | |
| Middlesex-London | 428,628 | | 9 | | 42 | 6 | 1 | 25 | 1 | 1 | 6 | |
| Oxford | 103,880 | | 3 | | 6 | 2 | | 2 | | | 1 | |
| Perth | 77,265 | | 6 | 1 | 9 | | | | | | 2 | |
| Windsor-Essex | 400,540 | | 23 | | 46 | 1 | 1 | 5 | | | 8 | |
| August 2004 | 12,238,300 | 7 | 504 | 90 | 1,430 | 50 | 11 | 271 | 13 | 6 | 341 | |
| *** Total YTD 2004 | - | 69 | 2,606 | 12,694 | 13,096 | 311 | 205 | 2,279 | 130 | 83 | 3,317 | 4 |
| *** Total YTD 2003 | - | 81 | 2,968 | 11,125 | 8,800 | 229 | 211 | 1,453 | 186 | 90 | 4,385 | 3 |

* The Toronto City regions above are now defined as: North - former North York; South - former City of Toronto; West - former Etobicoke and City of York; East - former Scarborough and East York

** Infectious Syphilis cases include 'Primary, Secondary and Early Latent' staging effective January 1, 2003

*** Adjusted for deletions and late reports.

Summary of Reportable Diseases in Ontario - August 2004 cont'd

| Health Units by Region | Influenza | IPD | Measles | Meningo-coccal | Mumps | Pertussis | Rubella | Salmon. | Shigellosis | Syphilis Infectious** | TB | VTEC |
|-----------------------------|-----------|-----|---------|----------------|-------|-----------|---------|---------|-------------|-----------------------|-----|------|
| Northern Region | | 3 | | | | | | 12 | 1 | | 2 | |
| Algoma | | 2 | | | | | | 6 | | | 1 | |
| Muskoka-Parry Sound | | | | | | | | | | | | |
| North Bay | | | | | | | | 3 | | | | |
| Northwestern | | | | | | | | | | | 1 | |
| Porcupine | | | | | | | | | | | | |
| Sudbury | | | | | | | | | | | | |
| Thunder Bay | | 1 | | | | | | 3 | 1 | | | |
| Timiskaming | | | | | | | | | | | | |
| Eastern Region | 4 | 7 | | | | 11 | 1 | 24 | 1 | 1 | 1 | 4 |
| Eastern Ontario | | 1 | | | | 1 | | 4 | | | | 1 |
| Hastings & Prince Ed. | | 1 | | | | | | | | | | |
| Kingston, Fron. & Len. | 1 | | | | | 3 | | 1 | | | | 1 |
| Leeds, Gren. & Lan. | | | | | | | | 1 | | | | |
| Ottawa | 3 | 5 | | | | 7 | 1 | 16 | 1 | 1 | 1 | 2 |
| Renfrew | | | | | | | | 2 | | | | |
| Central East Region | | 4 | | 1 | | 20 | | 55 | 1 | | 3 | 10 |
| Durham | | 1 | | 1 | | 3 | | 13 | | | | 1 |
| Haliburton-Kawartha | | 1 | | | | 1 | | 4 | | | | |
| Peterborough | | 1 | | | | 10 | | | | | | |
| Simcoe | | 1 | | | | | | 16 | | | | 1 |
| York | | | | | | 6 | | 22 | 1 | | 3 | 8 |
| Toronto Region* | 2 | 8 | | | | 11 | | 53 | 17 | 25 | 17 | 5 |
| <i>North</i> | | 1 | | | | 3 | | 11 | 4 | 1 | 4 | |
| <i>South</i> | | 1 | | | | 2 | | 19 | 9 | 23 | 5 | 3 |
| <i>East</i> | 1 | 4 | | | | 2 | | 15 | 1 | 1 | 5 | 1 |
| <i>West</i> | 1 | 2 | | | | 4 | | 8 | 3 | | 3 | 1 |
| Central West Region | | 8 | | 1 | | 21 | | 51 | 8 | 1 | 13 | 10 |
| Halton | | | | | | 1 | | 8 | 2 | | 1 | 1 |
| Peel | | 5 | | 1 | | 1 | | 29 | 3 | 1 | 12 | 6 |
| Waterloo | | 2 | | | | 14 | | 11 | 1 | | | 1 |
| Wellington-Duff. | | 1 | | | | 5 | | 3 | 2 | | | 2 |
| Central South Region | | 1 | | | | 11 | | 21 | 2 | 1 | 1 | 8 |
| Brant | | | | | | 1 | | 1 | | | | |
| Haldimand-Norfolk | | | | | | | | 2 | | 1 | | 2 |
| Hamilton | | 1 | | | | 9 | | 5 | 1 | | 1 | 1 |
| Niagara | | | | | | 1 | | 13 | 1 | | | 5 |
| Southwest Region | | 2 | | | | 3 | | 18 | 1 | | | 11 |
| Grey Bruce | | | | | | 1 | | 3 | | | | 2 |
| Elgin-St. Thomas | | | | | | | | | | | | 1 |
| Huron | | | | | | | | 4 | | | | 1 |
| Chatham-Kent | | 1 | | | | | | | | | | 2 |
| Lambton | | | | | | | | | | | | |
| Middlesex-London | | 1 | | | | 2 | | 1 | 1 | | | |
| Oxford | | | | | | | | 2 | | | | 1 |
| Perth | | | | | | | | | | | | 3 |
| Windsor-Essex | | | | | | | | 8 | | | | 1 |
| August 2004 | 6 | 33 | | 2 | | 77 | 1 | 234 | 31 | 28 | 38 | 48 |
| *** Total YTD 2004 | 877 | 667 | 6 | 32 | 18 | 410 | 5 | 1,445 | 199 | 282 | 383 | 175 |
| *** Total YTD 2003 | 2,283 | 581 | 1 | 57 | 23 | 837 | 3 | 1,660 | 193 | 210 | 465 | 364 |

*The Toronto City regions above are now defined as: North - former North York; South - former City of Toronto; West - former Etobicoke and City of York; East - former Scarborough and East York

** Infectious Syphilis cases include 'Primary, Secondary and Early Latent' staging effective January 1, 2003

*** Adjusted for deletions and late reports.