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The contribution of scientific articles by the staff of local Boards of Health is invited. Address all inquiries and submissions to the Editor.

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BULLETINS and NOTICES

AMERICAN THORACIC SOCIETY (ATS) 2000 CONFERENCE - TORONTO

The ATS 2000 conference will be held in Toronto from May 5-10, 2000. This yearly Conference has become the key international forum for physicians and scientists who work in pulmonary and critical care medicine. As part of the conference activities, the "Tuberculosis Control Strategies" poster session program on May 7th from 7-9 p.m. will provide an opportunity to exchange information with others who share the goal of controlling this disease.

Sessions in this year's conference will be held on a broad range of topics to include pneumonia, asthma, critical care, tuberculosis, pediatric pulmonology, sleep apnea, environmental and occupational lung disease, nursing studies, cell biology, lung structure and function and AIDS.

Additional information on the conference is available on the ATS website at: http://www.thoracic.org/

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C.D. RESERVOIR: THE PATHOGENS AMONG US

A 2 day educational conference for Health Professionals working in Communicable Disease and Infection Control

Presented by Canadian Institute of Public Health Inspectors

May 11 and 12, 2000
Ministry of Health Laboratory, Toronto

Full Conference Fee - CIPHI Member: $ 80
- Non-CIPHI Member: $100

One-Day Fee - CIPHI Member: $50
- Non-CIPHI Member: $60

Registration Deadline – April 14, 2000

For more information or for a copy of the conference agenda and registration form contact:

Susan Morrison
Lambton Health Unit
160 Exmouth Street
Point Edward, ON N7T 7Z6
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RACCOON RABIES - FRONTLINE DEFENSE

LEEDS, GRENVILLE AND LANARK HEALTH UNIT

Introduction

The raccoon strain of the rabies virus was first identified in Florida, US in the 1940's. The strain affects primarily the raccoon species. This strain has slowly migrated north at approximately 30 to 50 kilometers per year through all the mid-Atlantic States and reached the New York State southern boundary in 1990. In 1998 a case of raccoon rabies was identified in Morristown, N.Y., directly across the international border from Brockville, Ontario.

Although there have been no recorded human deaths caused by raccoon rabies, the uncertainty about the level of virulence of this virus variant as well as the potential for exposure to humans has created a dramatic increase in rabies post-exposure treatment in all the affected States in the US. Since 1990, when raccoon rabies was first detected in New York State, the number of people receiving post exposure treatment for rabies each year (1990 to 1995) has increased from 100 to 2,000.[1] Concurrently there was a 40-fold increase in laboratory confirmed animal rabies during this period.[1]

Raccoon Rabies Contingency Plan (RRCP)

The RRCP was developed in 1994/95 as a joint endeavour between local representatives of the Ministry of Natural Resources, Canadian Food Inspection Agency (CFIA) and the Leeds, Grenville and Lanark District Health Unit. The RRCP aimed at addressing the then impending danger of raccoon rabies migration from New York State which is separated from the health unit by the St. Lawrence Seaway to the south. Four basic strategic areas were explored and activities were assigned to each of the participating agencies. The strategic issues focused on prevention, detection, containment and communication.

Health Unit Communication Plan

At the same time that the RRCP was formulated, the Health Unit developed an internal communication protocol on raccoon rabies, the purpose of which was to maintain up-to-date information on raccoon rabies for immediate delivery to the public, board of health, and health unit staff and other key stakeholders.

Communication

Public

At least once per year, the health unit provided local media with information on rabies. In the mid-1990's an awareness campaign was initiated with primary schools in the health unit area. The campaign included information on rabies prevention and control. The program was delivered by teachers of primary schools and included presentations, colouring books and the distribution of fact sheets to school-aged children. The health unit also coordinated annually cost reduced rabies vaccination clinics with local veterinarians. The advertisement for these clinics included information on rabies and raccoon rabies. In 1998, the health unit developed a media information kit on raccoon rabies which was distributed to all health units in Ontario bordering New York State and to the Ministry of Health and Long-Term Care.

Board of Health

On an annual basis, a presentation was made to members of the Board of Health on rabies with emphasis on raccoon rabies. The Board of Health meetings were attended by the local press resulting in the communication of raccoon rabies issues in the newspapers and radio stations. The Board of Health also received ad-hoc reports on current changes to the status of raccoon rabies in the US and changes in raccoon rabies activities carried out by other stakeholders in the Health Unit.

Key Stakeholders

As part of the RRCP, cooperation was sought from local veterinarians to agree to conduct emergency cost-reduced rabies vaccination clinics in the event that raccoon rabies was identified in the county. According to a study carried by the Health Unit in 1994, it was found that 71% of animal bites were inflicted on humans by dogs, 20% by cats and the remaining 9% by other species. Twenty five percent of cats and dogs investigated were not vaccinated against rabies.

Staff Training and Development

Pertinent information on raccoon rabies was regularly distributed to key staff of the health unit. Rabies investigation staff were kept apprised on the status of raccoon rabies and were kept trained and at-the-ready on response procedures in the event that raccoon rabies affected the health unit. The health unit 1-800 information line was designated as the key link for all inquiries on raccoon rabies and if the need arose, a number of public health inspectors were designated who would be on standby to field public inquiries.

Identification of Raccoon Rabies in Ontario

The first identification in Canada of a raccoon strain of rabies virus was made from a dead raccoon found on Tuesday, July 13, 1999, about 10 kilometers north of the Canada/US border near Brockville, Ontario. On July 14th, the Animal Disease Research Institute (ADRI) of the CFIA in Nepean, Ontario confirmed by monoclonal antibody testing that the brain tissue was positive for the mid-Atlantic raccoon virus strain. Further PCR testing confirmed the findings. The raccoon was found in a dog kennel on a rural residential property 7 km NW of Prescott, Ontario. A subsequent investigation by staff of the Health Unit concluded that there was no significant human exposure to the raccoon. On notification and confirmation of this strain of rabies, two related contingency plans were simultaneously activated. The Health Unit activated the Raccoon Rabies Contingency Plan, while the Ministry of Natural Resources (MNR) concurrently activated the Point Infection Control strategy. This strategy involves trapping raccoons and skunks in the vicinity of a laboratory-confirmed case and humanely euthanizing these species with euthanol or T-61 within a 5 km (rural) or 2 km radius (urban). Raccoons and skunks trapped within 5-10 km (rural) or 2-4 km (urban) radius from the index case are vaccinated against rabies with the IMRAB rabies vaccine and released. For more information please see the following article by Dr. R. Rosatte.

Subsequent Confirmations

Soon after the index case was identified and just after the Rabies Research Unit, of the MNR had completed their first Point Infection Control (PIC) strategy, a second raccoon was confirmed on July 26th with the same virus strain 10 kilometers northwest of the PIC. MNR activated the second PIC. Two months latter, on September 16th, a third case of raccoon rabies was identified, 15 kms northeast of the first PIC area. A third PIC process was carried out by MNR.

Demographic of Raccoon Rabies Affected Area

All three confirmed cases of raccoon rabies occurred in a rural area in the County of Grenville, which has a population of 23,026 residents within an area of approximately 3,300 square kilometers. Grenville County is separated from the State of New York by the St. Lawrence River and is land-connected by the Johnstown International Bridge. This Bridge is most probably the route of access of at least one of the rabid raccoons. It is assumed that the raccoon(s) were transported accidentally across the bridge by the numerous vehicles crossing it on a daily basis.

Health Unit Experiences

Public Enquiries

On notification of the first case of raccoon rabies, MNR in consultation with the Health Unit and the CFIA provided a press release which included a Public Health Unit 1-800 rabies information number. Two public health inspectors were responsible for inquiries related to raccoon rabies and to redirect callers to the appropriate Ministry on issues not related to the Health Unit's mandate. From July 14th to August 4th, the Health Unit maintained a log of all raccoon rabies calls. The following table summarizes the types of calls received:

Interagency Communications

The Health Unit kept the local Reeve of the appropriate Municipality and the Board of Health appraised of current information on Health Unit activities and the activities of other agencies involved with control measures. The Office of the MPP for Leeds and Grenville contacted the Health Unit requesting that a cost reduced rabies clinic be implemented for pets of residents of the county. An earlier promise of funding for this project was not forthcoming after the MPP made inquiries about financial support for the clinics. The Ministry of Health and Long-Term Care also urged the Health Unit to coordinate cost reduced rabies vaccination clinics for cats and dogs.

Cost Reduced Rabies Vaccination Clinics

The Health Unit coordinates and markets regularly scheduled annual animal rabies vaccination clinics held each May. The May 1999 clinics were held throughout the health unit on two separate days. The veterinarians assisting with the coordination of these clinics had at that time expressed concern that the 1999

Summary of Types of Public Enquiries	# of Calls
Referrals to other agencies	26
Information on level of exposure - assessed as insignificant e.g. hit a raccoon with car, saw raccoon cross front lawn should children be allowed on the grass, how to clean up mess after raccoon rummaged through garbage	19
Requesting that health unit provide cost reduced rabies vaccination Clinics	15
Concerns about raccoons on private property - living in trees, chimneys, barns	13
Found dead raccoon on side of road	12
Information on raccoon rabies - general	11
Nuisance wildlife concerns with no significant human exposure	10
Information on post-exposure treatment	10
Information on rabies - general	9
Barn cats running wild, to many, controls needed, feeding of	9
Information on pre-exposure vaccination	8
Raccoon involved with pet	6
Pets allowed to roam free at night	6
Dog sprayed by skunk, concern for rabies	5
Child proofing against rabies	3
Total Calls	**162**

vaccination clinics may be the last cost reduced clinics that would be held in the health unit. The local veterinary association had recently released a report condemning cost reduced clinics as unnecessary and potentially dangerous to the animals being vaccinated.

Two thousand four hundred and twenty seven-animals were vaccinated, significant by fewer than about 4,000 animals vaccinated per year over the past 10 years. Raccoon rabies was identified two months after the May clinics were held. Contact with local veterinarian associations indicated that it would be difficult to provide these clinics again, especially since the press releases on raccoon rabies had created a greater awareness and veterinarian hospitals and clinics were inundated as a result.

A telephone survey conducted with all veterinarian services in Leeds and Grenville indicated an interest in providing a one-day cost reduced clinic, provided that the health unit publicize the vaccination clinics, arrange for the location and provide volunteers to help administer each clinic. Eight separate clinics were held on August 25th. Most of the clinics were conducted at municipal public works garages and arenas. The Warden for the United Counties of Leeds and Grenville provided two volunteers to help at each clinic. A total of 1,550 animals were vaccinated at these clinics.

Nuisance Animals

A number of calls received by the Health Unit concerned nuisance wildlife animals. The heightened awareness of rabies resulting from press coverage of raccoon rabies caused some residents to lash-out at public officials for not being able to provide assistance in the removal of nuisance animals. One of the local newspapers included an article titled " Passing the Buck" in reference to a nuisance porcupine and that "no-person-in-authority would remove it from a private residence." As a result of these concerns and the negative press coverage, a meeting was held with representatives from Ministry of Natural Resources (MNR), the Canadian Food Inspection Agency (CFIA), Ontario Provincial Police, the Trappers Association and the health unit to discuss issues pertaining to nuisance animals. At the conclusion of this meeting it was felt that the responsibility for the control of nuisance animals should be placed at the municipal level.

The health unit conducted a survey of all municipalities and found that out of the 28 municipalities in the health unit, only one had a comprehensive response process to handle nuisance wildlife. The remaining 27 employed dog control officers that handle cats and dogs and often, dogs only. Subsequent to this survey, a resolution was passed by the Board of Health asking all municipalities to provide 24-hour response to all nuisance animals in their respective municipalities. The municipal councils did not approve the Board of Health resolution. The reason was the perception that the control of nuisance animals was at one time the responsibility of MNR and that the request from the Board of Health was a downloading of services and cost from the provincial government to the municipality. Since the number of newspaper articles and editorials have provided support for the Health Unit and have criticized the municipalities for not assuming this responsibility in light of the continual presence of rabid raccoons in our area.

The Health Unit petitioned the Ontario Rabies Advisory Committee to address this issue with input from the Ontario Ministry of Municipal Affairs and Housing. A petition was also submitted to the Chief Medical Officer of Health for Ontario to amend Ontario Regulation 557, under the Health Protection and Promotion Act to allow for the funding of wild animal removal by municipal governments. In the interim, the Health Unit established an agreement with various trappers for the provision of essential services in the trapping, euthanizing and transporting of suspect rabid animals to the CFIA which have a history of human exposure. The Board of Health agreed to pay the $60.00 per animal cost.

Discussion

The Point Infection Control strategy, the Trap-Vaccinate-Release program and the aerial distribution of oral rabies vaccine may have a significant impact in controlling or eliminating raccoon rabies from Eastern Ontario. There are, however, vast areas in Ontario with equal and higher raccoon population densities where the raccoon population is not immunized against rabies. The assumption is that raccoons found positive for the mid-Atlantic strain of the rabies virus arrived in Ontario by means of hitching a ride on motor vehicles travelling from infected areas in the US. If true, then any area in Ontario is susceptible for the introduction of rabid raccoons.

It is important that public health agencies take action to ensure that pets in Ontario are properly immunized against rabies and that the public is kept informed on the risks associated with suspect animal exposure. It is also important that health units in Ontario review their communication and Raccoon Rabies Contingency Plans with all pertinent stakeholders. The plans should be kept up-to-date with contact names and a clear understanding of each key player's role in the event that raccoon rabies appears in their area.

The effects of animal control especially in urbanized areas are vital in helping to prevent the spread of rabies from raccoons to pets and to humans. The Medical Officer of Health is given the legislated authority to order the capturing, confinement and the destruction of any animal suspect of exposing a person to the rabies virus. Legislative changes that allow the Medical Officer of Health authority to charge the costs associated with any of these actions to the local municipality or other body would further ensure public safety.

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SOURCE

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REFERENCE

1. CDC. Update: Raccoon Rabies Epizootic - United States, 1996. MMWR 1997; 45:1117-1120.

AN EMERGENCY RESPONSE TO THE FIRST THREE CONFIRMED CASES OF RACCOON RABIES IN ONTARIO: POINT INFECTION CONTROL STRATEGY

Introduction

On July 14, 1999, the first confirmed case of the raccoon strain of rabies in Canada was diagnosed at the Animal Disease Research Institute (ADRI), Canadian Food Inspection Agency (CFIA), in Nepean. The animal in question was a raccoon (juvenile) that was found dead in a dog kennel on a rural residential property about 10 km NW of Prescott, Ontario. Ministry of Natural Resources (MNR), Rabies Research Unit staff immediately implemented a point infection control strategy to contain the case. Before that operation was complete, the second case of raccoon rabies in Canada was confirmed by the CFIA on July 26, 1999. The animal in question was a raccoon that had attacked a dog on a rural residential property about 15 km north of Brockville near the village of Jellyby, Ontario and 15 km west of the location of the first case. MNR subsequently moved another team of area trappers into the zone on July 27 to implement a second point infection control strategy. As well, about 50,000 baits containing Vaccinia-Rabies Glycoprotein (V-RG) oral rabies vaccine were aerially distributed around the point infection control zones on September 8, 1999. On September 17, the third case of raccoon rabies was confirmed in Ontario. This case was located 15 km north of the first case in the middle of the area that was baited with V-RG baits on September 8. This animal had been wandering aimlessly in a small residential community in rural eastern Ontario, about 5 km southwest of the village of Oxford Station. MNR implemented another point infection control strategy on September 20, followed by the aerial distribution of an additional 31,300 V-RG baits on September 27.

Methodology

Upon receiving notification that Ontario had its first case of raccoon rabies, the Point Infection Control Strategy document was reviewed and all of the appropriate people were notified to assist with the implementation of the plan. Within 24 hrs of notification of the first case, MNR Rabies Research Unit staff

moved a team of 15 trappers and 8 support staff into the area and initiated a point infection control strategy. Trapping commenced on Thursday, July 15. The target zone for the point control operation included a 300 sq km area defined by a 10 km radial arc around the location of the rabies case. The area was divided into 30 trapping cells. The plan included live-trapping and humanely euthanizing all raccoons and skunks that were captured within a 5 km radius of the case location. That zone was about 75 sq km in area and was divided into 8 trapping cells each one being about 10 sq km in area. Each of 8 trappers assigned to those cells set about 100 live-traps for 7 consecutive nights in each trapping cell. All captured raccoons and skunks from the depopulation zone were brought to a field laboratory which had been established in a vacant MNR building at Limerick Forest. Raccoons and skunks were immobilized with an intramuscular injection of about 1 to 2 ml of ketamine hydrochloride. About 10 cc of blood was collected from all raccoons via cardiac puncture using 10 ml vacutainers. Blood was centrifuged, sera collected, frozen and later transported to ADRI for antibody testing. All raccoons and skunks were then euthanized with an intracardiac injection of T-61 following anesthesia. Brain samples were collected from all euthanized raccoons and skunks, frozen and transported to ADRI, Nepean, for rabies testing. Carcasses were transported and incinerated at the Agricultural College in Kemptville. At the same time as the depopulation program was in action, a Trap-Vaccinate-Release program (TVR) was initiated in the area immediately adjacent to the depopulation area. All raccoons and skunks captured a further 5 to 10 km from the case location were vaccinated with Imrab inactivated rabies vaccine via intramuscular injection, ear-tagged for identification and released at the point of capture. As well, all cats trapped within both zones were vaccinated and released.

A similar point infection control and TVR strategy was carried out for the site of the second and third cases with the exception that only a partial TVR program was completed with the third case, as it occurred within the area that received the V-RG baits on September 8.

On September 8, 1999, about 50,000 baits containing V-RG oral rabies vaccine were aerially distributed using two MNR Twin Otter aircraft in a 10 km wide zone around the outer perimeter of the first two point control operations. Target bait density was 70 baits/sq km with flight line spacing of about 1 km. Following notification of the third case of raccoon rabies, about 31,300 V-RG baits were aerially deployed in a 450 sq km area north of the third case location. Bait density and flight line spacing were the same as for the September 8 baiting operation.

Results

Point Infection Control # 1 – Domville area

Twenty-seven trappers utilized 24,973 trap-nights to capture 2,258 animals during the first point infection control strategy from July 16 to 30. Four hundred and eighty-seven raccoons and 93 skunks were euthanized and submitted for rabies testing. All were negative for rabies. About 87% of the raccoons from the depopulation zone were captured during the first 7 of 13 nights of trapping (Figure 1). Estimated raccoon density in the depopulation zone prior to control was 6.5 to7.0/sq km based on a removal model. A total of 767 different raccoons, 199 different skunks and 281 cats including those cats in the depopulation zone were vaccinated and released. One hundred and five non-target animals were captured including 35 rabbits, 19 groundhogs, 9 muskrats, 6 squirrels, 11 porcupines, 8 fisher, 6 turtles, 2 rats, 2 mice, 1 fox, 1 frog, 1 mink and 4 birds. The estimated raccoon density in the TVR zone was about 4.5/sq km. Seventy-seven percent (767/1003) of the estimated raccoon population in the TVR zone was vaccinated.

Point Infection Operation # 2 – Jellyby area

Seventeen trappers utilized about 18,946 trap-nights to capture 1,966 animals during the second point infection control strategy from July 28 to August 10, 1999. Three hundred and eighty-five raccoons and 116 skunks from the depopulation zone were euthanized and submitted for rabies testing. All were negative for rabies. Eighty-two percent (315/385) of the raccoons from the depopulation zone were captured during the first 7 nights of trapping (Figure 1). Estimated raccoon density in the depopulation zone prior to control was 5.0-6.0/sq km. Seven hundred eighty-five different raccoons, 223 different skunks and 290 cats were vaccinated and released. A total of 96 non-target animals were captured. The estimated raccoon density in the 200 sq km TVR zone was 7.2/sq km. Fifty-five percent (785/1440) of the estimated raccoon population in the TVR zone was vaccinated.

Percent Raccoons Captured on Days 1 to 14

Rabies Point Infection Control, Domville, Jellyby, Oxford Station, Ontario, 1999

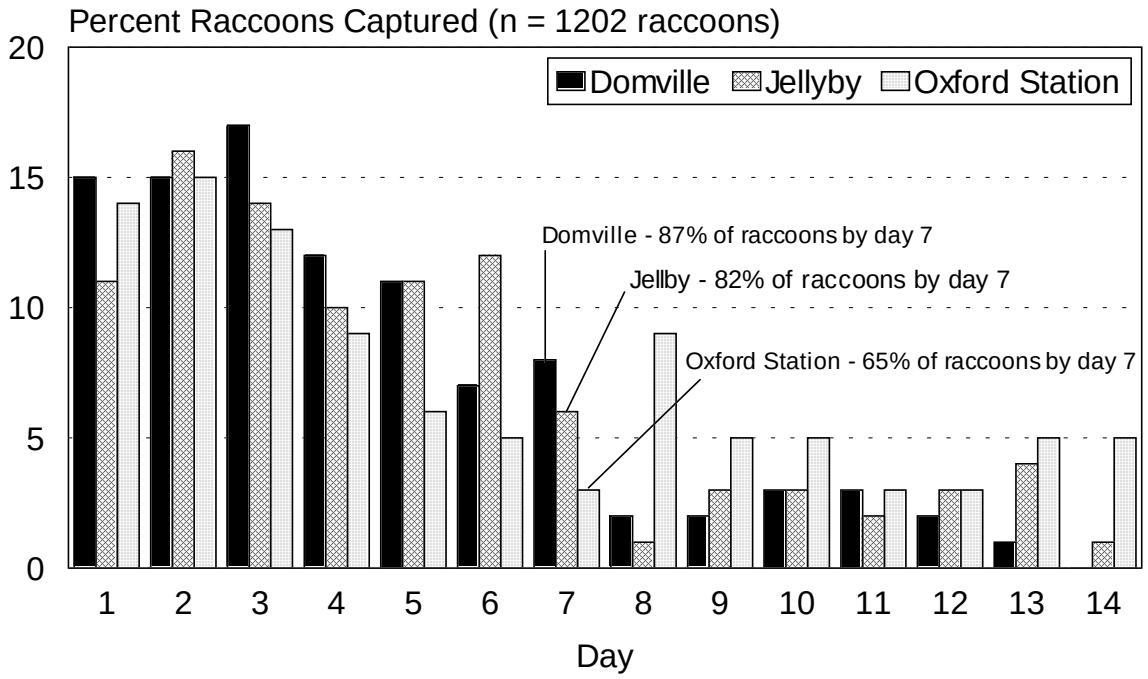

Figure 1

Point Infection Operation # 3 – Oxford Station area

Nineteen different trappers utilized about 8,756 trap-nights to capture 1,143 animals during the third point infection control strategy from September 20 to October 4, 1999. Three hundred and thirty raccoons and 128 skunks from the depopulation zone were euthanized. Sixty-five percent (214/330) of the raccoons from the depopulation zone were captured during the first 7 nights of trapping (Figure 1). Estimated raccoon density in the depopulation zone prior to control was 4.5/sq km. A total of 207 different raccoons, 71 different skunks and 285 cats were vaccinated and released. Thirty-six non-target animals were captured. Raccoon density and percent vaccinated estimates for the TVR area were not calculated as the area (60 sq km) in question was to small for confident estimates.

Media/Communications

The first case of raccoon rabies elicited a media feeding frenzy. R. Rosatte was interviewed by more than 75 different media reporters during the three weeks following the first case. Ninety–nine percent of the interviews resulted in favorable press. A 1-800 rabies hotline number was used for public inquiries regarding raccoon rabies. MNR documented 518 calls during July 26 to August 19,1999. The calls were related to the media (22%), suspect animals (27%), rabies in general (8%), nuisance animals (11%) and other issues (32%).

Costs for Point Control Strategy

The total cost for the three point control strategy was approximately $285,000.00. However, the replacement of traps and supplies increased the cost to $363,000, equivalent to a cost of about $500.00/sq km.

V-RG baiting

About 81,300 baits containing V-RG were distributed in the vicinity of the location of the three cases of raccoon rabies. To assess bait acceptance through confirmation of a tetracycline marker in tooth sections and vaccine efficacy by antibody prevalence in blood serum, five trappers collected blood and tooth samples from raccoons trapped in the baiting area. Those samples will be analyzed during the winter and results should be available by March 2000. The cost to distribute 81,300 V-RG baits was $200,000.00. Post baiting assessment costs were $41,000.00, equivalent to a total cost of $200.00/sq km.

Discussion

The key to the successful implementation of the point infection control strategy was the fact that a health unit Raccoon Rabies Contingency Plan had been in place since 1993 which allowed for the rapid deployment of staff as soon as the index case was confirmed as raccoon rabies. As well, intergovernmental communications worked exceptionally well so that all agencies were informed of the plan to contain the case the day that the plan was implemented. The communication links that were in place were so effective that trappers were at the site within 24 hours of confirmation of the first case. This rapid response was critical to allow for the removal of all animals that may have been incubating the disease as well as other clinical animals and to prevent the spread of the raccoon rabies to the rest of the province. A total of 872 raccoons and 209 skunks were removed from the depopulation zones surrounding the locations of the first two raccoon rabies cases. All of those animals were negative for rabies upon testing at ADRI. It was anticipated that none of the depopulated animals would be positive for rabies as the average incubation period for raccoon rabies is 40 days and they would not have yet developed clinical rabies. So few animals were captured during nights 8 to 14 in the depopulation zones around the first two cases that there is a reasonable possibility that more than 90% of the raccoon population was removed. An estimated 77% of the raccoons in the TVR area around the first case of raccoon rabies were captured and immunized against rabies. However, only 55% were vaccinated in the TVR area around the second case. This difference was expected due to a greater trapping effort in area 1 (66 trap-nights/sq km) as opposed to area 2 (46 trap-nights/sq km). As well, raccoon density was higher in area 2 (7.2 raccoons/sq km) compared to area 1 (4.5 raccoons/sq km). Higher raccoon density and lower trapping effort resulted in fewer raccoons being captured. Results from the first two point infection control strategies should not be compared to control of the third case as that area had been baited with a resultant less intensive TVR program. As well, the weather and less abundant food sources in early October tended to slow raccoon movements making them more difficult to capture. Only 65% of the total animals captured were taken by the seventh night of trapping, compared to more than 80% during the July control programs.

The cost of the three point infection control programs was $363,000.00 including costs to replace traps, equipment and supplies. As well, the cost to deploy 81,300 V-RG baits was $200,000. Those costs are easily justified to contain the spread of raccoon rabies, saving to the province an estimated $8 to12 million per year. Included in the cost savings is the avoidance of a predicted increase of 3,000 human post-exposure treatments and 3,000 animal rabies cases if raccoon rabies were to become enzootic in Ontario.

It is speculated that the first 2 cases were not isolated and others were either incubating rabies or had yet to be found in areas outside of the point infection control zones. The potential for nuisance raccoons to be translocated in this area was very high according to the residents. The average incubation period for raccoon rabies is 40 days within a range of 7 to 107 days and it was expected that additional cases of raccoon rabies would appear along the St. Lawrence, probably in September 1999. MNR speculations were fulfilled when the third case was confirmed on September 17, just 15 km north of the first case, thus supporting the action to vaccinate high risk animals 5 to 10 km from each depopulation zone. The most feasible approach to immunize raccoons over large areas is through aerial deployment of baits containing oral rabies vaccine. The only vaccine currently available for the oral immunization of raccoons in the wild is Vaccinia-Rabies Glycoprotein (Raboral (V-RG). The immediate plan in response to the three cases was to deploy 50,000 baits containing V-RG in a 10 km wide buffer zone immediately outside of the point infection control zones on September 8, 1999 and an additional 31,300 baits on

September 27. As well, 1600 liters of bulk V-RG were ordered and baits are in the process of being manufactured which will allow for the future deployment of baits to contain any additional cases of raccoon rabies. A key to preventing raccoon rabies from becoming enzootic in Ontario will be a rapid response to contain isolated cases of the disease as soon as they are confirmed.

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SOURCE

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Communiqué

Public Health Research, Education and Development Program

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NEW MOTHERS IDENTIFY INFORMATION NEEDS: IMPLICATIONS FOR POSTPARTUM COMMUNITY CARE PROVIDERS

Introduction

By 1998, a postpartum length of stay of 48 hours or less following vaginal delivery had become common practice in Ontario.[1] While hospital and community health care providers in many areas continue to collaborate to plan care delivery, there is wide variability in postpartum services available to women across the province.[1] The lack of consistency in programming raises concerns about how well, and by whom, the needs of postpartum women and their infants are being met.

A shortened postpartum hospital stay has reduced access to nursing care that traditionally has focussed on the identification and treatment of postpartum complications, health promotion and patient education.[2] Research has revealed the importance of education for women in the early postpartum period given the numerous concerns and challenges they experience. Women with shortened hospital stays have identified a need for more information about their own recovery, infant care and feeding.[3,4] Beger and Cook[5] studied postpartum teaching priorities from the viewpoints of both hospital nurses and mothers, and concluded that education on the immediate physical health needs of both mothers and infants is most important, particularly for first time mothers.

This article presents data concerning women's postpartum learning needs collected as part of a five-site Ontario study of postpartum health and social

services utilization (TOMIS - The Ontario Mother and Infant Survey). These specific findings have implications for both hospital and community-based postpartum care providers in planning programs and services to ensure information needs are adequately met.

Method

This study was a cross-sectional survey of mothers with longitudinal follow-up approximately four weeks after discharge from hospital. Two hundred and fifty women were recruited from each of five hospital sites across Ontario for a total sample of 1,250. The hospital sites were chosen to reflect diversity in both the study sample and postpartum services available in the community. They are as follows:

Site 1 - Suburban teaching centre, urban catchment area, 3900 annual births

Site 2 - Regional centre, urban and rural catchment area, 1500 annual births

Site 3 - Regional centre, urban and rural catchment area, 4500 annual births

Site 4 - Urban teaching hospital, urban catchment area, 2700 annual births

Site 5 - Regional centre, northern urban and rural catchment area, 2000 annual births

Recruitment for the study began in November 1998 and data collection was completed in June 1999. Women were eligible to take part in the study if they: (1) had given birth vaginally to a single live infant; (2) were being discharged from hospital at the same time as their infant; (3) were assuming care of their infants at the time of discharge; and (4) were competent to give consent to participate. Women were excluded from participation if they: (1) had an infant who required admission to a neonatal intensive care or special care nursery for more than 24 hours; or (2) were unable to communicate in a language for which translation could not be obtained.

Data collection tools included a self-report questionnaire completed by mothers prior to hospital discharge and a structured telephone interview at four weeks post-discharge. The self-report questionnaire provided sociodemographic information whereas the interview addressed maternal and infant needs, service utilization, satisfaction with services, and health outcomes for both mother and infant. Items were incorporated from previously validated instruments where appropriate, including the National Population Health Survey,[6] the Edinburgh Postnatal Depression Scale[7] and the Health and Social Service Utilization Questionnaire.[8] The questionnaire and interview were available in seven different languages: English, French, Spanish, Italian, Portuguese, Cantonese and Farsi.

Descriptive statistics were completed for all variables measured using SPSS 8.0. Women who completed the interview were compared with women who were lost to follow-up at four weeks. Outcome variables were coded as categorical variables and univariate analyses were performed to determine which of the predictor variables were statistically associated with the outcomes in question. The variables found to be statistically associated with each outcome were then used in subsequent multivariate analyses. These more detailed findings will be reported in subsequent papers.

Findings

A total of 1250 women were recruited with 875 (70%) completing the follow-up interview at four weeks post-discharge from hospital. A profile of women who completed the four-week follow-up and their infants is presented in Table 1. The characteristics of women who completed follow-up did not differ significantly from those of women who were lost to follow-up or refused participation in the interview. Only 1.8% of potential participants was excluded from interview because of the inability to find suitable translation.

Study participants were asked to comment on their own health and their baby's health at the time of discharge from hospital and again at four weeks post-discharge. The majority of women viewed themselves and their newborn infants as healthy. At discharge, 90.4 to 96% of women who completed the interview at each site reported that they had experienced no medical problems since delivery and 86.1 to 97% reported that their infants had no health problems since birth. At four weeks post-discharge from hospital, women were asked to rate their own health and their infant's health; 88.4 to 96.4% of mothers rated their own health as good to excellent with the remainder rating their health as fair. Similarly, 96.5 to 99% of participants rated their infants' health as good to excellent.

Table 1

Profile of Participants

Characteristic	Site 1 n=250 (%)	Site 2 n=250 (%)	Site 3 n=250 (%)	Site 4 n=250 (%)	Site 5 n=250 (%)
Marital status:					
Married	87.6	71.9	88.4	82.4	62.0
Common-law/living with partner	8.4	18.5	9.2	12.0	21.6
Single/Widowed/Separated/Divorced	4.0	9.6	2.4	5.6	16.4
Family income before taxes:					
<$20,000	13.2	19.2	7.2	20.8	21.2
$20,000 to $39,999	18.0	23.7	10.8	21.2	20.0
$40,000 to $59,999	14.0	28.9	25.2	19.2	20.4
$60,000 to $79,999	14.4	12.9	24.8	16.4	14.8
$80,000+	32.4	11.2	28.8	13.2	11.2
Cultural group:					
Canadian	34.4	90.4	84.4	31.2	87.2
Chinese	23.2	0.0	1.2	0.8	0.0
Jewish	9.2	0.0	0.0	0.4	0.0
South Asian	6.0	0.0	1.6	6.4	0.0
Italian	3.2	0.4	0.4	8.8	0.8
Black	1.2	0.0	0.0	6.0	0.0
Portuguese	0.8	0.0	0.8	12.4	0.0
Polish	0.4	1.2	0.4	5.6	0.0
French	0.4	0.4	1.6	1.2	4.0
Other[1]	21.2[2]	7.6[3]	9.6[4]	27.2[5]	8.0[6]
Language spoken most often at home:					
English	62.0	96.8	96.4	66.0	88.8
Chinese	21.2	0.0	0.4	1.2	0.0
Spanish	2.4	0.8	0.4	4.0	0.0
Portuguese	0.0	0.0	0.4	7.6	0.0
Polish	0.0	1.2	0.4	4.4	0.0
French	0.4	0.4	0.0	1.2	10.0
Other[7]	14.0[8]	0.8[9]	2.0[10]	15.6[11]	1.2[12]
Highest level of education:					
Elementary school or less	1.6	0.8	0.0	1.2	1.2
Some high school	5.2	14.1	3.2	9.6	13.6
Completed high school	13.1	13.3	15.2	19.6	11.2
Some community college or technical school	11.6	12.0	7.2	10.4	13.2
Completed community college or technical school	16.8	36.1	26.8	18.0	32.8
Some university	8.4	3.6	6.8	8.0	6.0
Completed bachelor's degree	29.5	14.1	25.6	21.2	16.4
Graduate degree	13.5	6.0	11.6	8.4	4.8
Mother's age:					
Mean	32.3	29.2	30.7	30.2	27.4
Std. Deviation	4.5	5.6	4.6	5.3	5.2
Min/Max	17/43	17/43	18/42	16/44	16/42

Table 1 (Cont...)

Characteristic	Site 1 n=250 (%)	Site 2 n=250 (%)	Site 3 n=250 (%)	Site 4 n=250 (%)	Site 5 n=250 (%)
Baby's birth weight:					
Mean	3409	3626	3552	3418	3509
Std. Deviation	472	464	449	452	473
Min	2381	2410	2381	2200	2005
Max	4876	5021	4835	4700	4876
Gestation:					
Mean	39.5	39.9	39.8	39.4	39.6
Std. Deviation	1.4	1.2	1.4	1.7	1.4
Min/Max	35/42	36/42	34/42	29/42	33/42

1. Percentages less than 4% are combined in the AOther@ category
2. Includes English, German, Scottish, Irish, Dutch, Turkish, Greek, Japanese, Guyanese, South American, Macedonian, Jamaican, Korean, Romanian, Salvadorian, Somali, Filipino, Yugoslavian, Hungarian, Muslim, Mexican, Iranian, Serbian, Trinidadian, American, Thai, Spanish, West Indies, Hispanic, and Lebanese.
3. Includes English, German, Ukrainian, Dutch, North American Indian, Dutch, Japanese, South American, Filipino, American, and Cuban.
4. Includes English, German, Scottish, North American Indian, Métis, Dutch, Greek, Guyanese, Yugoslavian, Muslim, and Iranian.
5. Includes English, German, Ukrainian, Dutch, Métis, Sri Lankan, Turkish, Japanese, Guyanese, South American, Jamaican, Somali, Filipino, Serbian, American, Spanish, West Indies, Hispanic, Lebanese, Croatian, Maltese, Bosnian, Brazilian, Russian, Palestinian, Arabic/Middle Eastern, Latino, Pakistani, and Tibetian.
6. Includes English, German, Scottish, Irish, Ukrainian, North American Indian, Serbian, Finnish, and Cree
7. Percentages less than 4% are combined in the AOther@ category
8. Includes German, Hungarian, Italian, Korean, Persian, Vietnamese, Hebrew, Turkish, Japanese, Romainian, Serbo-Croatian, Urdu, Tamil, Thai, Somali, and Hindi.
9. Includes German, and Cambodian.
10. Includes Arabic, German, Tagalog (Filipino), Vietnamese, and Romanian.
11. Includes Arabic, Italian, Tagalog (Filipino), Ukrainian, Turkish, Serbo-Croatian, Urdu, Tamil, Somali, Hindi, Russian, Tegrina, Swahili, and Tibetian.
12. Includes Persian (Farsi), Japanese, and Serbo-Croatian.

Length of hospital stay following vaginal delivery varied as show in Table 2. At one site, the most common length of stay was 24 hours or less whereas at the other four sites most women stayed in hospital 25 to 48 hours. At three of the sites, less than 10% of women stayed in hospital for more than 48 hours after delivery. Finally, less than 2.5% of women and infants at any of the sites stayed in hospital for more than 60 hours.

Information was gathered about study participants' learning needs in relation to issues generally addressed during postpartum teaching in hospital. As part of the telephone interview, women were asked if they would have liked to learn more about specific topics while in hospital. The topics and "yes" responses are listed in Table 3.

At four weeks post-discharge from hospital, the percentage of mothers who expressed a desire to have learned more about each topic while in hospital was much higher than the percentage of mothers who expressed concern about the same issues at the time of discharge. For example, between 32.5 to 56.2 of women at all sites wanted to have learned more about infant care and behaviour at four weeks post-discharge compared to between 11.5 and 38.4% who reported concern about this topic at discharge.

Table 2

Length of Postpartum Stay

Length of Stay	Site 1 n=164 (%)	Site 2 n=200 (%)	Site 3 n=209 (%)	Site 4 n=137 (%)	Site 5 n=165 (%)
≤ 24 hours	59.1	11.0	32.5	45.3	23.6
25-48 hours	39.7	67.5	59.3	49.9	40.6
> 48 hours	1.2	21.5	8.1	5.8	35.8
Range in hours	≤ 12 to 97-118	≤ 12 to 97-118	≤ 12 to 73-96	≤ 12 to 97-118	≤ 12 to 97-118

Table 3

Topics Women Wanted to Learn More About While in Hospital

Topic	Site 1 n=164 (%)	Site 2 n=200 (%)	Site 3 n=209 (%)	Site 4 n=137 (%)	Site 5 n=165 (%)
Hospital routines	23.2	13.5	11.5	29.2	17.6
Breast feeding	39.6	29.5	21.5	56.9	24.8
Bottle feeding	23.2	11.5	12.9	32.8	15.8
Infant care and behaviour	54.9	35.5	32.5	56.2	37.6
Signs of illness in infant	62.8	57.0	43.1	72.3	57.6
Physical changes and self care	54.3	29.5	27.3	56.9	35.8
Emotional changes for self	40.2	26.0	20.1	49.6	33.3
Sexual changes and intercourse	27.4	14.5	12.4	31.4	21.2
Family changes	36.6	16.0	16.3	31.4	20.0
Community supports and services	43.3	20.0	11.5	35.8	35.8

CONCLUSIONS AND IMPLICATIONS

The Ontario Mother and Infant Survey gathered information from a sample of healthy postpartum mothers and newborn infants. The findings, therefore, are particularly noteworthy because if issues are identified in this population, they are likely to be more pronounced in women and infants with identified health problems.

Women surveyed at four weeks post-hospital discharge reported a number of information needs. Certain knowledge areas consistently were identified by study participants across sites as being of greatest need: (1) signs of illness in infant; (2) infant care and behaviour; and (3) physical changes and self care. This ranking was found in all but one of the sites. Although the findings show more variability for the remaining topics, the next most commonly identified areas mothers would have liked to have learned more about were breast feeding, emotional changes, and community supports and services.

Since data collection for this study was completed, the Healthy Babies, Healthy Children program was enhanced to include the universal Hospital Stay and Postpartum Home Visit Program (effective October 1, 1999). This program has two components: (1) all women have the option of staying in hospital up to 60 hours postpartum; and (2) all consenting new mothers receive a phone call from a public health nurse within 48 hours of discharge and are offered a home visit. These recent changes provide an opportunity to address the identified needs of new mothers.

At the time of the follow-up telephone call, public health nurses can determine areas of concern and provide information according to needs. Postpartum teaching after the mother has returned home may have greater impact than prenatal education or teaching in the hospital. Prior to delivery, women may be focused on matters related to pregnancy and labour and delivery, and perhaps it is only after giving birth that they become concerned about postpartum and infant care issues. During the postpartum hospital stay, distractions in the environment and maternal fatigue and discomfort can hinder the teaching and learning process.[9] Further, women may be most ready to learn when they are confronted with the realities of caring for themselves and a newborn infant at home. Perceptions of vulnerability and recognition of responsibility are motivational factors for learning.[9]

It may be important for communities to determine what other services could better support new mothers during the postpartum period. Telephone information lines, for instance, provide an easily accessible source of information for most mothers. Parenting groups and breast feeding clinics are other initiatives implemented in some communities. Whatever services a community decides to provide, it is essential that mechanisms be in place to provide information to new mothers about these services, and that they are easily accessible (e.g., culturally appropriate, extended hours of operation). Moreover, each community should evaluate the effectiveness of a range of community-based services in relation to the specific characteristics and information needs of their populations.

As further analysis of the data is undertaken, it is likely to become clearer whether there are groups of women within the study population that have specific difficulties, and how sociodemographic and resource utilization factor into meeting these needs. Additionally, length of postpartum hospital stay warrants examination as a predictor variable for maternal information needs. It is unclear to what extent shortened lengths of stay may have decreased opportunities for in-hospital education and, hence, increased the need for information post-discharge. What is evident at this point is that healthy mothers, whom we might expect to be coping well with the first month of motherhood, are experiencing significant information gaps which are relevant to appropriate health and social services utilization.

❑

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Summary of Reportable Diseases in Ontario - December, 1999

Health Units by Region	1996 Population	AIDS	Campylo.	Chicken-pox	Chlamydia	Enceph./ Meningitis	GAS	Gonorrhea
Algoma	123,953		3				1	
North Bay	93,841							
Northwestern	80,235				12			3
Porcupine	97,437				6			
Sudbury	201,154		1		3			
Thunder Bay	161,187		4		30	1	2	2
Timiskaming	38,847		1		4			
Total - Northern	**796,654**		**9**		**55**	**1**	**3**	**5**
Eastern Ontario	185,314		3		7			1
Hastings-Prince Edward	143,790		3					
Kingston-Frontenac	175,568				2			1
Leeds-Grenville	156,129		2		4	1	1	
Ottawa-Carleton	721,136		21		82		1	5
Renfrew	97,634							
Total- Eastern	**1,479,571**		**29**		**95**	**1**	**2**	**7**
Durham Region	458,616		3		33			6
East York	107,822		1				1	6
Etobicoke	328,718		8					5
Haliburton-Kawartha	165,039		2		2			
Muskoka-Parry Sound	78,675				2		1	
North York	589,653		12				1	18
Peel Region	852,526		19		9		1	3
Peterborough	123,448		1		7			
Scarborough	558,960		13		108	4	1	38
Simcoe County	329,865		3		10	1	1	1
Toronto City	653,734		8		30			27
York City	146,534		3		4			
York Region	592,445		17		41	1	3	3
Total - Central East	**4,986,035**		**90**		**246**	**6**	**9**	**107**
Bruce, Grey-Owen Sound	153,312							
Elgin-St. Thomas	79,159				6		1	
Huron	60,220							
Chatham-Kent	109,650				3			
Lambton	128,975				3			
Middlesex-London	389,616		1		43	7	3	8
Oxford	97,142							
Perth	72,106		1		1			
Windsor-Essex	350,329							
Total - Southwest	**1,440,509**		**2**		**56**	**7**	**4**	**8**
Brant	114,564		2		6	1		3
Haldimand-Norfolk Region	102,575				4			
Halton Region	339,875		1				2	1
Hamilton-Wentworth	467,799		4		42	1	3	8
Niagara Region	403,504		2			5	1	8
Waterloo Region	405,435		9			3	3	6
Wellington-Dufferin	217,052							
Total - Central West	**2,050,804**		**18**		**52**	**10**	**9**	**26**
December 1999*	**10,753,573**	**N/A**	**148**	**N/A**	**504**	**25**	**27**	**153**
**** Total YTD 1999**	**-**	**N/A**	**3,728**	**N/A**	**12,038**	**404**	**283**	**2,024**
****Total YTD 1998**	**-**	**161**	**5,340**	**21,887**	**12,400**	**444**	**259**	**2,241**

Data incomplete for sexually transmitted diseases for the month of December 1999, and for all diseases for the month of December from health units: Bruce, Gr
North Bay, Wellington-Dufferin, Windsor-Essex

** Adjusted for deletions and late reports.

Summary of Reportable Diseases in Ontario - December, 1999

Health Units by Region	1996 Population	PPNG	Hepatitis A	Hepatitis B	Hepatitis C	Hib	Influenza	Measles	Meningo-coccal
Algoma	123,953				9		24		
North Bay	93,841								
Northwestern	80,235						7		
Porcupine	97,437				5		10		
Sudbury	201,154				3				
Thunder Bay	161,187				10		11		
Timiskaming	38,847						2		
Total - Northern	**796,654**				**27**		**54**		
Eastern Ontario	185,314				5		1		
Hastings-Prince Edward	143,790								
Kingston-Frontenac	175,568			1	2		14		
Leeds-Grenville	156,129				7				
Ottawa-Carleton	721,136				36		48		
Renfrew	97,634				1				
Total- Eastern	**1,479,571**			**1**	**51**		**63**		
Durham Region	458,616						10		
East York	107,822				9		5		
Etobicoke	328,718		1		7		15		1
Haliburton-Kawartha	165,039				4		13		
Muskoka-Parry Sound	78,675						4		
North York	589,653						55		1
Peel Region	852,526				7		27		1
Peterborough	123,448				6		13		
Scarborough	558,960				19		39		
Simcoe County	329,865				10		44		
Toronto City	653,734				7		13		
York City	146,534				2				
York Region	592,445				20		58		1
Total - Central East	**4,986,035**		**1**		**91**		**296**		**4**
Bruce, Grey-Owen Sound	153,312								
Elgin-St. Thomas	79,159						7		
Huron	60,220						23		
Chatham-Kent	109,650						2		
Lambton	128,975				1				
Middlesex-London	389,616		1	1	28		76		
Oxford	97,142		1						
Perth	72,106				1		23		
Windsor-Essex	350,329								
Total - Southwest	**1,440,509**		**2**	**1**	**30**		**131**		
Brant	114,564								
Haldimand-Norfolk Region	102,575				1		3		
Halton Region	339,875						19		
Hamilton-Wentworth	467,799				19		34		
Niagara Region	403,504				12		42		
Waterloo Region	405,435			1	7		97		
Wellington-Dufferin	217,052								
Total - Central West	**2,050,804**			**1**	**39**		**195**		
December 1999*	**10,753,573**	**N/A**	**3**	**3**	**238**		**739**		**4**
**** Total YTD 1999**	**-**	**N/A**	**244**	**131**	**6,172**	**1**	**3,067**	**2**	**75**
****Total YTD 1998**	**-**	**115**	**312**	**146**	**7,030**	**8**	**2,424**	**9**	**50**

Data incomplete for sexually transmitted diseases for the month of December 1999, and for all diseases for the month of December from health units: Bruce, Grey-Owen Sound,North Bay, Wellington-Dufferin, Windsor-Essex

** Adjusted for deletions and late reports.

Summary of Reportable Diseases in Ontario - December, 1999

Health Units by Region	1996 Population	Mumps	Pertussis	Rubella	Salmon.	Shigellosis	Syphilis (Prim/Sec)	VTEC
Algoma	123,953	1	1		2			
North Bay	93,841							
Northwestern	80,235							
Porcupine	97,437							
Sudbury	201,154							
Thunder Bay	161,187				1			
Timiskaming	38,847							
Total - Northern	**796,654**	**1**	**1**		**3**			
Eastern Ontario	185,314		1					
Hastings-Prince Edward	143,790					1		
Kingston-Frontenac	175,568		1					
Leeds-Grenville	156,129				1			
Ottawa-Carleton	721,136		5		9	1		1
Renfrew	97,634							
Total- Eastern	**1,479,571**		**7**		**10**	**2**		**1**
Durham Region	458,616		2					
East York	107,822				2			
Etobicoke	328,718				3			
Haliburton-Kawartha	165,039				6			
Muskoka-Parry Sound	78,675							
North York	589,653		1		7			
Peel Region	852,526				19	1		
Peterborough	123,448							1
Scarborough	558,960		1		8	2		
Simcoe County	329,865		1		1			
Toronto City	653,734	1			5			
York City	146,534				3			
York Region	592,445	1	2		8			2
Total - Central East	**4,986,035**	**2**	**7**		**62**	**3**		**3**
Bruce, Grey-Owen Sound	153,312							
Elgin-St. Thomas	79,159				1			
Huron	60,220							
Chatham-Kent	109,650							
Lambton	128,975							
Middlesex-London	389,616		6		9	1		2
Oxford	97,142							
Perth	72,106				2			
Windsor-Essex	350,329							
Total - Southwest	**1,440,509**		**6**		**12**	**1**		**2**
Brant	114,564		5		1			1
Haldimand-Norfolk Region	102,575							1
Halton Region	339,875							
Hamilton-Wentworth	467,799		2					
Niagara Region	403,504		2		6			
Waterloo Region	405,435		14		1	1		
Wellington-Dufferin	217,052							
Total - Central West	**2,050,804**		**23**		**8**	**1**		**2**
December 1999*	**10,753,573**	**3**	**44**		**95**	**7**	**N/A**	**8**
**** Total YTD 1999**	**-**	**42**	**1,088**	**8**	**1,964**	**239**	**N/A**	**345**
****Total YTD 1998**	**-**	**32**	**1,862**	**15**	**3,321**	**405**	**26**	**400**

Data incomplete for sexually transmitted diseases for the month of December 1999, and for all diseases for the month of December from health units: Bruce, Grey-Owen Sound,North Bay, Wellington-Dufferin, Windsor-Essex

** Adjusted for deletions and late reports.