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EPI NORTH

The Northwest Territories Epidemiology Newsletter

IN THIS ISSUE

Influenza Vaccine

Jill Walker, *NWT Medical Student*

In Canada, flu season generally runs from November to April[1]. Fall is the time to promote and administer the influenza vaccine so that people develop peak seroprotective levels by the time the virus presents itself in the community.

Influenza Vaccine For The 2005-2006 Season

The antigenic characteristics of the main circulating and emerging influenza virus strains provide the basis for selecting the strains included in the vaccine. For the 2005-2006 season, the National Advisory Committee on Immunization (NACI) recommended that the vaccine offered to Canadians include[2]:

- A/New Caledonia/20/99 (H1N1);
- A/New York/55/2004 (H3N2)[a]; and
- B/Jiangsu/10/2003[b] virus antigens.

The influenza vaccine should be offered free of charge to the following groups at high risk for influenza-related complications:

- Adults aged 65 or older;
- Adults and children with chronic cardiac or pulmonary disorders (including bronchopulmonary dysplasia, cystic fibrosis and asthma) severe enough to require medical follow-up or hospital care;
- Adults and children with chronic conditions such as diabetes or other metabolic diseases, cancer, immunodeficiency (including HIV infection), renal disease, immunosuppression, anemia and hemoglobinopathy;
- Adults and children who have any conditions that can compromise respiratory function or the handling of respiratory secretions or that can increase the risk of aspiration;
- People with neuromuscular conditions;
- Persons of any age who are residents of nursing homes or other chronic care facilities;
- Children and adolescents (aged six months to 18 years) with conditions treated for long periods with acetylsalicylic acid (ASA therapy may increase the incidence of Reyes Syndrome after influenza);

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a The A/New York/55/2004 is antigenically equivalent to the A/California/7/2004 (H3N2) virus strain

b B/Jiangsu/10/2003 is antigenically equivalent to Influenza B/Shanghai/361/2002 virus strain

Northwest Territories Health and Social Services

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Editor's Note

Janet Hopkins, *Managing Editor*

Included in this issue of *EpiNorth* is an article written by Jill Walker, providing information for health care providers on influenza vaccine, including recommendations on high risk groups who should be offered the vaccine.

Dr. Kami Kandola, Wanda White and Maria Santos offer us an indepth look at NWT pertussis rates, with the results of a study of a comparision of pertussis rates in the NWT pre and post acellular pertussis vaccine introduction in children and adolescents.

A report on Tuberculosis in the NWT for 2004 is provided by Cheryl Case. This report gives the epidemiological characteristics of the 2004 TB cases, summarizes how TB cases are detected and identified, identifies risk factors that possibly contributed to the development of TB and includes efforts to prevent and control the spread of TB in our communities.

Wanda White and Dina Cardinal, supplied an article discussing the results of a survey done to evaluate the implementation of STI kits into physicians' clinics, health care centres, hospital emergency and correctional centres and whether they have contributed to the process of contact tracing and partner notification for sexually transmitted infections.

Pamela Jones, presents an article on the prevention of nosocomial infections with the timeless message – hand washing is considered the most important single intervention for preventing nosocomial infections.

Finally, Helen MacPherson, Disease Registries Officer, gives us an up-to-date report on Notifiable Diseases in the NWT.

If you have comments on any of the articles in the *EpiNorth* newsletter please e-mail us at Epi_north@gov.nt.ca.

Continued from page 1

- Persons at high risk of influenza complications who have trips planned to destinations where influenza is likely to be circulating; and
- Healthy children age 6-23 months.

Please note that influenza vaccination is recommended for pregnant and breastfeeding women who are characterized by any of the conditions listed as recommended recipients.

The vaccine should also be actively promoted and offered free of charge to those capable of transmitting influenza to individuals at high risk for complications, and those who provide essential community services:

- People who provide regular childcare to children age 0-23 months, whether in or out of the home;
- HCWs and caregivers who may transmit the virus to those at risk; (NB: Health care workers often have low coverage rates, and unimmunized health care workers are the leading cause of institutional outbreaks!);
- Staff who provide home care for persons in high risk groups;
- People who provide essential services to their community (e.g. law enforcers, ambulance drivers, firefighters, etc.);
- Household contacts of high-risk individuals (including children of parents who either cannot be vaccinated or may not respond to vaccinations); and
- People in direct contact with poultry infected with avian influenza during culling operations.

Once priority groups have been covered, healthy adults and children may then be offered access to the influenza vaccine.

Contraindications

The influenza vaccine should not be given to people who have had an anaphylactic reaction to a previous dose of influenza vaccine, or who have known IgE-mediated hypersensitivity to eggs. Adults with serious acute febrile illness should only be vaccinated once their symptoms have abated.

Annual immunization against influenza is required to maintain optimal coverage because there is a constant change in circulating and emerging influenza viruses. Also, immunity declines quickly in the year following vaccination. Each 0.5mL of the vaccine contains 15µg of hemagglutinin of influenza specific antigen. The vaccine is available as a split-virus (chemically disrupted) and cannot cause influenza. Protection generally begins 2 week after immunization and may last up to 6 months or longer. However, in the elderly, antibody levels fall below protective levels in less than 4 months. In the NWT, October to mid-November is the recommended time for influenza vaccination.

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A Comparison of Pertussis Rates in NWT: Pre- and Post-Acellular Pertussis Vaccine Introduction in Children and Adolescents[1]

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Introduction

Pertussis or whooping cough, as it is commonly known, is a communicable bacterial infection caused by *Bordetella pertussis*. It is commonly seen in infants under age 12 months, who typically present to the health care worker with prolonged spastic coughing spells and possibly apneic episodes. During the past decade, a trend toward an increase in pertussis cases in older children and adults has been witnessed in Canada.[2] A number of other prior studies in Australia, Japan, USA and Germany have also shown increasing trends in adolescents and adults.[3,4,5,6] This has been attributed to waning immunity in later childhood.[7]

In May 2000, the National Advisory Committee on Immunization (NACI) recommended that adult formulation acellular pertussis (adult dTap) vaccine combined with diphtheria and tetanus toxoids be substituted for diphtheria and tetanus toxoids (Td) for the 14-16 year old booster dose.[8] Although there are two formulations for adult dTap, only Adacel vaccine is available in Canada and is manufactured by Sanofi Pasteur Ltd.[9] In October 2000, the Government of Northwest Territories was one of the first to adopt adult dTap into its territorial immunization program free of charge for adolescents from 14-16 years of age. Implementation of this policy occurred in early 2001.

Objective

The objective of the study is to evaluate the effect of the implementation of acellular pertussis vaccine first in childhood and then in adolescents on the epidemiology of pertussis in the Northwest Territories.

This study compares pertussis cases in three consecutive four-year periods. The first period represents the whole-vaccine era; the second period occurred after the introduction of the child formulation of the acellular pertussis vaccine and the last period follows the introduction of the adult formulation of the acellular pertussis vaccine.

Methodology

Pertussis is a reportable disease in the Northwest Territories and surveillance standards have remained unchanged in the past decade. Cases that met the clinical case definition (Box 1) received a nasopharyngeal swab, which was sent for culture to the Provincial Laboratory of Public Health based in Edmonton, Alberta. A *confirmed case* (*clinical*), from hereon referred to as an epi-

Box 1: Case Definitions for Pertussis in NWT

Clinical Case:
(a) paroxysmal cough, or cough with gagging or vomiting > or = to 7 days; (b) cough with apnea with no other known cause; (c) cough with inspiratory whoop with no other known cause

Confirmed Case (clinical):
contact of a lab confirmed case and presenting with symptoms of any duration with no known cause (referred to in the article as an epi-linked case)

Confirmed Case (lab): Positive culture for Bordetella pertussis- (referred to in the article as a lab-confirmed case)

Pending publication in the Canadian Journal of Infectious Diseases and Medical Microbiology.

linked case, would have been in contact with a *confirmed case* (*lab*), from hereon referred to as a lab-confirmed case. In this case, epi-linked cases would present themselves with symptoms while the lab test could be pending. In an outbreak situation, a patient who has met the clinical criteria with no other known cause and a pending lab test is considered a *clinical case*. Diagnoses for these *clinical cases* are reported by public health nurses, community nurses or physicians but only during the two major outbreak periods in 1993 and 1999. (*Table 1*)

Table 1: Annual Pertussis Incidence in NWT

Year	Number of Pertussis Cases				Rate per 10,000 population
	Clinical	Epi-Linked	Lab-confirmed	Total	
1993	40	20	72	132	33.1 (27.4, 38.7)
1994	0	1	4	5	1.2 (0.4, 2.9)
1995	0	0	12	12	2.9 (1.5, 5.1)
1996	0	2	35	37	8.9 (6.2, 12.2)
1997	0	0	19	19	4.6 (2.7, 7.1)
1998	0	0	14	14	3.4 (1.9, 5.8)
1999	5	6	77	88	21.6 (17.4, 26.7)
2000	0	0	8	8	2.0 (0.9, 3.9)
2001	0	0	4	4	1.0 (0.3, 2.5)
2002	0	0	13	13	3.1 (1.7, 5.4)
2003	0	0	1	1	0.2 (0.0, 1.3)
2004	0	0	1	1	0.2 (0.0, 1.3)

The routine case management protocol for clinicians is outlined in the Department of Health and Social Services' Communicable Disease Manual. All epi-linked and clinical cases are swabbed and provided with treatment. In terms of contact management, a change in protocol occurred in 2004. Initially, all household and home daycare contacts were offered chemoprophylaxis regardless of age and immunization status. As of 2004, this was done only for household contacts (including attendees at family day care centres) where there is a vulnerable person (i.e. an infant < 1 year of age (vaccinated or not) or a pregnant women in her third trimester). Furthermore, vulnerable persons in the community who have had face-to-face exposure and/or have shared confined air for more than an hour are also treated.

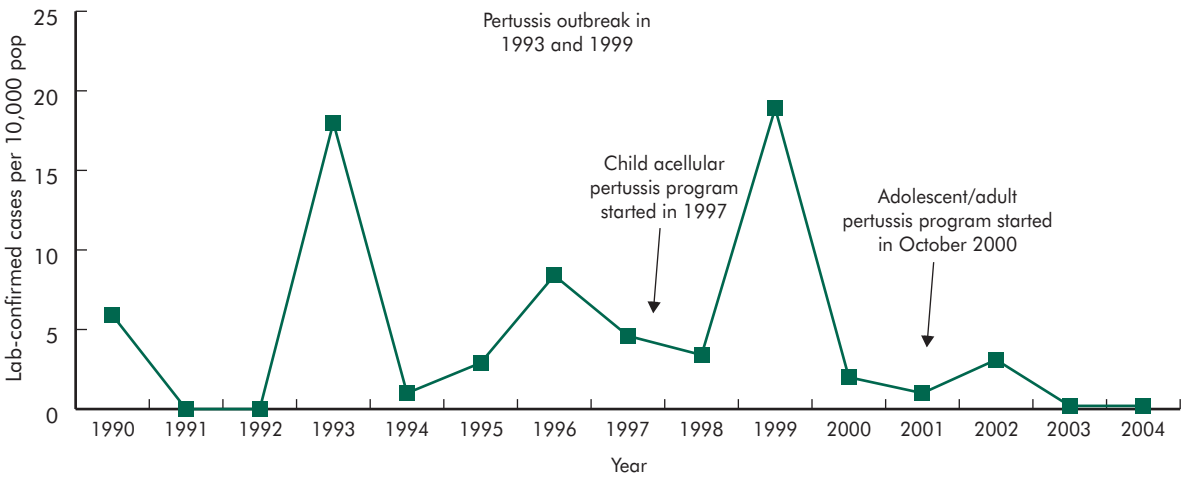
In terms of chronology for the introduction of pertussis vaccines in the NWT, neither the child nor the adult formulation of acellular pertussis vaccine had been introduced in the period of 1993-96. During this period, whole cell DTP was provided to infants at the age of two, four, six and eighteen months and four-six years of age. The new childhood formulation of acellular pertussis was recommended by NACI in 1997 and had fewer side effects. From 1997-2000, the child acellular pertussis vaccine had replaced the whole cell DTP but the adult formulation of acellular pertussis (dTaP) had not been initiated. Full implementation of this childhood series occurred within the first year of introducing the vaccine in 1997. From 2001-2004, both the child and the adult formulation of acellular pertussis vaccine had been introduced. Again full implementation of the adult formulation occurred within the year of introducing the vaccine in October 2000.

A review of vaccine coverage rates for the child formulation of acellular pertussis was conducted by the Government of Northwest Territories and is available for 2000 and 2002. Vaccine coverage of dTap for 2003 will be calculated for the 17 year-old cohort through review of an existing computerized database and immunization cards. Given that dTap was introduced in 2001 to high school students aged 14-16 years of age, this cohort was eligible for dTap vaccination at several opportunities.

Results

Incidence rates for lab-confirmed pertussis cases are presented from 1989-2004 (*Figure 1*). *Table 1* illustrates the total incidence rate for the three types of cases that currently require notification to the Office of the Chief Medical Health Officer. Data on epi-linked and clinical cases was not electronically captured pre-1993. Thus, data is only provided from 1993-2004. Based on *Figure 1*, there were two large outbreaks of pertussis in

Figure 1: Annual Pertussis Rates in Northwest Territories 01/1990 – 12/2004



Source: NWT Helth & Social Services: NWT Bureau of Statistics

1993 and 1999, but none post introduction of dTap in 2001. The average incidence of lab-confirmed pertussis for 1993-1996 was 7.5 cases per 10,000 pop (population) compared to 7.2 cases per 10,000 pop from 1997-2000 and 1.1 cases per 10,000 pop from 2001-2004. Child DTaP vaccine coverage was 89% in 2000 prior to adult dTap introduction and 87% in 2002. Vaccine coverage of adult dTap was 84% in NWT for 2003 17 year-old cohort.

There were 31 cases in infants <12 months of which the primary cause for pertussis was lack of immunization or partial vaccination:

- 17 cases 1993-1996 (4 cases under 2 months)
- 9 cases in 1997-2000 (2 cases under 2 months)
- 5 cases in 2001-2004 (2 cases under 2 months)

Of interest, only one teenager contracted pertussis post adult dTap but this was a 14 year old with NO history of prior vaccination.

Discussion

Throughout the three observed time periods, there appears to be a greater reduction of pertussis cases amongst the older children than amongst the infants, with the major pertussis activity shifting from early childhood (1993-1996) to late childhood and late adolescence (1997-2000) to infants (2001-2004) (see *Figure 2, 3* and *4*). Nonetheless, the high adult dTap vaccine coverage of 14-16 year olds appears to have contributed to the largest reduction in pertussis incidence in the total population. This makes sense considering the relatively young demographics of the NWT compared to Canada overall.

Approximately one-third of all residents in Northwest Territories are age 18 or under.[10] A significant number of births also occur in young mothers, between 11-12% of all births in Northwest Territories occur in women aged 19 years of age or less.[11] Protecting this age group against pertussis would curtail the endemic reservoir for circulation of *Bordetella pertussis*. This significant reduction was not witnessed when switching to the child formulation of acellular pertussis in 1997 although an upward age shift for contracting pertussis did occur as witnessed in the 1999 outbreak.

This 1999 outbreak occurred after a track meet and fanned out among the communities and throughout Nunavut among teenagers. This could possibly explain the higher proportion of teens affected by the disease (~23%). Even though the source occurred among teens, there was not as a significant increase in the younger age groups because of the introduction of childhood acellular pertussis at high coverage

Figure 2: Total Pertussis Cases from 1993-1996 in Northwest Territories (whole-cell vaccine area)

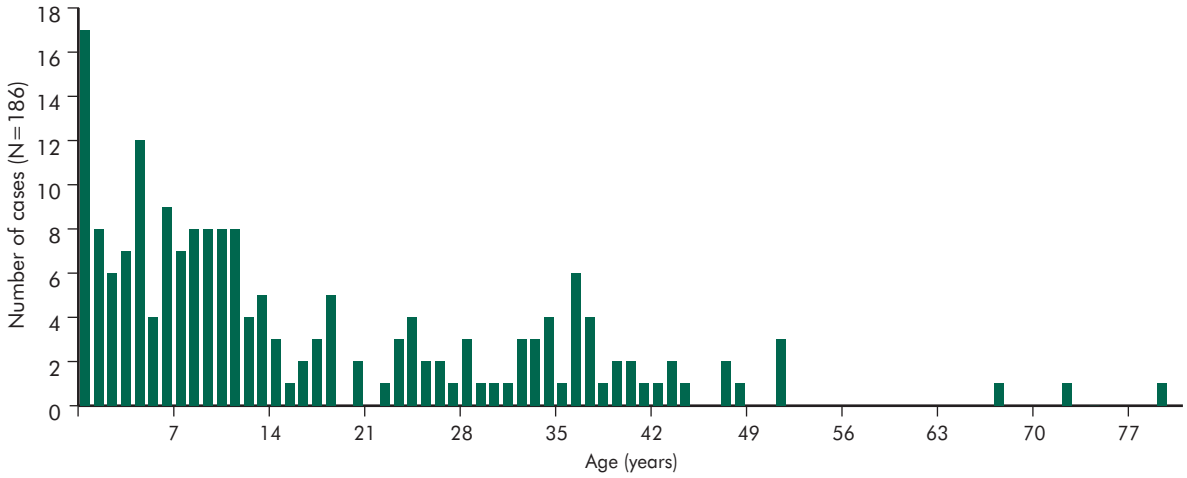


Figure 3: Total Pertussis Cases from 1997-2000 in Northwest Territories (post-child and pre-adult acellular pertussis vaccine)

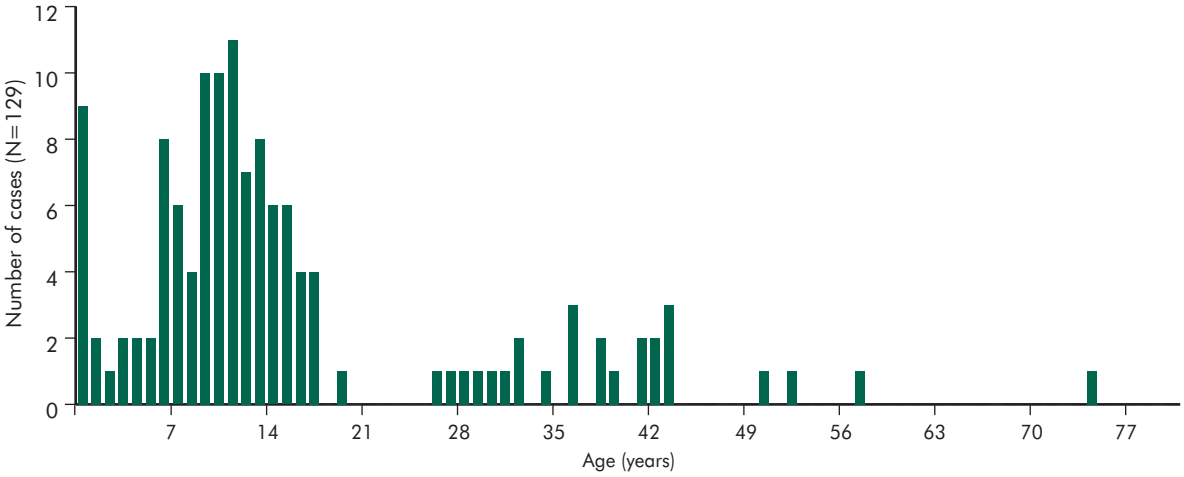
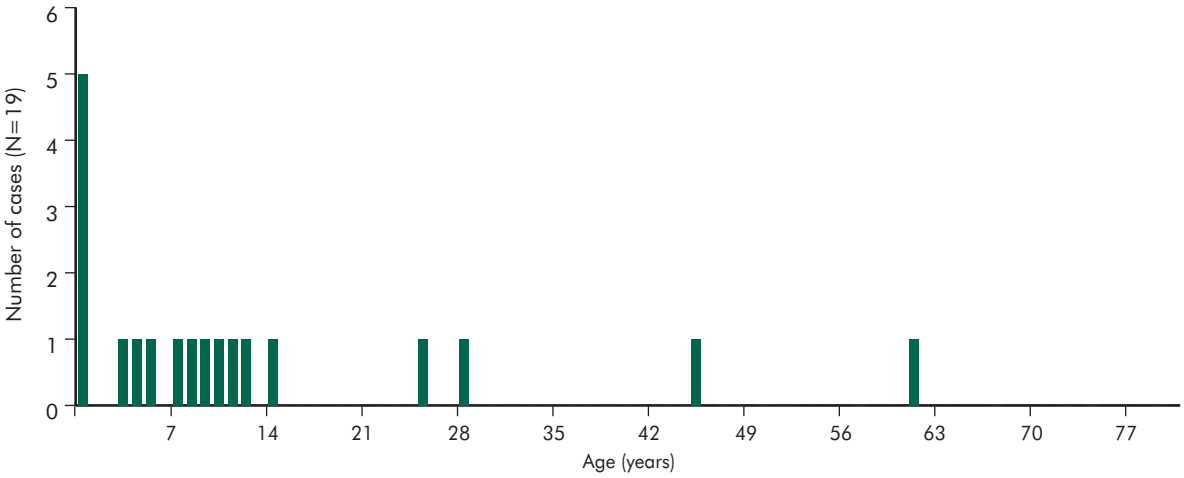


Figure 4: Total Pertussis Cases from 2001-2004 in Northwest Territories (post-adult acellular pertussis vaccine)



rates. Nonetheless, the teens served as the initial reservoir for this outbreak that then spread to mainly older children, adults and infants.

Although NWT is a small jurisdiction, the implications of these findings have relevance for other provinces and territories that have recently introduced the acellular pertussis into their adolescent populations. It is important to maintain high coverage in the adolescent population. Ideally, the school system is the best venue for immunization programs. These should be started as early as possible prior to decreased enrollment rates. Street youth and other out-of-school youth should be captured by other means. It would be then important to analyze the impact of this immunization strategy on pertussis trends and adjust the program accordingly. Given the number of pertussis cases in infants under two months of age who would not be eligible for the vaccine, one may also look at vaccinating young mothers who may be at increased risk. This selective approach to vaccination provides greater financial savings than targeting the general public.

Another important finding is the occurrence of pertussis in the elderly; at least six cases were reported in >55 year olds. Nonetheless, adult formulation of acellular is indicated only for adults <55 years. This is primarily due to lack of research in this age cohort and not due to adverse sequelae. In fact, Sanofi Pasteur are looking at relaxing the upper limit of their age restriction. It may be useful to look at targeting this vaccine to seniors who are at higher risk for morbidity from *Bordetella pertussis* infection due to weakened immune response, frailty and concomitant chronic disease.

Data Limitations

The analysis of small numbers in the Northwest Territories is one of the major limitations to conducting research. Both the population size and the number of reported pertussis cases remain small. As a result, on an annual basis any increase or decrease in the number of reported cases creates unstable rates, as seen from the confidence intervals in *Table 1*.

The cycle in which pertussis outbreaks occur in the NWT can be attributed to the geography and demographics of the population. Given that communities in the NWT are relatively small and "isolated", a susceptible population may be lacking for a number of years after the occurrence of a large outbreak. Looking at the incidence graph (*Figure 1*), NWT has particularly large outbreaks every 6 years (1993, 1999) with smaller outbreaks between these peaks (1990, 1996, 2002). From this observation, it appears that an outbreak occurs every three years. The observation seen in 2001 may simply reflect the normal cycle with just a smaller than usual peak in 2002. If dTaP has NOT had an effect one would predict a large outbreak in 2005 (or 2006). Consequently, these two years will be critical for assessing the program. Nonetheless, there have been only five lab-confirmed cases throughout four different communities by mid-year 2005. This translates to a mid-year rate of 1.2 lab confirmed cases per 10,000 population. Of the lab-confirmed cases, two were infants that were not immunized, two were preschoolers that were fully immunized, and one was an adult with an unknown immunization status.

Immunization coverage rates are also subject to systematic errors during the data collection process. The most reliable method of capturing this information is through immunization cards. However, NWT residents are very transient and can move between communities and/or in and out of the territories. As a result, information can be missed if the child was immunized out of territory and not captured on the immunization card.

Another issue in determining the immunization coverage rate is in relation to the denominator. In order to take into account the transient nature of the territorial population, the cohort was determined based on information from the health care registration database. The cohort was developed based on those born from 1/1/1986-12/31/1986 who resided in the NWT throughout the person's 14th to 17th birthday. Furthermore, any individual that had received a Td or Td/P immunization at least two years prior to implementation of the adolescent/adult acellular

implementation program were discarded from the cohort. This is because these individuals would not have received dTaP soon after receiving Td or Td/P. It has been recognized that a centralized immunization registry will help to create more accurate information with regards to vaccinations.

Conclusion

There appears to be a decrease in the incidence of overall pertussis after the introduction of adult dTap in the Northwest Territories to the 14-16 year old cohort. Although there is significant adult dTap coverage for travelers and health care workers, data supports that adolescents seem to be the primary reservoir for transmission to infants and young children. Cohort by cohort, universal immunization of adolescents along with health care workers therefore, seems sufficient to protect this vulnerable population.[12] In fact, this strategy has been supported by a number of studies and has a cost-effective approach compared to mass immunization of adults.[13,14] Of concern nonetheless, is the increasing proportion of infant cases within the first two months of life (despite the overall absolute reduction in cases). Further research on maternal vaccination programs aimed to reduce pertussis incidence in the newborn period will be required.

Acknowledgements

Disease Registries, Office of the Chief Medical Health Officer
Department of Health and Social Services, Government of Northwest Territories

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Tuberculosis in the NWT for 2004

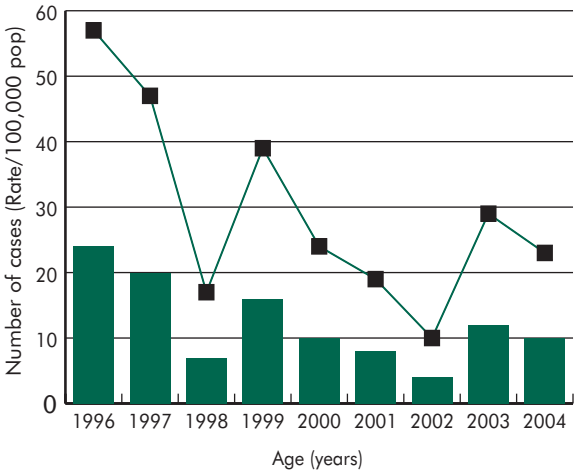
Cheryl Case, RT, BSc, MLS, *Communicable Disease Consultant, Department of Health and Social Services*

The following is a summary of Tuberculosis (TB) cases reported in the NWT for 2004. This report emphasizes the epidemiological characteristics of the cases and summarizes how the cases are detected and identified, providing details on risk factors that possibly contributed to the development of TB disease. In addition, initiatives illustrating various efforts to prevent and control TB are discussed.

Case Description for 2004

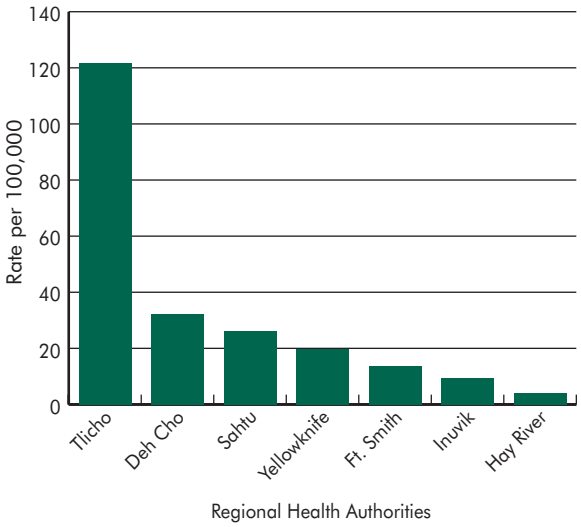
In 2004, there were 10 reported cases of TB in the NWT, a rate of 23.4 cases per 100,000 population, a 19% decrease from the previous year when the rate was 29 per 100, 000. *Figure 1* demonstrates a leveling off of active TB rates since 2000, with a five-year average rate of 21/100,000. This is still four times the national rate of 5.2 per 100,000 in 2002.

Figure 1: Number of TB Cases/Year in the NWT



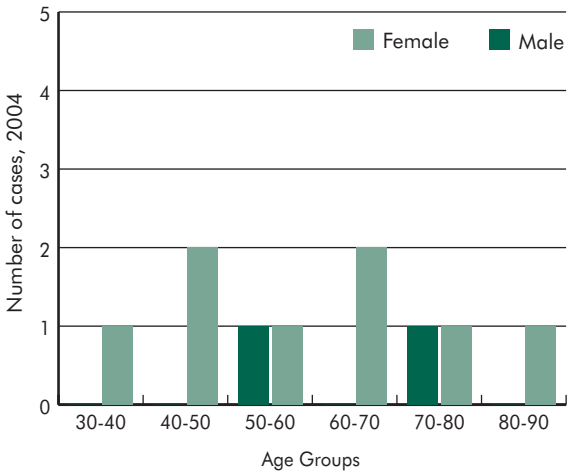
The Tlicho, Deh Cho and Sahtu regions have the highest rates of active TB, which were 121.9, 32.2 and 26.1 per 100,000 respectively over a six-year period from 1999-2004, as shown in *Figure 2*. (Yellowknife includes Lutsel k'e and Deninu (Ft. Resolution)).

Figure 2: TB Rates per 100,000 by Region (1999-2004)



In 2004, the average age of a TB case was 58 years, with ages ranging from 30-85 years. The gender ratio was 4:1 for females and males as shown in *Figure 3*. It is also important to note there were no active TB cases reported in persons less than 30 years of age. This is significant since one of the primary goals in TB control is to eliminate the incidence of TB in children. The older age range of the cases is reflective of early case finding and also proactive approaches in

Figure 3: TB by Age and Gender for 2004



contact tracing and surveillance, such as, treating children and others for Latent TB Infection (LTBI), thus preventing progression to active disease. *Figure 5* indicates that the highest burden of active TB disease (35%) is in the 60 years and older age range. This differs from *Figure 4* that shows the burden was similarly shared among 20 - 29 years olds and 60+years. *Figures 4 and 5* are indicators that the spread of TB is better controlled.

Figure 4: Age Distribution of Tuberculosis in the NWT, 1995-1999 (n=99)

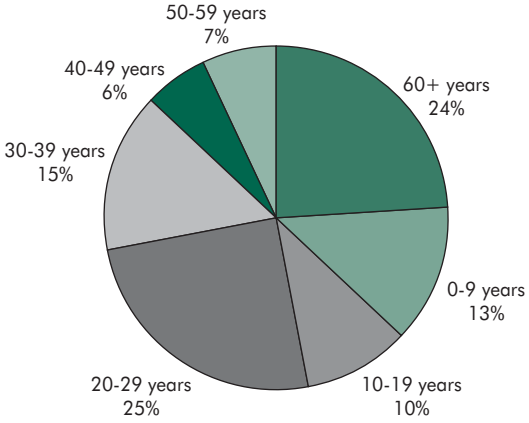
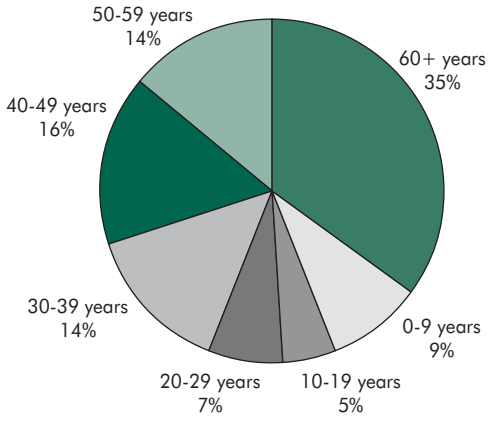


Figure 5: Age Distribution of Tuberculosis in the NWT, 2000-2004 (n=44)



All ten cases in 2004 were Dene. The 2004 TB rate for NWT aboriginal TB (46.7 per 100,000) is twice the Aboriginal national rate (23.3/100,000) in 2002[1] and eight times that of the Canadian population.

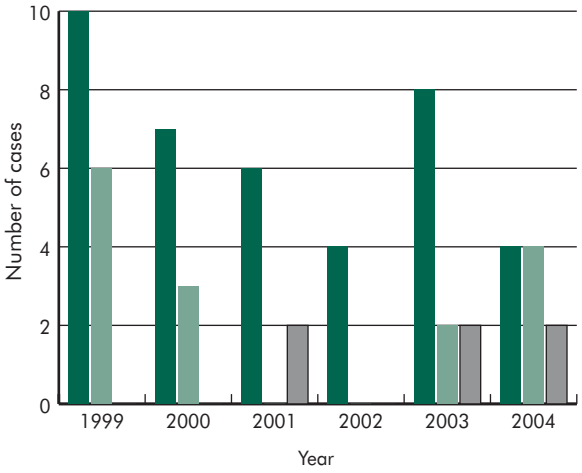
All of the ten cases had negative HIV serology tests. Nine of *Mycobacterium tuberculosis* isolates were susceptible to all of the first-line antibiotics (isoniazid, rifampin, pyraziamide, ethambutal and streptomycin) with one case not culture confirmed but rather a clinical case.

Treatment was done by directly observed therapy (DOT) for all 10 cases and nine of the ten completed treatment. One case died of cancer before TB treatment was completed.

Since 1999, the mode of case finding was evaluated. *Figure 6* summarizes how cases are detected by their health care providers. The mode of detection is categorized into symptom presentation, contact tracing for an active case of TB or surveillance.

DOT:
Directly
Observed
Therapy

Figure 6: Case Findings 1999-2004



Surveillance includes the following:

- Review all abnormal chest x-ray reports by a Communicable Disease Consultant in the Office of the Chief Medical Health Officer (OCMHO)

- Screen those at high risk of TB such as those with immunosuppressive diseases (HIV, treatment for cancer or auto-immune disease)
- People with untreated LTBI
- School screening done in TB endemic communities
- Occupational health screening

Although the astuteness of the health care professional is extremely important for early case finding, contact tracing and surveillance also play an important role.

All of the cases were pulmonary tuberculosis; with one case additionally diagnosed with miliary tuberculosis. Four of the cases were direct smear positive at time of diagnosis. A positive smear indicates a greater number of bacteria in lung secretions, thus greater infectivity. The rate of smear positive pulmonary cases was 9.0 per 100,000 in 2004 for the NWT compared to the national rate 1.4 per 100,000 for 2002.[1]

Risk Factors

Eighty percent (8 of 10) of the TB cases had a history of untreated LTBI. One of the cases had a co-morbidity of type II diabetes and another was on high dose prednisone for one year for an autoimmune disorder. Two of the cases were reported to be heavy drinkers. One of the cases had received treatment many years ago for LTBI, but was since diagnosed and treated for cancer. At the time of TB diagnosis, the cancer had metastasized. According to the *Canadian TB Standards, 5th edition,* cancer, immunosuppressive therapy and diabetes mellitus are risk factors for the development of active tuberculosis.

With reference to *Table 1*, there were a total of 176 Mantoux tests done among contacts of TB cases. With 22 positive tests, the overall infectivity rate was 12.5 %. Twenty of those with a positive Mantoux test (95%) were treated for LTBI. Nineteen of the 20 completed treatment while two contacts with evidence of infection still require further follow-up. One contact with a positive Mantoux test opted out of treatment.

LTBI:
Latent
TB
Infection

Table 1:

Contact Tracing	Contacts
Total # Mantoux tests	176
# Positive Mantoux	22
# Offered treatment	20
# Treated	20
# Completed	19

A review of each case's contact listing revealed that many of the contacts either had TB in the past or were infected with TB. Many of those who were infected with TB were never treated for the LTBI. Fifty-eight of those reviewed had untreated LTBI. Twenty-six of the 58 LTBI contacts were offered treatment with only five accepting treatment. Although, it is recommended that all contacts known to have untreated LTBI should be assessed and considered candidates for treatment, limited resources prioritize resources to focus on children and contacts with evidence as a new Mantoux reactor/converter.

This area of the TB program needs enhancement. Those with untreated LTBI that are screened and not treated during the contact investigation are missed opportunities to eliminate the seed pool of infection and continue to pose risk for TB reactivation in their lifetime. These contacts are at particularly high risk of TB activation if they have medical conditions such as chronic renal failure, immunosuppressive therapy, silicosis, diabetes mellitus, HIV or if residing or working in long-term care facilities, living in poverty or homeless[2] (ref. Canadian TB Standards). All contacts with evidence of TB infection should be treated regardless of age. Failure to do so is a missed opportunity to eliminate TB.

Summary

Tuberculosis remains a significant public health concern for residents of the NWT, particularly Aboriginal people. The rates of TB are leveling off

with a 5-year average of 21 per 100,000. This is due mainly to the absence of a TB outbreak since 1996. Early case finding, contact tracing and surveillance are contributors to the leveling of the TB rates. Thirty five per cent of cases are occurring in those 60 years of age and older. The next few years will continue to be challenging as efforts are directed to enhancing TB knowledge among health care providers and the general population, and the aggressive approach to treat TB cases and those infected with TB will continue.

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1 Report. "Tuberculosis in Canada", *Public Health Agency of Canada*. 2002 http://www.phac-aspc.gc.ca/publicat/tbcan02/

2 Long, R. et al "Canadian TB Standards, 5th ed." *Canadian Lung Association and Health Canada*. 2000

Nosocomial Infections can be prevented

Pamela A. Jones, *NWT Nursing Student*

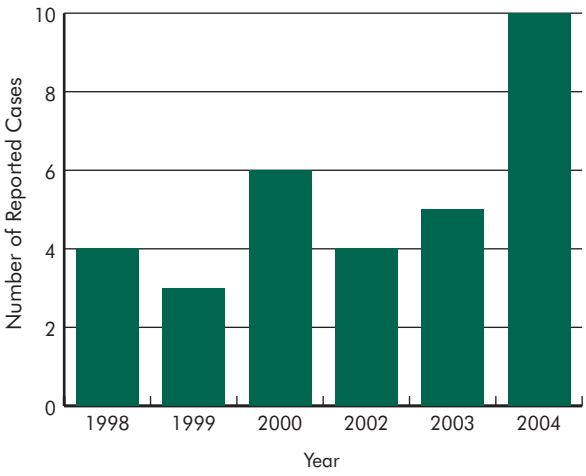
In the health care setting, hand washing is often cited as the primary weapon in the infection control arsenal. The purpose of hand washing is microbial reduction in an effort to decrease the risk of nosocomial infections.

A nosocomial or hospital acquired infection is one for which there is no evidence that the infection was present or incubating at the time the client was admitted to the hospital facility.[1]

The organisms causing most nosocomial infections usually come from the client's own body (endogenous flora). They also can come from contact with staff (cross-contamination), contaminated instruments, needles and the environment (exogenous flora). It has been estimated that 30%-40% of endemic institutional antibiotic resistance is caused by the unwashed hands of hospital personnel.[2] Because clients are highly mobile and hospital stays are becoming shorter, clients often are discharged before the infection becomes apparent. As an after effect, it is often difficult to determine whether the source of the organism causing the infection is endogenous or exogenous.

Antibiotic resistant microorganisms such as, *Methicillin Resistant Staphylococcus Aureus (MRSA)*, can be transmitted via health care workers hands. MRSA is a strain of Staphylococcus Aureus that is

Figure 1: Cases of MRSA in the NWT, 1998-2004



resistant to a large number of antibiotics, including methicillin. Clients returning from referral to southern hospitals have been the most common source of MRSA to the NWT (imported cases). Transmission of MRSA has also happened to several clients in their own community, with each client having to receive several courses of antibiotic treatment. Although MSRA infection can usually be treated, clients who are very ill will have difficulty tolerating the treatment.[3]

Dr. Zoutman, a member of the Canadian Hospital Epidemiology Committee (CHEC) and Canadian Nosocomial Infection Surveillance Program

(CNISP) estimates 250,000 people a year in Canada will become infected with a nosocomial infection.[4] He also stated that 8,000 to 12,000 people will die from nosocomial infections every year. Next to heart disease, cancer and stroke, these numbers would make nosocomial infections the fourth leading cause of death in Canada.

Although hand washing is considered the most important single intervention for preventing nosocomial infections, studies have repeatedly shown poor compliance with hand washing protocols by hospital personnel. Failure to comply is a complex problem that includes elements of lack of motivation and lack of knowledge about the importance of hand washing.[5]

Linda Heimbach, Occupational Health and Safety/Infection Control Coordinator at Stanton Territorial Hospital states:

"Stanton Territorial Health Authority recognizes the importance of hand washing as the number one barrier to the spread of infection both within the hospital setting, and in the community. This importance is stressed to staff through frequent education sessions, and the availability of anti-

How to Wash Hands[6]

Procedure	Rationale
Remove jewelry before hand wash procedure.	
Rinse hands under warm running water.	This allows for suspension and washing away of the loosened microorganisms.
Lather with soap and, using friction, cover all surfaces of the hands and fingers.	The minimum duration for this step is 10 seconds; more time may be required if hands are visibly soiled. For antiseptic agents 3-5 ml are required. Frequently missed areas are thumbs, under nails, backs of fingers
Rinse under warm running water.	To wash off microorganisms and residual hand washing agent.
Dry hands thoroughly with single-use towel or forced air dryer.	Drying achieves a further reduction in number of microorganisms. Reusable towels are avoided because of the potential for microbial contamination
Turn off faucet without recontaminating hands.	To avoid recontaminating hands.
Do not use fingernail polish or artificial nails.	Artificial nails or chipped nail polish may increase bacterial load and impede visualization of soil under nails.

microbial soap and alcohol based hand wash stations throughout the hospital. Signage reminds staff; patients & visitors that frequent hand washing will reduce spread of organisms.

Poor compliance with hand washing is one of the factors in nosocomial (hospital based) infections. Other factors include protecting patients by being appropriately vaccinated, staying home when sick, and practicing standard precautions consistently, including hand washing as well as specialized precautions as needed. According to the Canadian Hospital Infection Control Association (CHICA) the estimated national average for nosocomial infections in health care settings is 5-10%. To date, Stanton's nosocomial rate has remained at < 5%.

Continual reminders are needed as hand washing may be simple to do, but it's also easy to forget!"

In summary, nosocomial infections equate to extra pain and suffering for those affected. Nosocomial infection events are not limited to clients, nor are all infections preventable; however, the goal should theoretically be zero tolerance. Proper hand washing is one of the keys to stop the spread of germs. As health care professionals it is imperative that we set an example by being consistent with hand washing in the health care setting.

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2 http://www.cmaj.ca/cgi/content/full/167/8/885

3 Wanda White, Communicable Disease Specialist, Health and Social Services

4 Dr. Dick Zoutman, M.D., F.R.C.P.C, Personal Communication August 24, 2005

5 NWT. Department of Health and Social Services. *NWT Infection Control Manual*. Yellowknife, NWT: Department of Health and Social Services, May 2004

6 NWT. Department of Health and Social Services. *NWT Infection Control Manual*. Yellowknife, NWT: Department of Health and Social Services, May 2004 http://infoweb.hlthss.gov.nt.ca/content/internal%20form/pdf/immun_cntrl/nwtinfectioncontrolmanual.pdf

Continual reminders are needed as hand washing may be simple to do, but it's also easy to forget!

STI Contact Tracing: Summative Evaluation

***Wanda White, RN, BSN, MHS,** Communicable Disease Specialist*
***Dina Cardinal,** Nursing Student*

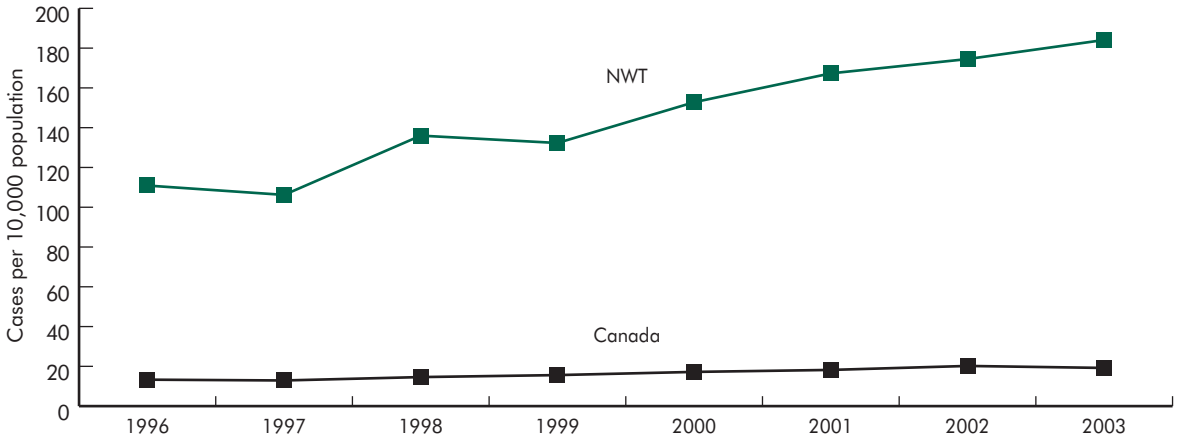
Over the past five years NWT rates of sexually transmitted infections (STI) have been rising steadily[1] (*Figure 1*). Multiple partners and unprotected sex are two documented factors in increasing STI rates, which include the 300% increase in gonorrhea rates over the past three years. This is a trend that is also seen in the rest of Canada,[2] although, the rates of STIs in the NWT are approximately 10 times those nationally (*Figure 2a & 2b*). The increased rates of STIs in youth 14 to 25 years of age (*Figure 3*) are of particular concern.

One of the key strategies to control STIs is contact tracing (Canadian STD Guidelines 2000). Contact tracing entails identifying and contacting all sexual partners and treating where necessary.

The NWT assessed contact tracing levels in 2000, which highlighted areas of concern (*see Table 1*). Prevention and control of STIs is essential, and partner notification or contact tracing is a very challenging endeavour for health care providers. In a survey done in 2005 many health care professionals reported that this is due to the reluctance by the client to identify partners. Some of the reasons given by the client for not wanting to divulge their partner's name are:

- They did not know the partner very well,
- They were too intoxicated to remember,
- They are embarrassed; or;
- Concern about lack of confidentiality.

Figure 1: Sexually Transmitted Infection Rates, 1996-2003



Source: Communicable Disease Registry and Health Canada

Figure 2a: Comparison of Chlamydia Rates Canada/NWT 2002

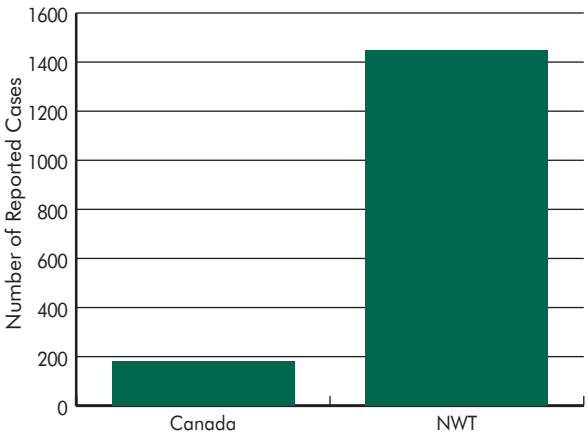
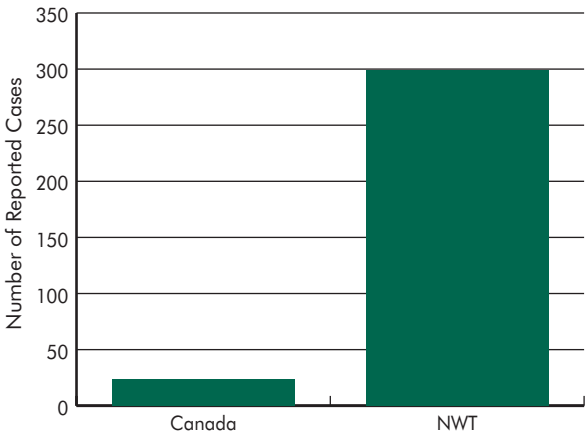


Figure 2b: Comparison of Gonorrhea Rates Canada/NWT 2002

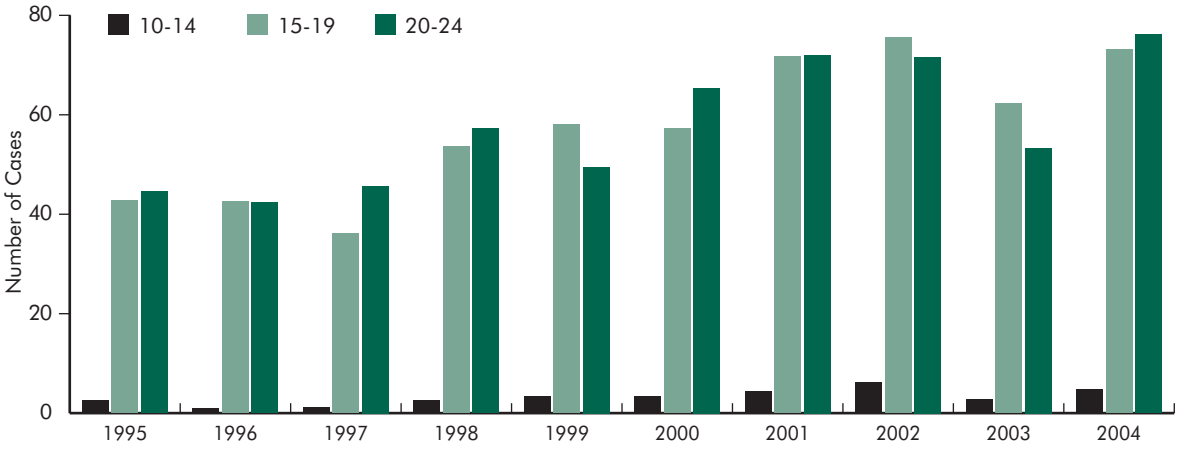


Source: Canada Communicable Disease Report, June 2005

However, some clients did consent to share information about partners once the process of partner notification and contact tracing was explained. Also, it was noted by health care providers that ensuring confidentiality of the index case enhances the chance that clients will provide contact information.

One strategy recommended by NWT physicians to provide continuity in the contact tracing process was to make available to all clinicians a STI Kit. This kit is intended to guide comprehensive diagnosis, treatment and follow-up of all STIs. In July 2003, the Office of the Chief Medical Health Officer distributed STI kits to all medical clinics and health centers across the NWT. These kits contained diagnosis, treatment and contact tracing protocols as well as client education materials. The kit also contained a supply of single dose medication treatment for chlamydia and gonorrhea. The purpose of this article is to discuss the implementation of the

Figure 3: STI Rates NWT Youth



Source: Communicable Disease Registry

STI kits and whether they have contributed to the process of contact tracing and partner notification. This will be done by comparing pre STI Kit contact tracing levels, 2000, to post kit levels, 2003/2004. According to best practices described in the Canadian STI Guidelines (2000) this should have made a difference in the level of contact tracing. Over 50% of male and female partners of people infected with Chlamydia are themselves infected: The Canadian STI Guidelines notes "secondary prevention of STI transmission from an infected partner to others is a critical component of the management of STI infection" (P: 34).

In July 2005, a survey was sent to physician clinics and health centres to determine if these kits were adequate for providing comprehensive STI services. Of the 48 surveys sent out, 22 (44%) completed surveys were returned. Of the 22 completed surveys, 11 either did not know that the kit existed or were unaware of the contents, and many kits had been tucked away in obscure places within the health centre. An equal number (11) stated that they were using the STI kits with every client and that they were very useful. Three of those surveyed indicated that a pictorial teaching tool would be useful for clients who are illiterate or need plain language information. Other information that was identified for possible inclusion was medication information for pregnant and nursing mothers, Adolescent Sexual Violence/Abuse Screening Tool, and diagnostic protocol for urine testing.

Table 1 clearly indicates that health care providers are completing more contact tracing. Eighty two percent of individuals are now contact traced for transmission of Chlamydia and Gonorrhea. This is a 24% increase since 2000. The most significant increase is in the population serviced by physicians, which has gone up by 36.5%. Other factors, such as awareness and increased health care provider education has probably contributed to a change in practice but the STI kits suggested by physicians and used now by the health care provider most likely contributed to the positive change.

Table 1:

Health Care Providers	Percentage of Partners notified		
	2000	2003	2004
Physicians Clinics	45%	80%	84%
Community Health Centre	72%	88%	84%
Public Health Units	78%	87%	87%
Hospitals	38%	62%	74%

The Office of the Chief Medical Health Officer has been working in conjunction with the local and regional elders, community leaders and health care professionals across the NWT to identify goals and objectives to raise the awareness of the realities of STIs. STI kit updates will be provided to those that require them, as well as complete kits to those who either have not received them, or are unable to locate them. It is our joint responsibility, as health care professionals to encourage high-risk clients to take control of their own health. Follow-up and partner notification are areas that require consistent monitoring and we will continue to assist and ensure this intervention is being carried out. It is our hope that these improvements in reporting will decrease the numbers of STIs in the Northwest Territories, as well as improve the health of high-risk clients as a whole. Good comprehensive STI services including contact tracing will help reduce and prevent STIs.

The STI Strategy (2004), "The Naked Truth" has set the following goals:

Goal 1 Ensure appropriate and effective clinic practices and treatment of STIs throughout the NWT.

Goal 2 Assist community members to avoid risky sexual behaviours and make healthy lifestyle choices.

Goal 3 Implement a comprehensive, sustained STI awareness and education campaign.

Goal 4 Develop the knowledge and skills among community-based front-line workers to lead STI education and awareness

Goal 5 Facilitate community ownership and responsibility for the health and well-being of members.

For more information on the NWT STI Strategy, check the Department of Health and Social Services web site: http://www.hlthss.gov.nt.ca/content/Publications/Reports/reports.asp

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5 Steenbeek, A. (2004). Empowering health promotion: A holistic approach in preventing sexually transmitted infections among first nations and Inuit adolescents in Canada. Journal of Holistic Nursing, 22(3), 254-266.

HEALTH.online
Mental Wellness Resources

Janet Hopkins, Managing Editor

The Internet has been a bonus to people who want research and information on a number of issues and topics at the tip of their fingers. Endless amounts of health information are available at the click of the mouse. One can find health information about almost every known disease and condition. Nevertheless, not everything on the Internet is factual and reliable information. People should always be aware to check with a health professional before using any information from the Internet as a source of decision for their health concerns.

In this issue of *EpiNorth*, the main focus is on vaccine preventable and communicable diseases. Below are a few of the websites found to be informative and reliable when researching topics related to these issues.

Flu Vaccine
http://www.phac-aspc.gc.ca/influenza

http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/05vol31/asc-dcc-6/index.html

STI
http://www.cdc.gov/std/default.htm

http://www.hlthss.gov.nt.ca/content/Publications/Reports/reportresult.asp?ID=93

TB
http://www.lung.ca/tb/main.html

http://www.phac-aspc.gc.ca/publicat/tbcan02/

Pertussis
http://www.hc-sc.gc.ca/iyh-vsv/diseases-maladies/cough-toux_e.html

UPCOMING events

NWT TB CONFERENCE

NWT TB CONFERENCE will be held in Yellowknife
February 2 - 3, 2006 at the Explorer Hotel

Keynote speakers will be:

Dr. Anne Fanning, MD
FRCPC; Professor Emeritus, University of Alberta Hospital, Edmonton

Dr. Dennis Y. Kunimoto, MD
FRCPC; Professor, University of Alberta Hospital, Edmonton

Dr. Richard Long, MD
FRCPC, FCCP, Provincial Medical Consultant,Tuberculosis, Alberta Health

For registration information please contact:
Cheryl Case, Communicable Disease Consultant
email: cheryl_case@gov.nt.ca

NOTIFIABLE diseases

for the Northwest Territories (NWT) January - June 2005[a]

		January - December 2004	January - June 2005
		NWT	NWT
Vaccine Preventable Diseases	Hepatitis B	0	0
	Haemophilus Influenzae	0	0
	Influenzae A	0	12
	Influenzae B	0	3
	Pertussis	0	5
	Chicken Pox	41	6
Sexually Transmited/ Bloodborne Diseases	Chlamydia	649	330
	Gonorrhea	181	36
	Hepatitis C	34	10
	Hepatitis, Other	0	0
	Syphilis	0	0
Diseases by Direct Contact/ Respiratory Route	Invasive Group A Strep	3	1
	Invasive Group B Strep in neonates	0	0
	Invasive Group B Strepococcus	1	0
	Invasive Pneumococcal Disease	15	8
	Legionellosis	0	0
	Listeriosis	0	0
	Meningitis, Other Bacterial	0	0
	Meningitis, Unspecified	0	0
	Meningitis, Viral	1	0
	Meningococcal Infections	1	0
	Respiratory Syncytial Virus	41	52
	Tuberculosis	11	2
Enteric, Food and Waterborne Diseases	Botulism	0	0
	Campylobacteriosis	5	1
	Cryptosporidiosis	0	0
	E.Coli 0157:H7	3	2
	Giardiasis	12	3
	Hepatitis A	0	0
	Salmonellosis	3	2
	Shigellosis	0	0
	Tapeworm Infestation	0	0
	Trichinosis	0	0
	Yersinia	0	0
Vectorborne/Other Zoonotic Diseases	Brucellosis	0	0
	Malaria	2	0
	Rabies Exposure	10	6
Antibiotic Resistant Microorganisms	Methicillin-resistant Staph.Aureus	10	12
	Vancomycin-resistant Enterococci	0	0

NWT HIV Infections Reported from 1987 to June 2005

	Age Group at Diagnosis								*Gender*		*Risk Category*					
Total	0-9	10-14	15-19	20-29	30-39	40-49	50-59	60+	Female	Male	MSM[b]	MSM/ IDU[c]	IDU	Hetero-sexual	Perinatal	Blood Products
28	1	0	0	4	17	5	0	1	5	23	11	1	7	7	1	1

a Statistics are based on currently available data and previous data may be subject to change
b Men who have sex with men (MSM)
c Injection Drug User (IDU)