

EpiNORTH

The Northwest Territories Epidemiology Newsletter

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Cervical Cancer, Sex, STDs and Early Childhood Development – What's the Connection?

At first glance, *EpiNorth's* Summer 2001 issue appears to offer a diverse collection of articles – one group loosely focuses on reproductive health issues in the NWT (see Healey, White, MacKinnon), while a second group of articles deals with early childhood health and development (see Tuck, Hewitt, Chatel). Nearly all these articles, however, are concerned with an important medical and epidemiologic technique – screening.

Medical screening is a recognized component of disease control. Its purpose is to identify pre-clinical states of disease through the application of simple tests or examinations to differentiate asymptomatic persons who may test positive for a disease from those who do not. In the case of pre-schoolers, screening instruments entail, for example, the early detection of cognitive and behavioural problems which may benefit from carefully designed, and culturally appropriate, remedial interventions.

Any worthwhile screening program adheres to the following basic principles: the condition screened for is a significant health problem; there is an asymptomatic phase of the disease during which screening is the only means to identify affected individuals; tests or examinations are simple, reliable, standardized and acceptable to the population screened; there is an effective treatment available; early intervention leads to better outcomes; and the benefits of screening outweigh the costs and risks associated with running such a program.

Cervical Cancer

- The NWT population is characterized by high STD rates, high fertility rates among young females, prevalent smoking and poor diet. Based on these population characteristics, a large proportion of NWT females are at high risk for cervical cancer.
- Between 1980-1996, twelve deaths due to invasive cervical cancer were reported; five occurred in women 24-35 years of age.¹
- Between 1992-1999, twelve cases of invasive cervical cancer and 139 cases of cervical *in-situ* cancer were reported. Seventy-eight (56%) of the *in-situ* cases occurred in women 20-29 years of age, and 39 cases (28%) occurred in women 30-39 years of age.
- The crude screening rate between 1991-1994 was 481 per 1,000 women (48%) of the target population age 15 and older. The average annual screening rate is 120 per 1,000 women (12%) of the target population.

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Pap Testing: Are we doing enough?

The Conventional Pap Test

Cancer of the
cervix is a

preventable disease and, theoretically, with regular screening dysplasia can be detected early and invasive disease can be prevented. Pap testing is considered the best tool for screening for cervical cancer, yet an unacceptable number of women who have been cytologically screened develop invasive cervical cancer because of too many false negatives. Dysplasia is often missed in a cervical sample either because of human error in screening and interpretation or because of suboptimal quality of Pap smear.^{1,2} In Geneva, 14% of women with high grade cervical intraepithelial neoplasia (CIN) received a false negative cytology result in the two years before diagnosis.³ This was also seen in a retrospective study of cancer cases in Alaskan women in 1988 where it was found that the Pap test had a sensitivity of 51% to render a diagnosis of dysplasia up to one year before the confirmation of invasive cancer.⁴

Cervical Cancer in NWT and Nunavut

The NWT and Nunavut have had a comprehensive cervical screening program since 1990. In spite of having in excess of 48% of eligible women screened from January 1991 to December 1994,⁵ the NWT had the highest rate of cervical cancer in Canada for that period.

Cervical cancer is the most common cancer occurring among women in the Northwest Territories (NWT) and Nunavut, and represents about 35% of all cancers diagnosed among women between 1991 and 1996.⁶ Cancer rates are higher among the Aboriginal people, who constitute 61% of the population in the NWT⁷ and 85% of the population in Nunavut⁸. High cervical cancer rates are also seen in other Canadian⁹ and United States Aboriginal populations¹⁰.

Role of HPV

Many epidemiological studies provide evidence that persistent infection with specific types of Human Papillomavirus (HPV) is a strong independent risk factor for the development of CIN and cervical cancer.^{11,12} There are more than 70 HPV types¹³ and more than 30 of these infect the anogenital tract.¹⁴ Low-risk types (6,11 and 42 to 44) are present in some low-grade lesions but are absent in cervical cancers. Types 16,18,31,33,35,39,45,51,52,56,58,59 and 68, referred to as the 'oncogenic types', and account for nearly 90% of HPV types detected in High Grade Squamous Intra-epithelial Lesions (HSIL) and cancer.¹⁵

Pap Test Using Liquid Cytology

Recent developments in screening for cervical cancer include a new 'thin-layer liquid based cytology'. This technology is designed to reduce sampling and reading errors by providing an improved quality of specimens that facilitates easier detection of abnormal cells in the cytological specimens.¹⁶ Samples collected from the cervix with a cervical brush or broom are rinsed into a liquid medium that preserves the cells. The advantage of this technique is that most of the sample is available for analysis. With the traditional slide preparation, a large portion of the sample was left on the brush which was then discarded.

In the laboratory, the samples are placed in an automated device that standardizes the concentration of the cells and prepares a thin layer of cells on the slide. This thin layer allows a more consistent uptake of cytological stains and provides superior quality specimens for microscopic analysis. Large-scale prospective studies have evaluated the accuracy of using liquid cytology for the Pap test and found the sensitivity of this method to be superior to conventional cytology.^{2,17}

HPV Testing

Early clinical methods for HPV testing such as filter in-situ hybridization and dot blot hybridization were insensitive and relatively non-specific. Their application in earlier epidemiological studies had led to inconsistent results^{18,19} and this has resulted in significant skepticism in the literature as to the clinical utility of HPV testing. Two types of tests now dominate the field of HPV testing: Polymerase chain reaction (PCR) technology and the HPV DNA hybrid capture. Hybrid Capture-II (HC-II, Digene Corp., MD, US) is the only HPV test approved by the US Federal Drug Administration (FDA) for clinical use.

Population-based studies have shown HPV DNA testing with HC-II to be more sensitive for detecting precancerous lesions (90 to 100%) than the conventional cytology counterpart.²⁰ Although it has a lower specificity compared to the histology gold standard, it has been shown that HPV DNA detection precedes and predicts the first cytological detection of SIL. In a prospective study, nested in a five-year follow-up of 17,654 women who were initially cytologically normal, the women who were positive for HPV DNA at enrollment were 3.8 to 12.7 times more likely, than women who were HPV negative, to have cervical lesions diagnosed for the first time during the follow-up.²¹

In May 1999, a cross-sectional study conducted in Nunavut²² revealed the prevalence of oncogenic HPV to be in the order of 26%. This was double that reported in other provinces in Canada.^{20,23,24} Consistent with most other investigations, the prevalence of HPV was found to be inversely related to age. This pattern is attributable to increased sexual activity and increased susceptibility to HPV infection of the immature transformation zone of epithelium (squamous metaplasia) in young women.²⁵ Although the number of non-Inuit in the Nunavut study was small, it appeared that HPV infection was acquired at an earlier age in the Inuit than in the non-Inuit, as seen by the comparative prevalence of HPV (31.7% compared to 11.8%) in the 13-20 year-olds.

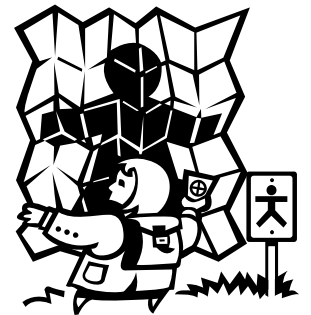
Prevalence of squamous Intra-epithelial lesions (SIL) was 6.9% and was nearly twice as high as that reported in the Newfoundland population (4.4%).²⁰ Over 90% of women with a cytological diagnosis of SIL in this study tested positive for oncogenic HPV types.

HPV was strongly associated with SIL. Women in Nunavut were 38 times more likely to have a cervical lesion if they were positive for oncogenic HPV types. The Nunavut study also found that women who were positive for oncogenic HPV types but negative for SIL were predominantly (75%) in the under 30-year-old group. This finding is of major clinical importance because it suggests that HPV testing in a primary screening should be restricted to women over the age of 30 years old. Also, at this age, the specificity of HPV testing is at its highest, in the order of 85%. In the Nunavut study, 21% of women with HPV had negative cytology. This is perceived by many as a false-positive HPV test, however, the presence of oncogenic HPV has been shown to be predictive of future lesions in prospective studies.²⁶ In these studies, women who were HPV positive and initially cytologically negative were four to thirteen times more likely to have an SIL within a five-year follow-up period. Furthermore, in a retrospective assessment of Pap smears, it was found that 16 out of 18 patients with negative Pap smears preceding a diagnosis of cervical cancer, were subsequently shown to have tested positive for oncogenic HPV types up to six years before the diagnosis of cancer.²⁷

In the Nunavut study, the risk of having SIL also correlated positively with increasing viral load. Women with a 1+ viral load were 11 times more likely to have an SIL and the trend increased to 116 times more likely with a 3+ viral load.

Conclusion

The high birth rate in Nunavut^{28,29} and the high rates of sexually transmitted diseases (STD)³⁰ imply that a potentially large number of women in Nunavut are at high risk for development of cervical cancer. Early detection



could mean earlier treatment and a reduction of the number of women at risk for progression to invasive cancer. Consideration should be given to incorporating the new technologies to make screening for cervical cancer more effective with particular emphasis on the use of liquid cytology for Pap testing. Concurrent HPV testing in women over 30 years old, and reflex testing for HPV in those under 30 years who have a positive Pap test should be considered for their potential to enhance the cervical screening program.

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Contact Tracing as a Strategy for Disease Control – the Case of Sexually Transmitted Diseases

Chlamydia and Gonorrhea rates have shown a sustained increase over the last five years in Northwest Territories (NWT). The NWT sexually transmitted disease (STD) rates for the year 2000 were 1185/100,00 for Chlamydia and 325/100,000 for Gonorrhea, as compared to Canadian rates of 148 and 189, respectively. In 2000, there were 488 cases of Chlamydia and 136 cases of Gonorrhea as compared to 426 Chlamydia and 34 Gonorrhea cases in 1995. This represents a 14 percent increase in Chlamydia and a 300 percent increase in Gonorrhea.

Figure 1 shows that females are over-represented in Chlamydia cases, however, males are twenty percent more likely to be diagnosed with Gonorrhea. In part, the increase can be attributed to improvements in testing methodologies, but significant increases in both diseases reflect difficulties experienced by the health care system regarding contact tracing and follow-up of those exposed to STDs.

Figure 2 illustrates the dramatic increase in number of Gonorrhea cases in the NWT. This trend is also evidenced in Northern Alberta. The special concern with Gonorrhea is that it is known to develop antimicrobial resistance. In the NWT, we are seeing more beta lactamase positive specimens and, monitoring is currently in place to assess resistance to the indicated treatment regime. To prevent the transmission of this STD, both contact tracing and patient education is critical.

Figure 3 illustrates location where individuals obtained an STDs diagnosis and received treatment. Sixty per cent received care at health centers by community health nurses, while 33% were seen by physicians in offices and in hospitals. Public health nurses saw 12% of STDs cases.

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Figure 1
Cases of NWT Chlamydia by Sex, 1996-2001

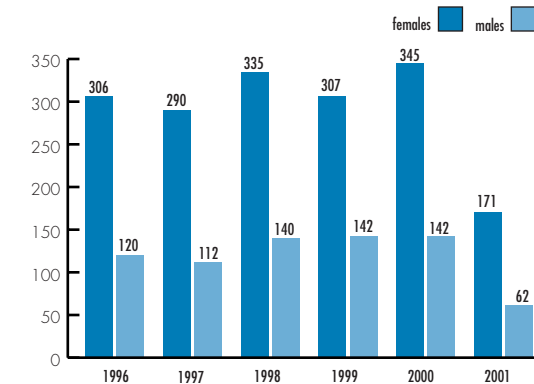


Figure 2
Cases of NWT Gonorrhea by Sex, 1998-2001

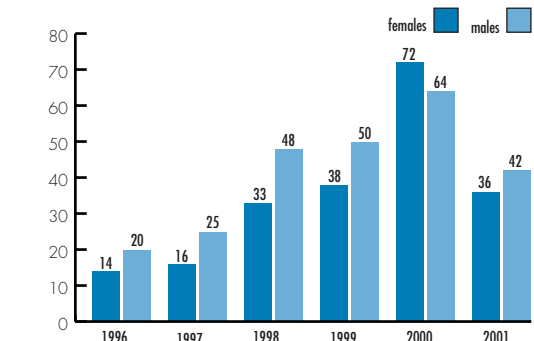
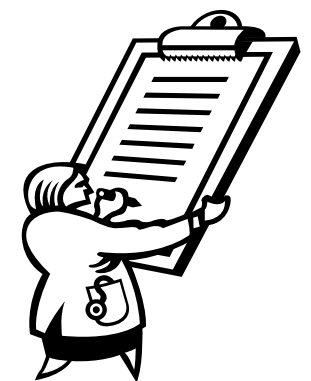
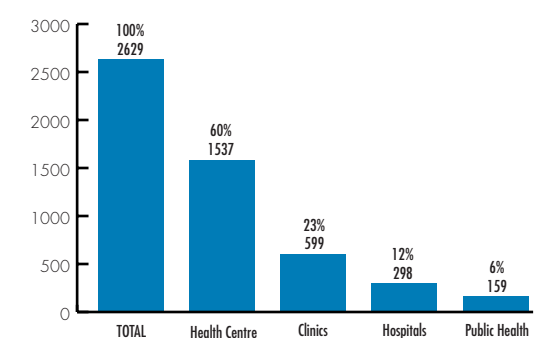


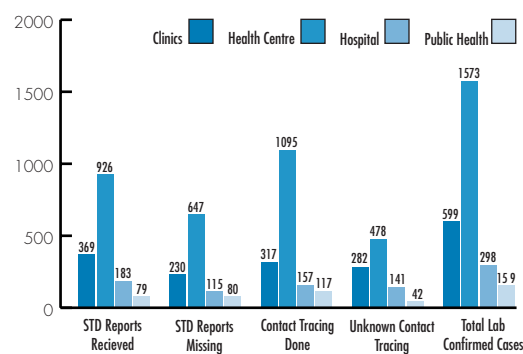
Figure 3
Diagnosis and Treatment of STDs in NWT by Provider, 1996-2000



As Figure 4 points out community/public health nurses are doing more contact tracing per proportion of patient diagnosed than any other group of service providers.

Figure 4

Contact Tracing in NWT, 1996-2000



Of the 7,121 STD cases reported in the NWT, 39% of the reports did not indicate if contact tracing had been conducted. Just over 2,000 lab confirmed cases did not have a STD report and/or indicated that the patient could not remember or would not provide the names of his/her sexual contacts. Reports of contact tracing for patients receiving care by physicians was documented at 45% for a five-year period. Community health nurses and public health nurses diagnosed 3.68 times the number of patients in the same reporting period and performed contact tracing for more than 70% of their clients.

Over 50% of male and female partners of people infected with Chlamydia are themselves infected.² In 1998, *The Canadian STD Guidelines* noted that "secondary prevention of STD transmission from an infected patient to others is a critical component of the management of STD infection" (p. 34). It identifies partner

notification, partner treatment, and counseling as critical components of any STD control and prevention program. Partner notification or contact tracing is the process through which sexual partners and other contacts exposed to STDs are identified, located, assessed, tested, treated, and counseled with regard to prevention.

The data clearly show that a large number of people exposed to STDs in the NWT are not being identified and treated for exposure to STDs. NWT legislation under the *Public Health Act* requires that all health professionals report specific STDs such as Chlamydia and Gonorrhea. As well, the NWT has standards in place which require health care professionals to perform contact tracing to identify those individuals exposed to reportable STDs. These standards are available in the *Communicable Disease Manual*.

Health care professionals requiring assistance to notify contacts out of their region or territory should contact the Health Protection Unit, Department of Health and Social Services. Directions and forms for reporting reportable STDs are in the Communicable Disease Manual as are Health Protection contact numbers.

For those health care professionals who may find contact tracing and counseling to be too time-consuming, referrals should be made to the local public unit.

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Yellowknife STD Clinic – A General Assessment

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Program Background

In late spring of 1999, the Yellowknife Health and Social Services Board opened the Sexually Transmitted Diseases (STD) Clinic at the Public Health Unit. Its establishment was made possible through the Strategic Initiatives Funding available from the Department of Health and Social Services. The clinic serves as an example of primary health care, and is one component of a comprehensive Sexual Health and Risk Reduction Program. Two public health nurses, with specific training, run the program. A local family physician acts as the medical advisor to the clinic. Services complement those provided by family physicians in Yellowknife. Overall, the goals of the STD Clinic include :

- Prevent the spread of STDs;
- Assist professionals and the general public to access appropriate information, education and training;
- Build partnerships with other agencies involved in STD prevention and education.

STD Screening

In the twenty-two month period, nurses completed 383 STD screenings for 219 females (57%) and 164 males (43%). Fifty-one per cent of females and 59% of males were between 15 and 28 years of age. Overall, 64% were of Aboriginal ancestry, including 69% of the females and 57% of the males.

The most commonly reported risk behaviour was unprotected vaginal intercourse which included the non-use and/or inconsistent use of condoms or barrier protection, as well as condom breakage and slippage. All respondents reported unprotected oral sex. Some reported unprotected anal intercourse.

More females than males reported moderate to heavy alcohol and/or cocaine use, a previous STD, and a history of childhood sexual abuse and/or assault. More males than females reported being a contact of a person who had gonorrhea, chlamydia or trichomonas and having a past history of

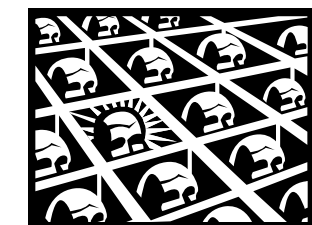
injection drug use with sharing. Both females and males reported between 0-12 sexual partners in the previous six months.

The laboratory-confirmed reports identified the following cases: 45 chlamydia; 27 gonorrhea; 12 trichomonas; and 9 genital herpes. In addition, there were 53 reports of bacterial vaginosis, 11 of yeast infection and 7 of hepatitis C which are not STDs (see Table 1).

TABLE 1

Sexually Transmitted Diseases Clinic, 05/1999 – 03/2001

Characteristics	Females	Males	Total
Sex	219 (57%)	164 (43%)	383
Age	14-56 15-28 (57%)	16-56 15-28 (59%)	NA
Aboriginal Ethnicity	152 (69%)	94 (57%)	246 (64%)
Reported Risk Behaviours			
- Unprotected vaginal intercourse	176	130	306
- History of injection drug use (Sharing of needles & /or works)	6	10	16
- Blood transfusion before mid-May 1990	8	2	10
- Unprotected anal intercourse	2	6	8
- Home-made tattoo/Body piercing	1	3	4
- Unprotected oral sex	All	All	All
Other Related Factors			
- Previous STD	108	67	175
- ETOH/Cocaine use (self reported as moderate to heavy use)	69	44	113
- Named contact of GC/Ct/HCV/Trichomonas	21	54	75
- Multiple partners (# in the past 6 months)	0-12	0-12	NA
- History of child sexual abuse	At least 45	Unknown	NA
Test Results			
- Chlamydia	26	19	45
- Gonorrhea	10	17	27
- Trichomonas	12	0	12
- Herpes Simplex Virus (HSV)	4	5	9
Other (Non-STDs)			
- Bacterial Vaginosis (BV)	53	NA	53
- Yeast	11	0	11
- Hepatitis C (HCV)	4	3	7



HIV Antibody Testing

During the same period, nurses performed 225 HIV antibody tests for 111 females and 114 males. Thirty-three per cent of females were between 18 and 23 years of age while 55% of males were between 20 and 29 years of age. Overall, 37% were of Aboriginal ancestry, 44% females and 30% males.

The most commonly reported risk behaviour was unprotected vaginal intercourse. All reported unprotected oral sex. Two females and six males reported unprotected anal intercourse. Four females and seven males admitted a past history of sharing needles and/or works. Eight females and two males had a blood transfusion before 1985. Six males had a home-made tattoo.

More females than males reported a previous STD and a history of childhood sexual abuse and/or sexual assault. More males than females were named as a contact of a STD. Just as many females as males reported moderate to heavy alcohol and/or cocaine use. Females reported 0-10 sexual partners in the previous six months, while males reported 0-12 partners (see Table 2).

All HIV antibody test results were negative. About 23% of clients did not return for test results. Some individuals who visit the STD Clinic for a specific service and agree to undergo an HIV antibody test may not be inclined to return for test results. Perhaps some clients (correctly) assume that the public health nurse would contact him/her in the event of a positive test result. In some cases, clients were not prepared for their test result.

Table 2
HIV Antibody Testing, 05/1999 – 03/2001

Characteristics	Females	Males	Total
Sex	111	114	225
Age	18-59	14-56	NA
	18-23 (33%)	20-29 (55%)	
Aboriginal Ethnicity	(44%)	(30%)	(37%) Aboriginal
Reported Risk Behaviors			
- Unprotected vaginal intercourse	73	77	150
- History of injection drug use (Sharing of needles & /or works)	4	7	11
- Blood transfusion before mid-May 1990	8	2	10
- Unprotected anal intercourse	2	6	8
- Home-made tattoo/Body piercing	0	6	6
- Unprotected oral sex	All	All	All
Other Related Factors			
- Previous STD	51	37	88
- ETOH/Cocaine use (self reported as moderate to heavy use)	23	21	44
- Named contact of GC/Ct/HCV/Trichomonas	3	15	18
- Multiple partners (# in the past 6 months)	0-10	0-12	NA
- History of child sexual abuse	15	2	17

Objectives of the STD Clinic

- Provide appropriate screening for and treatment of STDs, as well as the necessary follow-up for persons at-risk for STD infection.

The intended target group (adolescents and adults between 15-29 years of age) accessed the nursing services of the STD Clinic. Nurses saw individuals in this age range with high reported STD rates in the Northwest Territories. Many clients reported multiple risk behaviours, such as, unprotected vaginal intercourse, multiple partners and a previous STD. Nurses were able to diagnose cases of asymptomatic gonorrhoea and chlamydia and provide timely, one-dose, effective treatment (see Table 1). Most clients were receptive to HIV antibody testing even when this was not the main reason for visiting the STD Clinic.

- Provide education about safer sex and condoms and support to people at-risk for STDs.

During each clinic visit, nurses completed a comprehensive sexual history and risk assessment, and used this time with a client as an opportunity to inform and educate. Many clients had inadequate or incomplete information on reproductive anatomy and function, birth control and STDs, and appreciated explanations of tests and results, written material and other sources of information. Clients were provided with sufficient time to ask any questions.

- Develop the necessary skills to negotiate safer sex practices.

The nurses demonstrated the proper use of a condom, explained the correct method of taking the birth control pill or emergency contraception and taught breast and testicular self-examination. Many of those individuals named as contacts of a STD appeared ready for safer-sex and self-care messages.

Pre- and post-test counseling sessions were an opportune time to discuss safer sex precautions with clients. Clients often experienced anxiety waiting for their test results and seemed receptive to health

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Making an Early Investment in NWT Children

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Early childhood development refers to the early and formative years of a child's development from conception to age six. In the numerous books and articles written on this topic, one consistent theme emerges: there are four major stages of child development, which correspond to specific changes in a child's life. These developmental stages include transition through infancy, transition to school, transition to adolescence and transition to adulthood.

It has been argued that investment in a child's development from conception to age six improves long-term outcomes throughout the life-cycle and reduces the likelihood of developing socio-psychological problems later in life. Increasing positive stimulation, providing learning and supportive opportunities for parents, and reading to children are examples of how to promote early childhood development. Research results indicate "that early childhood programs can have large and persistent benefits for children in terms of cognitive achievement and social outcomes" (p.6).¹

It is difficult to negate the significance and importance of a life-cycle approach to childhood investment, which appropriately responds to the changing needs of children and youth. Further, it is hard to negate the idea that services need to be responsive to family needs (i.e., transportation requirements to attend a doctor's appointment; education regarding healthy prenatal diet, literacy issues, etc.), and therefore integrated and accessible within social and health services at the community level.

Individuals, communities, non-governmental organizations and the public sector share a moral responsibility to help children develop into healthy, contributing adults. For example, consideration needs to be given to current service providers and delivery models when developing the *Healthy Family Kits*. Various forms of information packages already exist

within communities, hence, government must work in partnership with all agencies in order to ensure that at-risk families' needs are appropriately met and duplication of services is avoided.

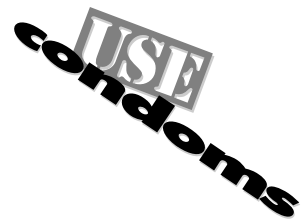
In keeping with this philosophy, the Government of the Northwest Territories (GNWT) Departments of Education, Culture and Employment, and Health and Social Services have developed an action plan, which identifies early childhood development as a priority in the NWT. The scope of this *Early Childhood Development (ECD) Action Plan* includes programs, services and initiatives covering the prenatal period, birth, infancy and early childhood. The action plan captures the essence of prevention, promotion, and intervention activities. The ECD Action Plan provides a road map to improved early childhood outcomes in the NWT.

In addition to the \$2 million identified by the Financial Management Board, the federal government is making increased funding available to provinces and territories to allocate to early childhood development initiatives through the Canada Health and Social Transfer (CHST). The amounts available to the GNWT through the CHST will be approximately \$400,000 in the current fiscal year, \$600,000 in 2002-2003, and \$800,000 in 2003-2004.

The Territorial Action Plan has two objectives: first, it identifies specific actions that the GNWT will implement immediately to enhance core services available to all children and families; second, it proposes initiatives to facilitate the development of child and family services at the community level. Health and Social Services will prioritize primary and secondary prevention through a home visitation program, implementation of a universal developmental screening tool, the production of *Healthy Family Kits*, and the implementation of a program to stimulate language development and promote interaction between parents and children.*

continued on page 16

* An example of primary prevention would be a public health nurse teaching a mother how to breastfeed her infant. Secondary prevention, for example, would involve teaching a parent the difference between punishment and discipline.



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Early Childhood Developmental Screening Tool for the NWT



Early childhood development (ECD) trends and research findings indicate that optimizing early opportunities for healthy growth and development, as well as the provision of timely experiences and stimulation result in readiness for school, later success in school, increased likelihood of graduating from high school and greater likelihood a child will reach his/her full potential as an adult.¹ This position is supported by the Government of the Northwest Territories' blueprint for the future "Towards a Better Tomorrow".² In recognition of the importance of healthy growth and development for all of our children in the NWT, the present Community Health Standards identify the importance of regular developmental screening in conjunction with the "Well Baby/Child", at 6 and 18 months, 3 years, and just prior to school entry.³

Over the past few years, nurses in the Community Health Centres (CHC), in particular those in smaller and more remote communities, have expressed concerns regarding the present developmental screening tool, the Denver II. A number of the items included in this screening tool were thought to be southern in content and culturally inappropriate to the NWT context. The protocol of directing a child to complete a specific task was also seen as inappropriate. Further, the problems associated with high staff turnover combined with the low numbers of nurses in the CHCs made it nearly impossible to provide each nurse the required training in order to administer the Denver II. In the absence of such training, the risk of bias and error are greater, hence compromising the results of the screening. In light of these issues, it was suggested that the children of the NWT might benefit from a more appropriate developmental screening tool.

In the Fall 2000, an ECD Screening Work Group, was established with representation from government and the health, social services and education professionals across the NWT. A literature review was conducted and an environmental scan identified ECD screening tools currently in use across Canada and in Alaska. A set of criteria was subsequently established for identification of potential successful screening tools for use in the NWT. The criteria included "short, simple, culturally appropriate, requiring little training or specialized knowledge, able to be completed by para-professionals, inexpensive, comprehensive of all general areas of child development, repeatable across all ages until school entry, reliable and valid".⁴ The Nipissing District Developmental Screen (NDDS) best matched these criteria.

The NDDS is a parent questionnaire that "was compiled by a multi-disciplinary committee, using a variety of standardized and non-standardized developmental instruments ..." (Page 1).⁵ and is described as a quickly administered instrument which tracks development in a number of areas including "visual, hearing, linguistic ability, gross and fine motor skills, cognitive, social and emotional development, and self-help skills".⁶ The screening tool is comprised of multiple sheets, each for one of the thirteen different age levels. Half of the page is directed towards parents with questions regarding their child's development, written at a basic literacy level. The other half is a rip-off sheet describing activities that the parent is encouraged to do at home with his/her child. The process for the screening is flexible allowing the parent to fill the questionnaire or respond to an interviewer. The results are then discussed and recommendations for follow up are made if necessary.

The ECD Screening Work Group, with the help of the Yellowknife Association for Community Living, was able to acquire year end CAPC funding to field test the NDDS in order to ascertain its appropriateness for use in the NWT.

Procedure

Between January - March 2001 the NDDS was field tested in the eight NWT communities, Wha Ti, Lutselk'e, Norman Wells, Fort Smith, Hay River, Katlodeeche First Nations Dene (Hay River) Reserve, Fort Providence and Tuktoyaktuk. The researcher/screener, a qualified speech language pathologist, was experienced in working with young children and living in a small remote community in the NWT. It was anticipated that twenty children in each community would be screened (for a total of 160) representing all ages from birth to six years of age.

For each site, a screening room was set up for the screening. It included a central place with toys for the child as well as a place for parental interview. Usually, the child played while the parent was interviewed. The results were discussed with the parent and a referral for assessment initiated if necessary. Sessions lasted from 15 to 25 minutes depending on the chattiness of the parent and the level of information the parent required. The length of these sessions was longer than would normally be expected because the research needed to be explained to the parent and consent established.

When all eight sites had been visited, an evaluator completed randomized phone calls to parents requesting their opinion of the screening. All participant CHC staff were also contacted.

Results Children

Two days for screening were completed in each of the eight communities. In total, 178 children were screened. There was a 95% attendance rate. Table 1 illustrates the results for each of the children screened. The types

of delays were found to fall under the two categories; first that of *developmental* delay which comprised those children not meeting the normal developmental milestones, and, secondly, *experiential* delay which consisted of those children who had not yet experienced something considered typical for his/her age, such as, colouring with crayons, cutting with scissors or riding a bike.

Screening Site	Number Screened	Number of Children by Type of Following-up		
		No Action (clear)	Suggestion	Referral
RURAL				
Lutselk'e	36	20	10	6
Tuktoyaktuk	28	12	15	1
Wha Ti	32	17	9	6
TOTAL RURAL	96	49 (51%)	34 (35%)	13 (14%)
URBAN				
Fort Providence	12	7	3	2
Fort Smith	18	14	1	3
Hay River	16	11	3	2
Katlodeeche First Nations Dene	8	6	0	2
Norman Wells	28	16	6	6
TOTAL URBAN	82	54 (66%)	13 (16%)	15 (18%)

Parents

Ninety-eight per cent of the parents indicated that they liked the interview experience and 94% of them said that they preferred the informal approach over the protocol where the child was required to perform a task.

Staff

All CHC staff reported preference for the NDDS because it was more child-friendly and easier to administer. Although no staff member or parent indicated a preference for "our own test" on the formal evaluation, during the screenings many of them noted that southern tests do not match northern experience and culture.

In the final report, the researcher recommended rewording some of the parent questions and changing some of the examples illustrating developmental milestones because the wording and examples were not appropriate for the NWT.

Discussion

Overall, field test results provide a strong indication that the NDDS would be useful in the NWT. However, some wording and example revisions will be required. These revisions may alter the reliability and validity of the NDDS, which will have to be addressed. Results also provided an excellent snap shot of the present early childhood development of a small percentage of NWT children. There were, however, a number of unexpected results including, a greater than expected proportion of the children screened who did meet their developmental milestones. Also the group of children who fit under the "suggestions" category was directly related to the increase in age and remoteness of the community. The number of children who required a referral on for an assessment increased with the age of the child cohort, and finally, the number of children who required the "follow up" of a formal assessment for potential developmental delays was within the usually quoted percentage of incidences for the general population.

As expected, the NDDS was not only a screening protocol but also a strong parent education tool because it did provide focused, timely and practical information about normal child development and parenting information. A base knowledge of child

development will be required by those who administer/interpret the NDDS and therefore, adequate training of the para-professional screeners will have to be addressed.

Conclusion

The children of the NWT generally begin life with the potential for success. The field testing of the NDDS was successful in identifying it as an appropriate screening protocol with the inclusion of suggested revisions and standardization specifically for this territory. Screening with the NDDS would be of value in helping to monitor early growth and development so as to be able to maintain NWT children's early developmental momentum and to assist parents in developing their parenting knowledge and provision of beneficial developmental opportunities for their children.

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Yellowknife STD Clinic...continued from page 8

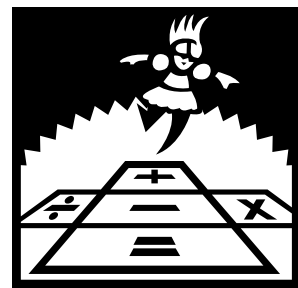
promotion messages during the post-test counseling visit. The high non-return rate for HIV antibody test results remains a concern.

Behaviour change was difficult to measure as data were based on self-reporting. Many clients, especially females, had long-standing issues related to previous sexual abuse and sexual assault, abusive relationships and low self-esteem. This past history affected her confidence and ability to insist on a partner's consistent and proper use of a condom. A significant number of clients had ongoing struggles with alcohol and drug abuse. When under the influence, they did not practice safer sex.

- *Raise community awareness about risk reduction through community outreach and education.*

Nurses responded to requests from community groups and post-secondary institutions for group presentations and displays. Requests will likely increase with continued publicity around the STD Clinic.

Adolescents reported they found out about the clinic from a friend or counselor. They often went to the STD Clinic with a friend, partner or in a small group.



Neonatal BCG Immunization

The continued high incidence of tuberculosis in the NWT and Nunavut populations has resulted in the routine immunization of high risk newborns with BCG shortly after birth. In the past, this was done either in hospitals of birth or in home communities following discharge from hospital. When it became evident that maximum rates of immunization were best obtained when BCG was given in hospital prior to discharge of the newborn, all hospitals in the NWT were encouraged to adopt a policy of BCG immunization prior to discharge.

At Stanton Regional Hospital (SRH), new Routine Nursery Orders which included BCG administration were adopted in October 1995. A new policy: *BCG Immunization of the Newborn* and procedure: *BCG Vaccine: Intracutaneous Injection, Administering to Newborn* were also adopted.

In 1999, concerns were raised across Canada when deaths occurred in immuno-compromised newborns inadvertently given BCG at birth. This issue was discussed at a NWT Immunization Advisory Committee meeting in the fall of 1999. Information was sent to NWT hospitals to apprise them of this risk. As a result, the Routine Nursery Orders at SRH were amended to indicate that BCG would only be given to at-risk newborns whose mother was known to be HIV negative during pregnancy. This information was deemed to be available for most mothers as HIV testing is a routine part of prenatal testing in the NWT. Although amendments to the Routine Nursery Orders were not approved until March 2000, HIV status of mothers delivering at SRH was verified as of late 1999.

This review was undertaken to assess the impact of this procedural change on the immunization rate for BCG in at-risk newborns from the NWT and Nunavut born at SRH. At-risk infants who did not receive their BCG in hospital prior to discharge were then followed up in their home community.

During the fiscal year 1999-2000, there were 576 births at SRH. Of these, 339 (59%) received BCG prior to discharge. Fifty-eight, potentially at-risk, newborns did not receive BCG prior to discharge. Data for the last six months of the fiscal year October 1, 1999 to March 31, 2000 was studied.

Of the 109 newborns who did not receive BCG at birth, 24 (22%) would be considered at risk according to the *Tuberculosis Protocol for the Northwest Territories* Appendix 3A: *BCG Vaccination*. Ten out of 24 were not given BCG at SRH as the HIV status of the mother was unknown. Eventually half of these infants were vaccinated in their home community. Nine were not given BCG at SRH because the vaccination was not ordered by the physician (6/9), due to an early discharge (2/9), or prematurity (1/9). The last 3 were vaccinated in their home community. Five out of 24 were not given BCG at SRH because the mother had refused prenatal HIV testing. Four out of five were eventually vaccinated in their home community after checking HIV status of the infant, with one mother refusing such testing for her infant.

Conclusion

In conclusion, the change in the procedure for BCG vaccination at SRH has not had a major impact on the immunization rate during the six month time span of this study. However, a number of concerns were identified. There is some confusion as to which infants are at high risk and therefore might benefit from BCG immunization. During the six month study period, eight infants who met the *Tuberculosis Protocol* criteria for high risk did not have BCG ordered. One mother indicated that BCG was never offered.

Although HIV testing during pregnancy has become routine in the NWT, some mothers continue to refuse the test prenatally or give birth without the test having been done. However, since 5/6 mothers agreed to be tested for results prior to BCG vaccination, the problem may be more with *how* the

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benefit of the testing is explained to the mother prenatally rather than with mothers not wanting it done.

The current Prenatal Record does not have a specific area to note whether HIV testing is done or not during the pregnancy. It is, therefore, not always noted in the Record and the result can be difficult to find by the nurses at SRH. Phone calls to the health centre or doctor's office frequently have to be made.

The Neonatal Record returning to either the health centre or doctor's office does not always have the status of BCG vaccination for that infant properly filled out by the nurses from SRH. It therefore requires phone calls back to the hospital to try to identify whether BCG is required or not. If a mother agrees to have HIV testing postnatally, and it is done prior to discharge, the results are not automatically sent to the health centre or doctor's office, requiring phone calls to try and track down the results. Not all the community nurses contacted were aware that negative HIV testing results on the mother were required prior to BCG vaccination of a newborn.

Recommendations

- Negative HIV testing results should continue to be required prior to BCG vaccination of newborns.
- Physicians involved in deliveries at SRH need to be reminded of which newborns should be considered at high risk for tuberculosis, for whom BCG immunization is recommended.

- The reason behind HIV testing in pregnancy should be clearly explained to the expectant mother, including the mention of BCG vaccination.
- Better documentation is required at a number of levels. HIV status during pregnancy should be clearly identified on the mother's Prenatal Record. (This will be easier once the newly revised Prenatal Records become available throughout the NWT.) The status of BCG vaccination should be clearly filled out on the infants Neonatal Record prior to sending it back to the community. If BCG vaccination is recommended but could not be given prior to discharge then this should be clearly identified for the community health nurses.
- If HIV testing was done at SRH prior to the mother's discharge then the results should be sent to the community.
- A reminder of the need for HIV results prior to BCG vaccination in newborns should be sent to all community health nurses.
- If an infant is older than six weeks of age, a Mantoux is required before BCG is administered.



New Advances in Diabetes Mellitus

Over the last several years a series of publications have appeared from the United Kingdom *Preventive Diabetes Study*. These studies have demonstrated clear benefits of tight glucose and blood pressure control in Type 2 diabetes. Two large groups were followed for twenty years or more and patients who had an aggressive approach to blood glucose and blood pressure control had a 21% reduction in retinopathy, 34% reduction in nephropathy, 8% reduction in neuropathy and 16% reduction in acute myocardial infarction. It appears that a 1% drop in the HbA1c reduced the complications of diabetes by 20% or one fifth. The intensive glucose control group had more hypoglycemia by 1.4% and did gain more weight than the control group (a gain of 2.9 kilos). It was noted that there was a gradual irreversible decline in beta cell function in both groups. It is also interesting to note that 50% of patients had complications at the time of diagnosis of their Type 2 diabetes. The finding that sulfonylurea, biguanide and insulin treatment were not associated with an increased cardiovascular mortality is reassuring. They found that the ideal blood pressure was certainly no more than 130/85 in diabetics.

In the past year two new agents have been released for treatment of Type 2 diabetes. They are both of the thiazolidinedione class. They are the "glitazone twins" – rosiglitazone and pioglitazone. They both have similar action by activating the PPAR nuclear receptors resulting in induction of glucose transport proteins. Both drugs take up to eight weeks to have their initial effect – quite different than other pharmacological agents. They have a mild to moderate effect on the glucose in Type 2 diabetes. Because of the increased glucose transport proteins the pathophysiology of Type 2 diabetes is at least partially reversed. Like many new agents they have been used in the more difficult cases, particularly insulin dependent Type 2 diabetics when the amount of insulin required can be reduced. They also have been used in patients who are not

using insulin. 1 to 1.5% reduction in glycohemoglobin or a drop in the fasting blood sugar of 2 to 3 micromoles per liter can be expected. There is a dose response for both agents and generally it is recommended the dose be started at the lowest level and gradually worked up over a period of six to eight months. Toxicity is not common and generally not severe. Dependent edema has been observed and generally is reversible with simple measures or possibly a low dose of a diuretic. Mild anemia has also been noted and is felt to be due to plasma volume expansion. Liver toxicity has not been observed, but many practitioners recommend checking the transaminase enzymes levels every two months for the first year patients take these agents. These newer aspects can also be combined with metformin, glyburide or insulin, depending on the situation.

Orlistat has been available for several years for management of obesity. There is now good evidence that this can be given safely to diabetics. The accompanying weight loss has a predictable beneficial effect on glucose control. Targeting the use of such agents to patients with obesity-related health problems, for example diabetes, makes much more sense than simply marketing as weight reducing agents, where they tend to be used for cosmetic reasons as opposed to medical reasons.

In the last few months *Fast Take Ultra*, a new monitoring device has been marketed. It uses a very small quantity of blood and provides a very rapid interpretation within only five seconds. The blood can be obtained from the forearm, sparing the fingertips from repeated needle sticks. Another product, *GlucoWatch*, is now available in the US. This device senses the glucose in perspiration, giving a constant output of glucose levels. There have been some problems with rashes underneath the watch, which has a gel pad that must be replaced every day at fairly significant expense. *GlucoWatch* will likely be marketed in Canada in the near future. It will be interesting to see how well it is tolerated by patients.

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With Type I diabetes there is a new open loop pump known as the *Mini MD 508* which is very reliable and is increasingly being used in patients who have unstable Type I diabetes. The same company has developed a sensing device which measures subcutaneous glucose. A closed loop pump with a sensing device as well as delivery of insulin has been developed. It is exciting but of course still too early to comment. Many patients are using multiple daily injections, MDI, using baseline NPH or ultra lente along with Lispro insulin. This certainly improves outcomes because blood glucose control is improved. A second rapid acting analog should be available this year in Canada. A new very long acting analog should be available within the next year, making MDI easier and more predictable.

The development of the "Edmonton Protocol" for islet cell transplantation has excited the world and, in particular, Yellowknife. The first patient to receive islet cells was from Yellowknife and has done extremely well with his transplant. The islet cells are infused into the liver. Anti-rejection medication is required to prevent the body rejecting these cells. Because the human islet supply is limited, it is unlikely this will become standard therapy. However, when an alternate source of islets (either cloned or from an animal source) is developed, this treatment may well be much more commonly used.

There are many exciting new developments in the management of both Type 1 and Type 2 diabetes. Each new development is a step towards the ultimate goal, that is, a cure for this increasingly prevalent and troublesome chronic disease.

Early Investment in Children...continued from page 9



Education, Culture and Employment will focus on parenting, literacy and the preservation of Aboriginal languages.

Some initiatives will begin immediately while others require further planning and discussion with partners and key stakeholders (i.e., HSS Boards, Aurora College, Aboriginal organizations, community groups, NWT & GNWT literacy councils, libraries, EC&E, Rehabilitation professionals, other existing ECD programs, MACA, health centres and families).

Although these initiatives are part of the ECD framework, they also fall within the mandate of other GNWT initiatives such as the Social Agenda, Literacy, Health Promotion, Home & Community Care and Maximizing Northern Employment. In addition, this plan is supported by the Territorial Wellness Initiative, which envisions a coordinated and comprehensive approach to building healthy families across the three levels of government, federal, territorial and Aboriginal.

Government stakeholders will continue to work together through an inter-departmental committee to promote community problem solving capacity and build infrastructure for sustainable early childhood programs and services. A formal communications plan will ensure that information is shared with parents, families and other community-based partners. The ECD Action Plan demonstrates government's ability to cut across departmental boundaries and individual agendas in order to develop a comprehensive plan which addresses the needs of our most valuable asset – children. The time has come to implement a comprehensive plan, which targets childhood development, early identification of high-risk children, and the development of resilience as a life-long skill.

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Cervical Cancer, Sex, STD's...continued from page 1

Sexual Activity

- The high rate of STDs transmitted in the NWT suggests that the necessary *safe sex* precautions to protect against risk of infection are not being taken.
- Between 1992-1996, the average NWT teen birth rate (birth mothers 15-19 years old) was double that for Canada.³ Women's sexual history is a primary predictor of cervical cancer development. There is good evidence to suggest a correlation between early age of sexual activity, multiple sex partners and cervical cancer.

STDs

- In 1995, the chlamydia rate in the NWT (including Nunavut) was 11 times the Canadian rate (1,388.5 as compared to 126.8 cases per 100,000).
- Between 1989-1998 the average rates of chlamydia and gonococcal infections were 542/50,000 and 104/50,000, respectively – significantly higher on both accounts as compared to national average rates (77 and 12, respectively).⁴
- About 70% of women with chlamydia are asymptomatic. Up to 25% of sexually active men are asymptomatic carriers of chlamydia infection and are sources of its spread.
- Six to 12 per cent of pregnant women are infected with chlamydia. Infection occurs in about 50% of infants born vaginally and in some cases in those delivered by cesarean section with intact membranes.
- As of 1997, 31 persons (35 males and 6 females) have tested positive for HIV infection in the NWT.

Child Development

- The Department of Education, Culture and Employment recently reported that 13% of their students required and/or received "specialized rehabilitation and medical services."⁵ This would suggest that a significant number of students experience some form of developmental delay.
- Pre-kindergarten screening has indicated up to 30% of NWT children are experiencing some form of physical, cognitive, emotional or experiential delay and are not "school-ready".
- Although comprehensive data is unavailable on the prevalence of FAS/FAE in the NWT, a recent study found that out-patient and emergency services utilized by children with FAS was significantly higher and that FAS children were twice as likely to be in-patients.⁶

These are sobering statistics and trends that suggest a need for more comprehensive and better co-ordinated screening programs for residents of the NWT. Decision makers – clinicians, health administrators, and legislators – need to assess local conditions and available resources for screening, diagnosis and intervention, and make available the best preventive options. These considerations not only work to reduce wastefulness of resources, but perhaps, more importantly, avoid the problem of over- or under-screening. Effective screening provides a cost-effective, preventive health strategy that leads to early detection and early intervention, and ultimately a reduction in the burden of disease.

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HEALTH .online... QUITNET

Imagine a smoking cessation support group that runs 24 hours a day, 7 days a week. Check out QUITNET at <http://www.quitnet.org>. This award-winning site is the first Internet-based, interactive resource designed with one purpose in mind: to help smokers stop smoking.

QUITNET was launched in 1995, and is now operated as a public service by QuitNet.com, Inc., in association with the Boston University School of Public Health. It is an entirely free site, dedicated to those who are trying to quit smoking. Beyond offering real-time online support to smokers who want to quit, QUITNET offers a variety of smoking cessation resources. Registered users (with complete privacy and anonymity) have access to personalized guides and tools to make the quitting process easier. There's even a gadget that will calculate how many days of life, and dollars, you have saved by becoming a former smoker.



The "Q" has an international following, so at any time of the day or night there are users online, seeking, offering and receiving support in their efforts to quit smoking. There are those getting ready to quit, "newbies" going through their first week of quitting (known as "Hell Week" by those who have been there), and "elders" with the first 100 days of their quit behind them. Thousands of people visit the site each month, and there are hundreds of messages posted every day.

QUITNET offers users a personal mailbox, instant messaging, membership in special interest groups and the ability to form buddy lists of supportive "quitters" (people who have taken on The Quit). Coming to terms with an addiction to nicotine and deciding to quit smoking is never easy, but with the support of others on the "Q" it is at least a bit easier.

If you are a smoker, or if you are working with smokers, then check out the site. It's well worth the visit, and it might just help save a life.

IN brief...

Community Care in the North

In the 1999 Budget, the federal government announced substantial and sustained investments over three years to improve health services to First Nations and Inuit, through the development of the First Nations and Inuit Home and Community Care Initiative. Initially developed with a southern Canada focus, to be delivered on reserve, but has since included a North of 60 and Inuit community approach.

Home Care Services in the Northwest Territories (NWT) began as a community project in the city of Yellowknife in the mid

1970s. Presently, these services are offered through the Regional Health and Social Services Boards. The goal of the NWT Coordinated Home Care Program is to provide an array of services which enables clients, both incapacitated in whole or in part, to live at home, often with the effect of preventing, delaying, or substituting for acute or long-term care alternatives. In the month of October 2000, 52% of the NWT Home Care clients accessing the program were First Nations or Inuit.

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The Department of Health and Social Services along with their partners, Dene Nation and Inuvialuit Regional Corporation (IRC) arranged for consultations in Hay River, Yellowknife and Inuvik, to begin the enhancement process. These workshops consistently identified training and communication as items requiring action, the need for standardized, accredited training courses delivered in a variety of ways at the community level, and the sharing of information with community groups and organizations to inform individuals about home care services in order to support families. The need to develop an integrated, accessible, standardized and accountable approach to home and community care services was also a priority topic during the Partnerships in Home and Community Care workshops.

In 2000/01, the regional health and social services boards provided training to their home care personnel in the areas of diabetes, footcare, homemaking, wound care and home intravenous therapy. The IRC and Dene Nation have assumed the responsibility of working with the Home Care Coordinators in the development of a territorial focused communications package. The goal of the package is to increase public awareness and generate a new interest for prospective home care providers. It is expected that the NWT will receive \$3.5 million ongoing from 2001/02.

Currently, a broad range of services are available including, for example, respite care, palliative care, medications management, ambulation, social support, and meals on wheels. Other components of the home care program include discharge planning, home IV therapy, and cardiac rehabilitation. Services are provided by a physician, registered nurse, physiotherapist, occupational therapist, speech language pathologist, community health representative, home support worker or personal care attendant.

All age groups access home care services. The elderly with multiple, chronic conditions are typically seen for case management and surveillance. Some short-term younger clients

are seen for post-op dressing changes or chemotherapy. Some of these clients will require nursing services, while others will require home support.

The 2001/02 fiscal year will see a further training and hiring of additional, certified home care staff. The Home Support Workers are mainly of First Nations/Inuit descent and provide a cultural component to the program.

The uniqueness of delivering home care services in the NWT has proven to be a challenge at times. The remoteness and isolation of some communities has made it difficult to provide the essential elements of a home care program. A few months of the year sees the NWT cut-off by road from southern Canada, during which time the only way in or out is by aircraft. Unpredictable weather conditions further challenge the ability of service providers. The innovative ideas from community members, clients, home care personnel, governments and non-government organizations have allowed for home care services to be available in most NWT communities.

There are approximately five NWT communities that do not have home care programs in operation, however, if home care is required then arrangements can be made to receive services from another community which may have an available nurse. Few communities have limited services, such as, home nursing visits monthly, medication monitoring and home management limited to early discharge.

Home care in the NWT has come a long way since its early inception. With the influx of First Nations and Inuit Home and Community Care Funding, we anticipate that the NWT Coordinated Home Care Program will continue to be a high quality and dynamic service. It is envisioned that increased care in the home will be required as the shift from long-term care to community care increases over coming decades as the NWT population ages.

Objectives for the enhancement of the NWT Coordinated Home Care Program and implementation of the First Nations and Inuit Home and Community Care Initiative:

- Build capacity within communities to develop and deliver comprehensive, culturally sensitive, accessible and effective home care services at a pace acceptable to the community.
- Assist communities living with chronic and acute illness in maintaining optimum health, well-being and independence in their homes and communities.
- Facilitate effective use of home care resources through a structured, culturally defined and sensitive assessment process to determine service needs of clients and the development of a care plan.
- Assist clients and their families in participating in the development and implementation of the client's care plan to the fullest extent and to utilize available community support services where available and appropriate in the care of clients.
- Build capacity within communities to deliver home care services through training, evolving technology, information systems to monitor care and services and to develop measurable objectives and indicators.

NOTIFIABLE diseases

by Region: for the Northwest Territories (NWT) April 2001 – June 2001*

	April - June 2001	Cumulative Totals - 2001	Regional Cumulative Total - 2001			
	NWT	NWT	Inuvik	Fort Smith		
<i>Vaccine Preventable Diseases</i>	Hepatitis B	0	0	0		
	Haemophilus Influenzae	1	1	0		
	Influenzae A	0	3	0	3	
	Influenzae B	0	17	9	8	
	Pertussis	0	0	0	0	
<i>Sexually Transmitted/ Bloodborne Diseases</i>	Chlamydia	135	242	95	147	
	Gonorrhoea	40	82	28	54	
	Hepatitis C	13	28	5	23	
	Hepatitis, Other	0	0	0	0	
	Syphilis	0	0	0	0	
<i>Diseases by Direct Contact/ Respiratory Route</i>	Chicken Pox	5	26	14	12	
	Group A Strep	0	0	0	0	
	Invasive Strep Pneumoniae	1	4	0	4	
	Legionellosis	0	0	0	0	
	Meningitis, Pneumococcal	0	0	0	0	
	Meningitis, Other Bacterial	0	0	0	0	
	Meningitis, Unspecified	0	0	0	0	
	Meningitis, Viral	0	0	0	0	
	Meningococcal Infections	0	0	0	0	
	Respiratory Syncytial Virus	4	16	6	10	
	Tuberculosis	2	4	0	4	
	<i>Enteric, Food and Waterborne Diseases</i>	Botulism	0	0	0	0
		Campylobacteriosis	4	5	0	5
Cryptosporidiosis		0	0	0	0	
E.Coli O157:H7		0	0	0	0	
Giardiasis		4	8	1	7	
Hepatitis A		1	1	0	1	
Salmonellosis		0	2	1	1	
Shigellosis		1	1	0	1	
Tapeworm Infestation		0	0	0	0	
Trichinosis		0	0	0	0	
Yersinia		0	0	0	0	
<i>Vectorborne/Other Zoonotic Diseases</i>	Brucellosis	0	0	0	0	
	Malaria	0	0	0	0	
	Rabies Exposure	0	0	0	0	
<i>Antibiotic resistant microorganisms</i>	Methicillin-resistant Staph.Aureus	0	0	0	0	
	Vancomycin-resistant Enterococci	0	0	0	0	

HIV Infections Reported by Year

	1987	88	89	90	91	92	93	94	95	96	97	98	99	2000	01
NWT	2	1	1	2	1	8	0	2	0	2	0	1	0	0	1

*Statistics are based on currently available data and previous data may be subject to change.