Review to Strengthen Tuberculosis Management and Control in the NWT

Assess the impact of change in response to the 2001 Review (Fanning Report)

Northwest Territories Health and Social Services

February 2006

Index

I. Executive Summary

In 2001, the government of the NWT requested a review of its TB control program because of an unexpected death due to tuberculosis, the result of delayed recognition of the diagnosis. This review yielded several recommendations for strengthened control (1).

The present review undertaken in September 2004 was intended to assess the impact of change in response to the 2001 review and to make additional recommendations. The author of the report spent five days in NWT reviewing activities of the central team in the communicable disease control unit of the territories (Appendix I). Visits were made to Yellowknife (Office of the Chief Medical Health Officer, Stanton Territorial Hospital, Public Health Unit), Inuvik (Hospital and Public Health Unit), and Fort McPherson Health Center. Meetings were held with medical, nursing, lab and pharmacy staff in the hospitals. In the health centers, meetings were held with nursing staff. As well visits were made to the lab in both regions.

About 20 members of the community attended a community meeting in Fort MacPherson. After a short presentation a lively dialogue continued for about one hour between the audience and the presenter and some of the health center staff. The stories told by several elders of their memories of their own experience with tuberculosis, of losing their friends and family gave some indication of the strong impact the disease has had in the past and the need to acknowledge this with regular opportunities for dialogue in future. This will be particularly important as changes in procedures such as BCG are made.

The 2001 recommendations and how they were addressed are commented on, and then updated for 2004 in the following report.

A few additional comments are made for future consideration on BCG and future review.

Strengths:

- The first observation is that the NWT has responded with vigour and conviction to the recommendations of the 2001 report.
- The small central team who manage the territorial program is committed and experienced. They have written a revised manual and responded to the first review answering to each recommendation.
- The central team has oversight of each case and knows intimately the outcome. Hence once diagnosed, the outcome is almost invariably positive.
- The activity around case treatment and contact follow-up serves as an education tool for the nursing staff at each region.
- The medical staff at Stanton is engaged fully in the strengthened TB program holding weekly rounds to discuss difficult cases or compliance problems with the central team or health unit staff. The level of engagement of the medical staff in the Inuvik region was less clear.
- The possibility of an assigned physician and nurse case manager was discussed as a means to strengthen communication.

Challenges:

- It would be useful to measure annual risk of infection (ARI) so that one could calculate the **estimated case rate**. (For every 1% ARI, one expects 50 smear positives /100,000, K Styblo) This would require assessing tuberculin reactivity of a cohort of children over time. (See (2) Arnadottir T)
- A remaining problem is to increase case finding, especially if the estimated rate is greater than the reported.
- Presently case finding is based on contact tracing and surveillance of known past cases and reactors. Yield of cases and contact by program is important to determine the value of each. High yield programs should be increased and low dropped.
- Prevention programs dictate that prophylaxis is offered when infection is present. If that is not the intent the test should not be done!

Education and Training:

- The challenge of keeping the possibility of TB on the radar screen of doctors and nurses is a challenge. Their training occurs where there is little disease.
- There is little time for in-service in busy practice and the turn over high. Thus addressing education at pre-service, in-service and as part of program supervision will have to be imaginative. Several possibilities are suggested.
- As rates decline the disease is less familiar to all health workers. The key to diagnosis is thinking of it in persons at risk. Knowing who is at risk requires knowledge of the epidemiology of TB and the burden of disease in the north. Then a history of exposure, infection, positive tuberculin skin test, will lead to appropriate investigation. Finding active disease requires an alert practitioner community, nurses, and physicians, requesting culture in persons with symptoms of cough more than 3 weeks, or in those with other unexplained symptoms of infection. In elimination phase of the TB epidemic the last case will be the hardest to find.

Recommendations

The recommendations are made in the light of the excellent progress to date and the likelihood that the NWT will soon enter the era of TB elimination. They address two areas of need: education and staffing. They recognize the need to use resources efficiently, but to sustain and strengthen surge capacity for TB control. They make suggestions for case finding and treatment of latent infection appropriate to the elimination phase.

<u>A. Central Team</u>
Recommend:

1. **That the excellent work of the central team in tracking all cases to cure continues to be supported.**
2. **That an educator 0.5 be added to the team to build innovative training opportunities into the existing program, expand on rounds, revise manual**
3. **That operations research examine program outcomes**

4. **That an advisory committee of PHN and clinician TB experts be formed to advise on program, hear reports, and provide advice on specific cases and contact follow-up events.**
5. **That the subject of surge capacity be re-explored with other regions, to enable the sharing of resources.**

B. Education

Partnerships between Public health and private practitioners will greatly strengthen TB control.

1. **TB rounds-Case discussion by Public health and clinicians should be used to maintain awareness, alert new staff to higher rates of TB, and location of the reference materials and build partnership between public health and clinical medicine.**
2. **The model of weekly rounds with the central team and doctors at Stanton Hospital Yellowknife must continue its exemplary collaboration between Public Health and medical care.**
3. **This model should be extended:**
    a. **To include other doctors in the hospital at least quarterly**
    b. **To have the rounds linked by videoconference to regional centers, at least Inuvik weekly with the assigned TB doc and PH nurse and quarterly to all staff.**
    c. **Give consideration to extending the quarterly sessions to include Nunavut and Edmonton.**
4. **That the manual, although thorough, be revised by a panel of advisors and contracted writer, to make it more user friendly. (US CDC modules are divided into pathogenesis, clinical presentation and program, and can be accessed by CD-ROM or at www.findtbresources.org) A shortened handbook for practical issues of how to think of and diagnose a case and how to conduct a contact follow-up (see Manitoba). The manual would be greatly enhanced by case examples of classical TB, unusual TB, Primary, and contact follow-up.**
5. **Develop training programs and in-service plans, using innovative distance learning technology. That a committee of Public health nurses from the regions be formed to meet at least quarterly by conference call or video conference to present data from their regions, or interesting cases and contact follow-up outcomes. This will create collegiality and training opportunity for new staff and will strengthen program**

C. Human Resources

1. **Human resources are the key to a successful program. There was a time when the nurses of the northern health centers were a proud cadre of competent experienced people. They received northern and travel allowances and should do so again. They are the best insurance against future TB epidemics.**
2. **Alert the Government's Human Resources Division of the crisis in staffing in the north.**
3. **That staffing for the 3 regional Public Health Units be completed forthwith.**
4. **Consider the reinstitution of past incentives for northern nurses to overcome the difficulty of recruitment and bonus offered for long stay.**
5. **That the 3 month limit on free board be removed to encourage longer stay.**
6. **Use supervision by the central team as time for supportive in-service teaching.**
7. **Consider credentialing for distance learning, rounds supervisions as credits toward a**

"Northern Diploma". Such credits might well be supported for both doctors and nurses through University of Alberta, Faculty of Medicine and Dentistry with their new northern, rural, aboriginal emphasis.

D. Case finding

1. **Determine annual risk of infection in order to determine the estimated number of cases**
2. **Although Case Finding is recommended as a passive exercise globally, this assumes that the symptomatic are the most infectious and will report allowing investigation.**
3. **In elimination phase new efforts to find cases early need to be explored.**
4. **That a goal of Zero tolerance for paediatric TB be established. This means that transmission must be interrupted before an adult case can infect the youth. Hence early detection of coughers is essential.**
5. **Consider establishing a cough registry as a trial method for case finding and yield tracked so that is can be more widely applied if useful. This way health centers to check that those coughing have had sputum sent for TB culture**

E. Case Management

1. **Though case outcomes are good, the structure of case management shared between physician public health nurse and in remote settings, a treatment supporter would be considered.**

F. Contact Follow-up

1. **While contact follow-up is clearly underlined as the second priority after case finding, the outcome of contact follow-up is incomplete and unclear except for the most urgent household contact children.**
2. **The opportunity to give prophylaxis to previous positives including adults in this setting seems to be missed. It is an essential element of TB elimination.**
3. **The timing of the case finding allows for education and buy-in from the community for wider prophylaxis and for teaching of all staff so that everyone understands the rationale for contact follow-up and prophylaxis.**
4. **Recommendation that all contacts be listed within one week, tested within two and started on prophylaxis within three. This will require the collaboration of the nursing staff and the physician who is reading the x-ray and recommending prophylaxis.**
5. **That each case report, at conclusion of treatment include the outcome of contact follow-up action**

G. Operations research of methods for case finding

Consider strengthening the excellent program in existence by addition of operations research to determine the value of the following:

1. **Lab results by region to determine activity**
2. **outcome of x-ray report review**
3. **possible institution of pathology report-- review for granulomas**
4. **pilot-testing of cough registry**

H. Structural changes

Two structural changes are suggested within the document:

1. **An advisory committee to CDC with a representative internist, paediatrician, Inuvik family doc PH nurse lab and community member. This body should meet quarterly to receive reports and advise on TB control strengthening. Meetings could be by conference call.**
2. **A working group of PH nurse, community doc, and community rep from each region to receive reports for their region and discuss issues and to meet annually to share concerns and progress with reps from other region**

I. BCG discontinuation

1. **It is my opinion that although not yet reached the time will soon come that BCG discontinuation will be appropriate. However, in preparation, an education program which involves the community would be appropriate because of the possibility of the occasional case of TB meningitis or miliary disease likely to occur after stopping BCG.**

J. Reporting to Ministry and Authorities

1. **That annual reports include program outcome and cost**
2. **That a request for comment accompany each report**
3. **Possibility of comparing regional activity and outcome?**
4. **Discussion of regional reports at annual meeting of regional reps.**

II. Terms of reference of Sept 2004 Review of NWT TB program

This review will determine progress made since last review and identify deficits in the TB Control Program and/or health care delivery system to adequately address this important public health program.

Review TB program at the territorial, regional and local levels to evaluate where the program is and recommend changes and/or direction for each level to meet.

Components for review:

- Case finding: Evaluate the level of disease progression at the time of diagnosis and determine whether opportunities for earlier diagnosis were missed.
- Contact tracing: Evaluate case by case to determine completeness and comprehensiveness of contact tracing and compliance to the set timelines.
- Surveillance: Assess the effectiveness of the present surveillance system, whether opportunities are being missed and if we are focusing on the correct target groups.
- Reports and Accountability: Review Quarterly/Annual reports
- TB Awareness and Education: Review materials that have been produced in the past three years and assess community visits/educational sessions and other organized educational sessions.
- Review orientation and ongoing education currently available to health care professionals.

- Review the new NWT TB Manual.

First Draft of Report by December 15, 2004. Final Report by March 31, 2005

III. Background

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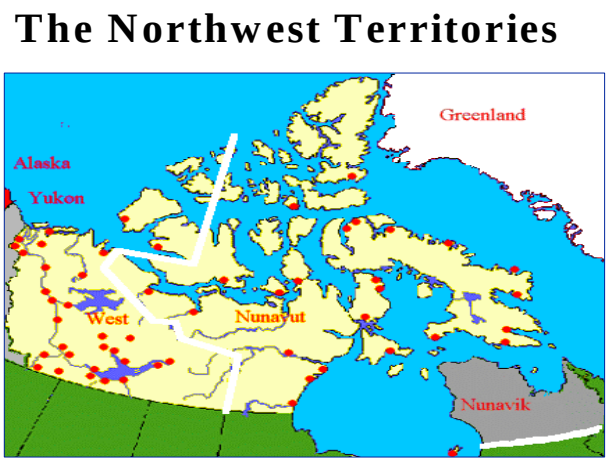
The writer wished to put the report into the context of the changed territorial status of the NWT, of its governance and of the issues of TB in the rest of the north and the rest of Canada.

IV. NWT governance

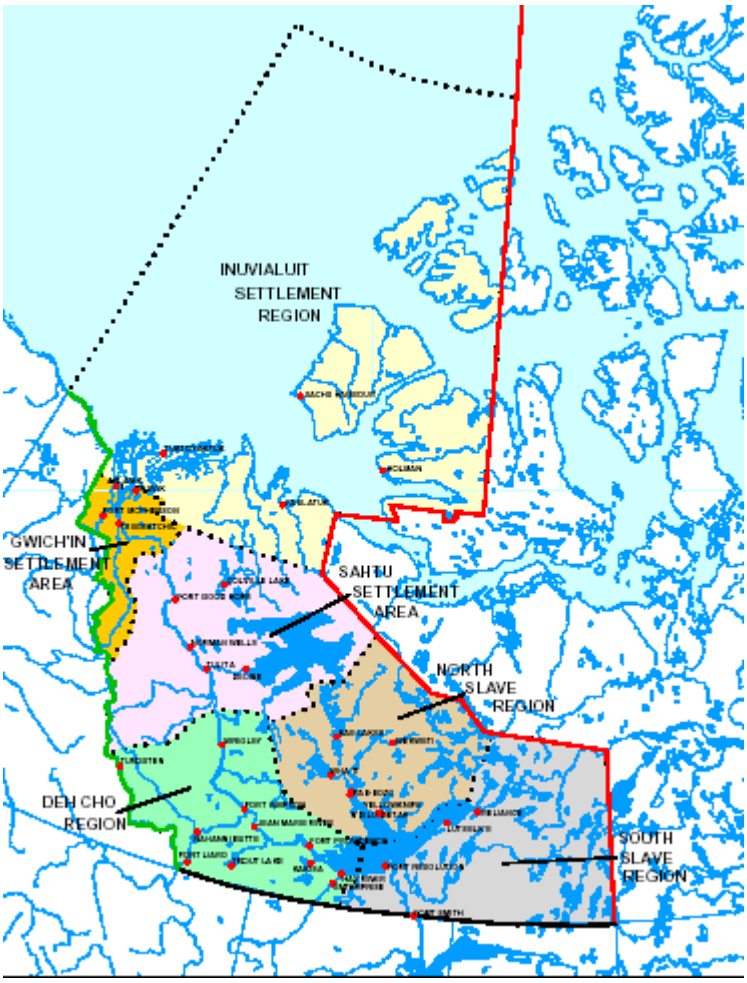
The Northwest Territories was divided into NWT and Nunavut in 1999. Since then the NWT' health care delivery system has evolved into eight health & social services authorities: Inuvik (Aklavik, McPherson, Tuktoyaktuk, Holman, Sachs Harbor and Tsiigehtchic), Sahtu (Normal Wells, Colville Lake, Tulitta, Fort Good Hope and Deline), Yellowknife (that also administers health centres in Lutsel' Ke and Fort Resolution), Deh Cho (Fort Simpson, Fort Providence, Fort Liard, Wrigley, Nahani Butte, Kakisa), Dogrib (Rae Edzo, Wekweti, Gameti and Wha Ti), Hay River, Fort Smith and Stanton Territorial Health Authority.

The NWT is governed from Yellowknife through an elected legislative assembly with representatives from each region.

Geography:"the north" includes NWT, Nunavut & Yukon



The Northwest Territories



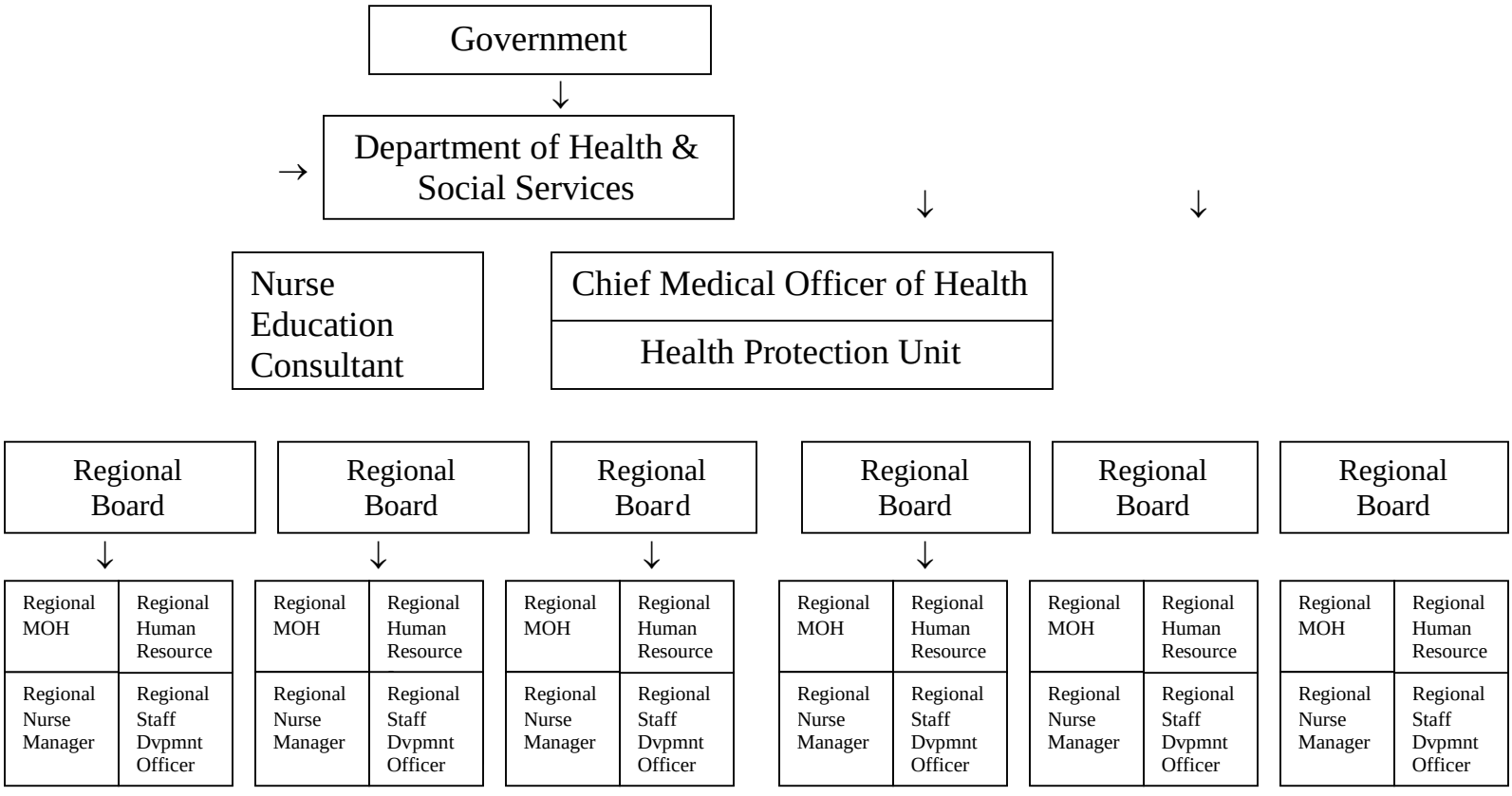
The Legislative Assembly of the Northwest Territories has 19 members and functions in much the same way as a provincial legislature, except that there are no political parties. Operating under a consensus system, six Ministers and a Premier are elected by the members of the Assembly to form the Executive Council, also called the Cabinet. There is a Commissioner who fulfills a role similar to that of a Lieutenant Governor in the provinces.

The NWT is in the federal electoral riding of Western Arctic and has one Member of Parliament and one Senator.

Commissioner:	Anthony Wilfred James Whitford
Premier:	Hon. Joe Handley
Member of Parliament:	Dennis Bevington (NDP)
Senator:	Nick Sibbeston (Liberal)
Capital:	Yellowknife

The current the Minister of Health and Social Services is the Honorable J. Michael Miltenberger.

C. Structure of the Program within the Government

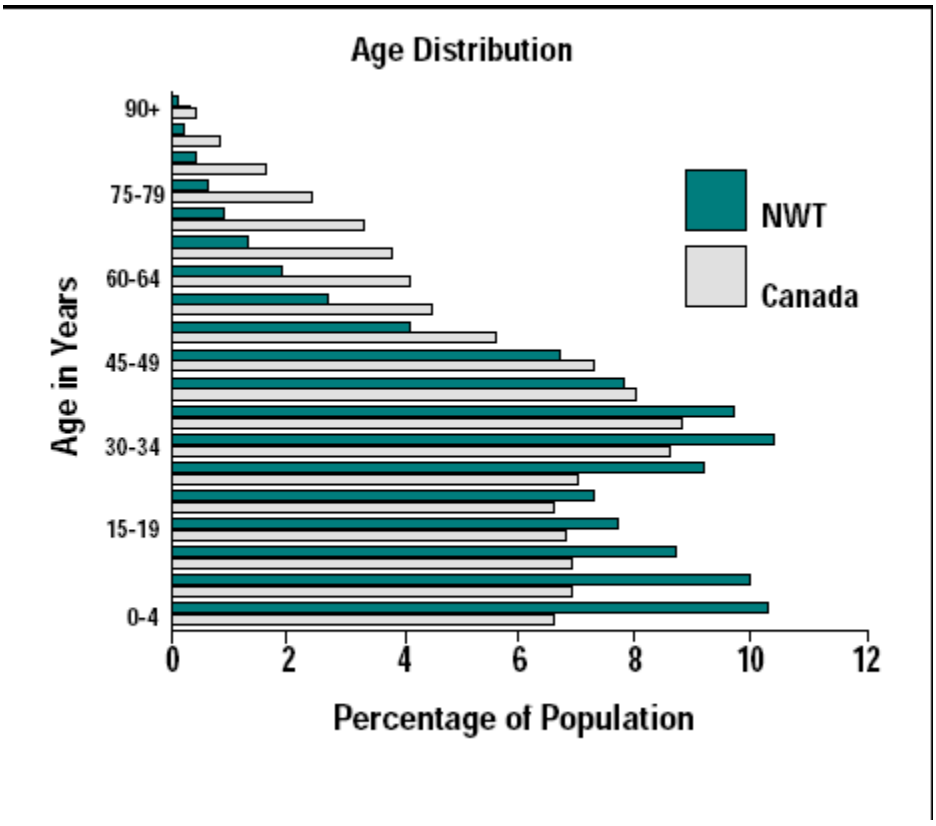


V. TB in the Northwest Territories and the Rest of Canada

The government is committed to control of tuberculosis as evidenced by:

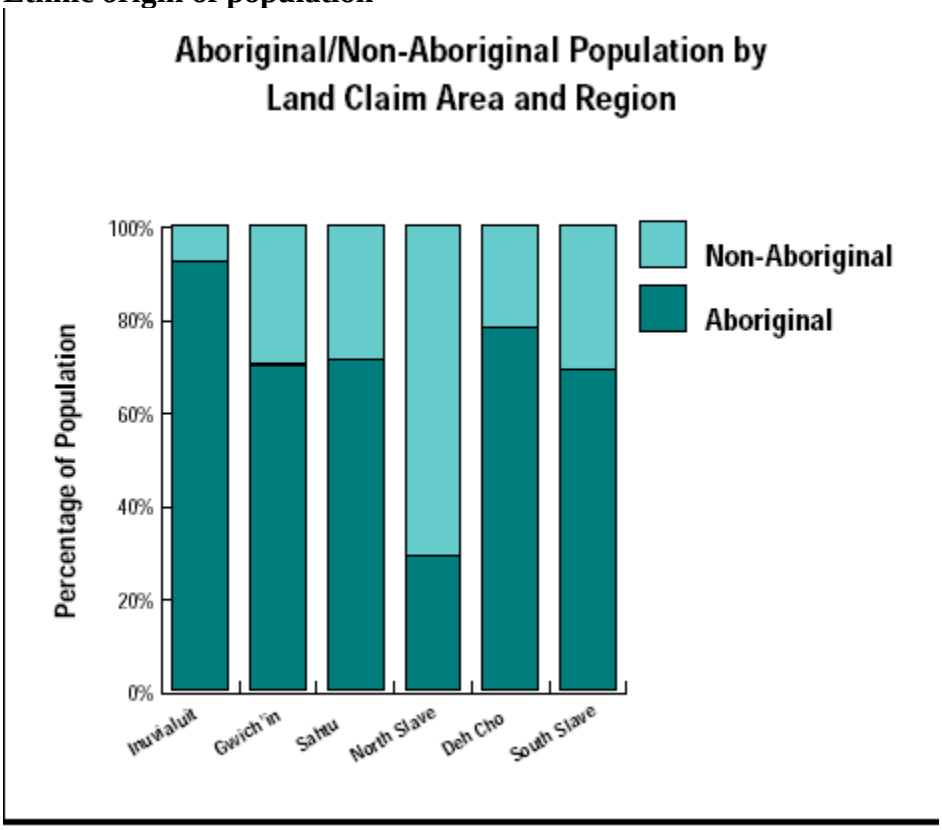
1. Stated policy— and the manual was endorsed as rewritten in 2003.
2. NWT TB manual which articulated the problems and their management
3. Response to the tragic death due to TB unrecognized for several months (-in fact this case is a strong lesson in the first and most important of the tenants of controlling TB i.e. finding the symptomatic patients so they can be cured and transmission stopped).
4. A vigorous program of contact follow-up which itself is followed by directly observed prophylaxis therapy (DOPT)
5. Surveillance in high-risk groups for early case finding and proph- this endeavor should regularly be assessed to assure it does identify the highest risk and does act!! (HIV, other immune suppression from steroids, Remicade, and organ failure transplant)

Population of the territories is 41,000, of which 50% is aboriginal. The distribution of the population is 50% in Yellowknife and 50% in scattered communities, the largest of which are Inuvik, Hay Rriver and Fort Smith.



The age distribution has a young adult bulge with a tail off in elderly.

Ethnic origin of population



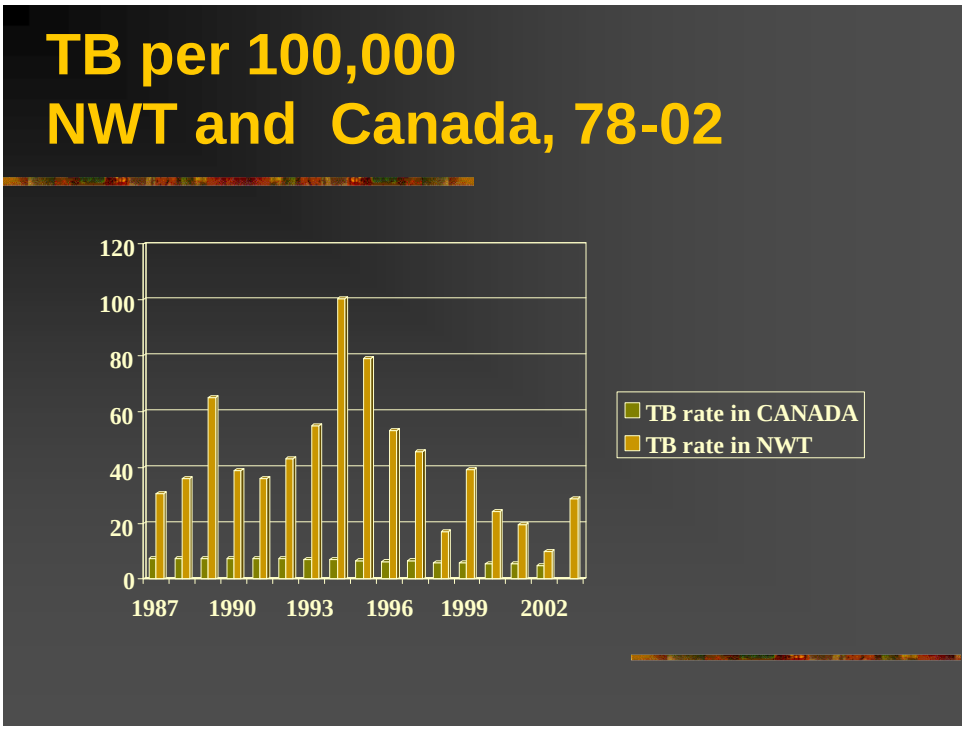
Health status

TB stats

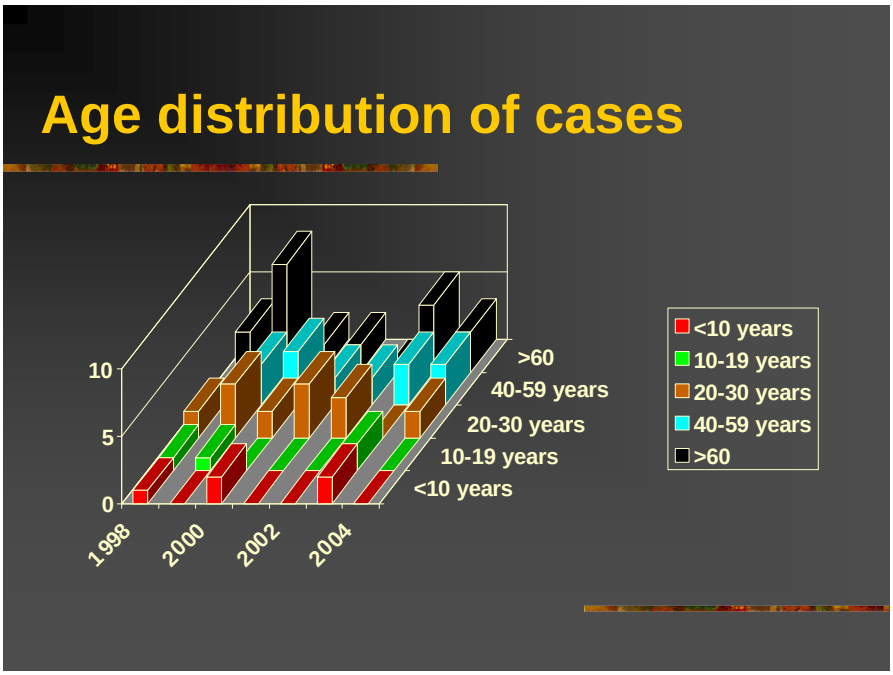
It is of interest that the 2002 TB in Canada report does not separate Yukon, Nunavut and NWT. Since each is a separate jurisdiction and since TB remains higher in the "the north" than in the rest of Canada, it would seem wise to report them separately. With consent of each director I have been given these numbers (courtesy Melissa Phypers of Health Canada) but without populations can't determine rates. It is clear that while the territories has declined since the division into two NWT and Nunavut, the numbers of cases in Nunavut have continued to be significant.

Province/Territory	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
NWT	65	52	36	31	38	23	10	8	4	
Nunavut after 1999	-	-	-	-	-	15	48	40	27	
Yukon	10	2	6	2	2	1	3	?	?	
All of Canada	2074	1931	1868	1976	1791	1806	1695	1702	1634	

TB rates /100,000 NWT compared with all of Canada 1978-2002



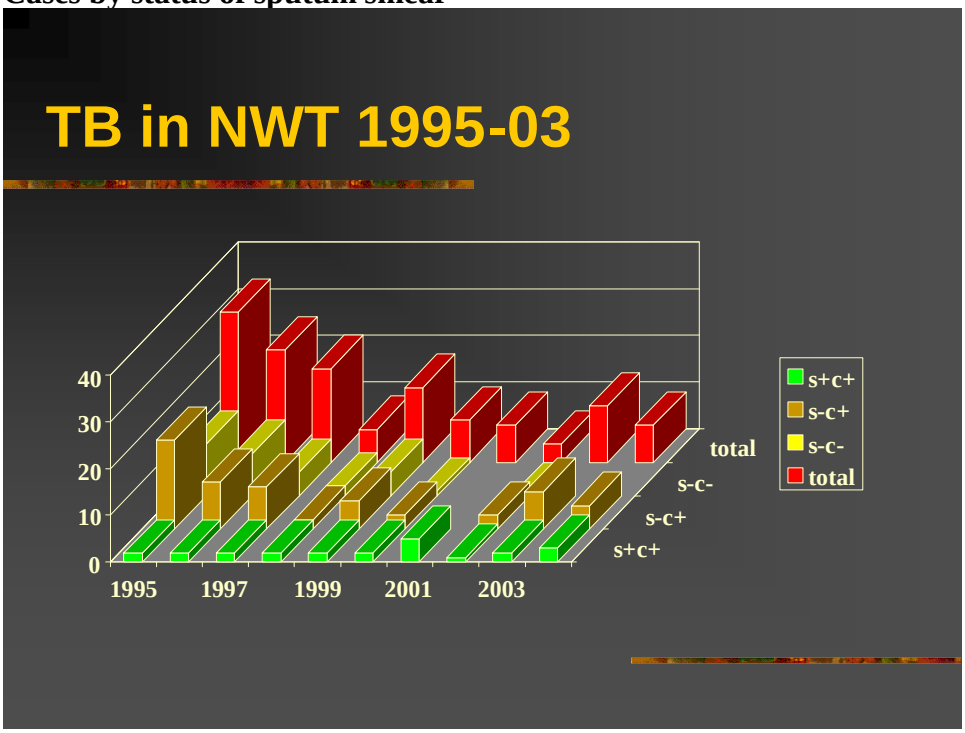
Rates have come steadily down since 1994, and have remained under 40/100,000
But in 1999 when the NWT became distinct from the Nunavut region it also lost the higher rate population. This group must receive urgent attention for the highest rates in Canada and for the recent occurrence of MDR TB. It seems reasonable that the NWT and Nunavut are so closely linked by geography, challenges of remoteness, that sharing of expertise would be workable. In the area of TB control the obvious strengths of NWT would be of assistance to Nunavut through shared rounds and other educational and training programs



Case numbers by age group

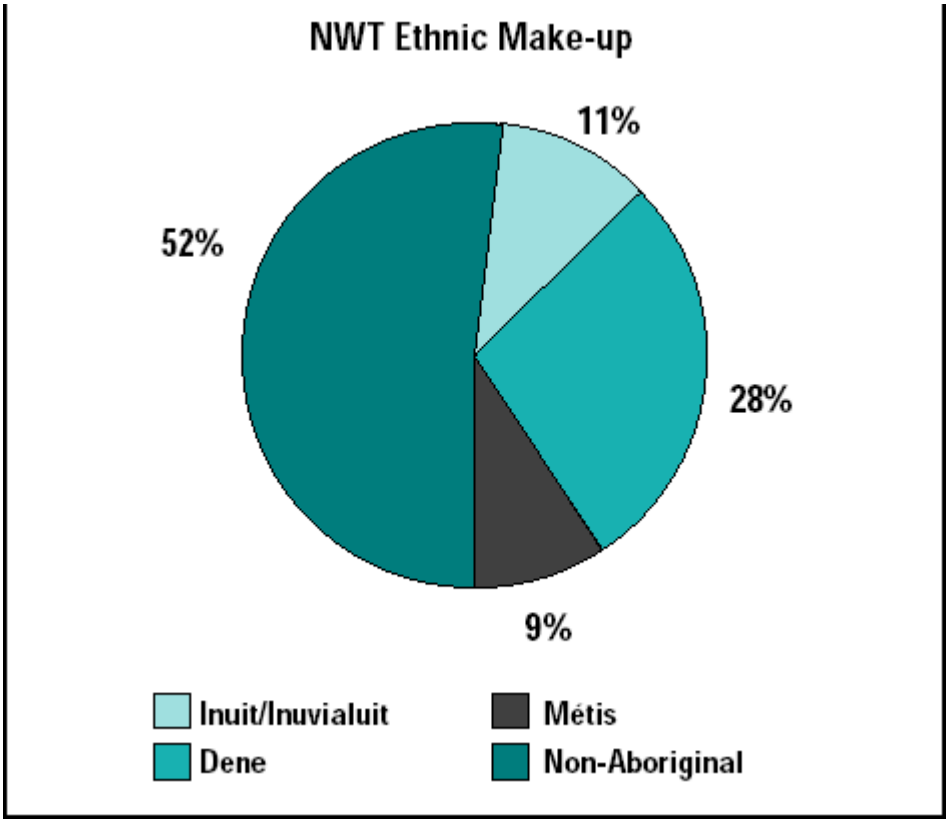
The older cases >60 are the most likely infectious ones and the younger the result of recent transmission. Finding youthful cases demands further work to identify the source of infection. The US has declared Zero tolerance for paediatric TB. A noble goal and one that addresses the heart of control the need to find the infectious source.

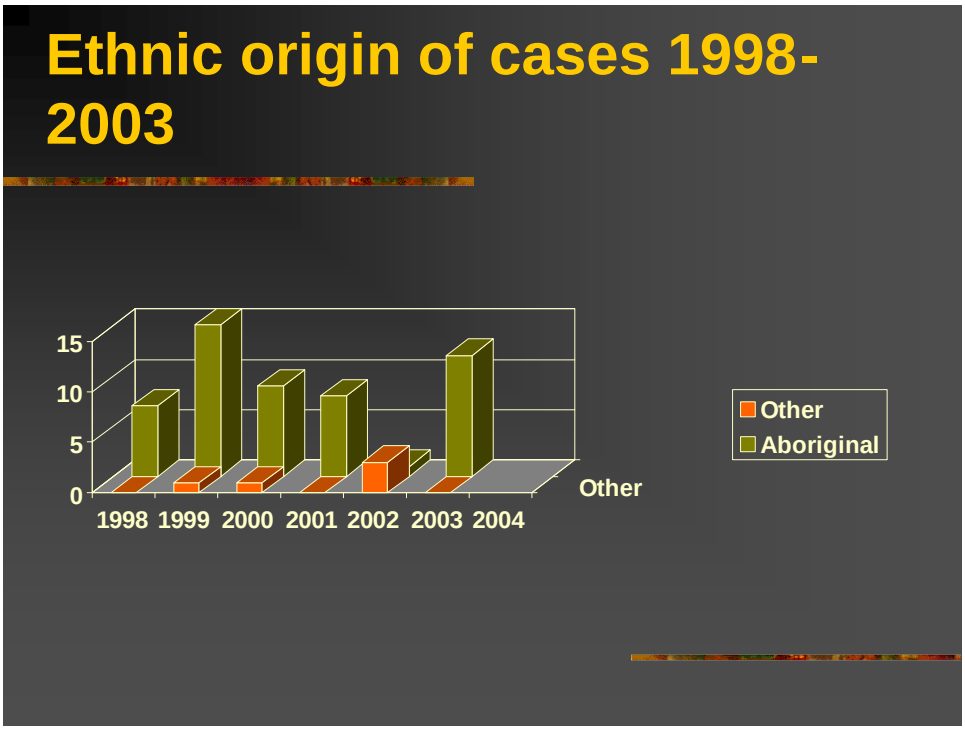
Cases by status of sputum smear



The means of confirmation of the case is displayed above which shows that almost all cases are confirmed by culture and that only a small number (24/65 since 1998) are infectious, with smear positive used as an indicator of infectivity. It is still about 9/100,000 per year .The recommended rate of smear positive pulmonary TB for consideration of stopping BCG is 5/100,000

The Ethnic origin of the people of the NWT as reported by census 1996 was 50% non aboriginal and among aboriginal 11% Inuit, 9% Metis, and 28% Dene





The ethnic origin of TB cases is greater than 90% aboriginal (52/57), giving that group a case rate of 24/100,000 (5 year moving average 1999-2003) , and the non-aboriginal a case rate of only 1.1.

NORTHWEST TERRITORIES TB RATES (per 100,000)

Region	TB cases	Rate	#	rate	#	rate	#	rate	#	rate	#	rate	#	rate	#	rate	#	rate	#	rate
Population	1995		1996		1997		1998		1999		2000		2001		2002		2003		2004	
Deh Cho Health and Social Services3169	3	90	1	30	1	30	1	30	1	30	0	0	1	29	0	0	3	87	0	0
Dogrib Community Services Board 2,471	5	200	4	160	4	160	3	120	8	320	2	80	3	111	0	0	2	71	3	107
Hay River Community Health Board 3,661	4	109	2	54	2	54	0	0	1	30	0	0	0	0						0
Lutsel K'e Health and Social Services 304	14	4900	8	2600	3	900	2	650	3	900	1	329	0	0	1	40	0	0	2	80
Note after 2001 I have put the rates for Sahtu as combined for Lutsel 'Ke and Deninu																				
Deninu K'ue Health and Social 536	0	0	0	0	0	0	0	0	1	180	0	0								
Yellowknife Health and Social Services 17,275	3	17	4	23	10	52	1	52	0	0	4	23	2	11	3	15	5	25	3	15
Fort Smith Health and Social Services 2441	0	0	3	110	0	0	0	0	1	40	0	0	1	43	0	0	1	4	0	0
Inuvik Regional Health and Social Services Board 9439	3	31	2		0	0	0	0	1		2	21	1	14	0	0	1	14	0	0
total 41,270	32	78	24	58	20	49	7	17	16	39	9	24	8	19	4	10	12	29	8	19

From the table of cases and rates by community it is evident that the rates are 4-5 times those of the Canadian average. They vary from one year to the next because of small numbers. They are examined by 3 or 5 year moving averages with good effect and are about 24/100,000 for aboriginal and 5.5 for non-aboriginal.

Cases are managed almost exclusively in the north with consultation by internists from Yellowknife, and only occasional referral to the south. This has had the effect of creating a cadre of expertise in the

paediatricians and internists of the north with beneficial effect. As well the lab provides good service only referring to Edmonton for second line culturing.

VI. Review of 2001 Recommendations, and 2004 progress and challenge

The recommendations made in 2001 appear below in italics. The government responses of 2002 follow. **The Sept 2004 Comments and Recommendations follow in bold.** I have summarized the 2004 recommendations in the Executive summary under different headings recognizing the improvements already made and the need to sustain and strengthen the progress in the areas of education and staffing.

A. Find cases.

All patients, with cough of more than three weeks, or suspected of having tuberculosis, by the primary physician, the public health nurse or the radiologist interpreting the x-ray, must have sputum collected for TB culture, with induction if necessary, and delivered to the lab for urgent interpretation within 48 hours. Consultation must be sought with an internist or pediatrician trained in tuberculosis diagnosis and management.

2001 response

1. CMOH will receive notice of all suspect active cases
2. The investigation of suspect TB is already standardized in the TB Manual. The Manual directs that all patients with confirmed TB diagnosis be seen by an internist or pediatrician.
3. As a quality control mechanism, the Communicable Disease Consultants (CDC) in the Health Protection Unit (HPU) will review all chest X-ray reports and, if indicative of TB, notify the health care practitioner (HCP) and request a TB investigation. Once TB is suspected, a decision about referral is made as result of consultation between the HCP and CDC. The HPU has been getting copies of all X-rays since November 2000.
4. Clinical Practice Guidelines for community health nurses and nurse practitioners are currently being developed. The section dealing with respiratory complaints will be adapted to include recommendation #1. Also, an update of the TB Manual is planned for early 2002 - the new edition will be made more user friendly and emphasize clinical management issues.

2004 Comment and Recommendation.

1. **The CMOH team of 3: André Corriveau, Cheryl Case, Wanda White, with clerical help from Ilona Bachmanek, is strong, experienced and effective and should continue to be supported and strengthened with improved education resources, and the three regional public health nurses promised.**
2. **All cases should continue to be seen by an internist or paediatrician.**
3. **Chest X-ray reviews are carried out, but there is an impasse at the PH nurse level because she does not have authority to investigate and needs the collaboration of the community physician. This is a common problem which jursidictions approach in different ways: regular meetings with Public Health doctors and nurses, which share discussion of both clinical and PH issues. A better solution might be to have a contracted**

physician review each possible case and communicate with the treating physician and the PH nurse to suggest that the abnormal x-ray be investigated, to include some sputum cultures for TB. Not all abnormal x-rays are due to TB. Regular communication through rounds is recommended.

4. **Although there is a manual it is not an easy reference for program nor is it a good clinical manual. Rather than rewriting it, a committee could look as samples provided (see Manual References 1-10 and pick the best only writing specifics for NWT.**
5. **Some additional issues re Case finding**
    a. **Finding cases is a challenge globally as well as in the NWT. It is recommended to be a passive exercise so as not to overwhelm the system where resources are slim. But this assumes that the symptomatic patients are the most infectious and will report allowing investigation. In most heavy burden countries less that 70% of the estimated cases are found. However in elimination phase new efforts to find cases early need to be explored.**
    b. **Operation research to determine ways to increase case finding. FIDELIS is an international research project being undertaken to find better ways of finding those cases. It would be an interesting project to test some theses about where the cases are by testing some case finding methods.**
        i. **For example, the "cough registry" used in Ecuador could be tried in a representative health center, and a check made to see that all those on the current cough registry have had sputum cultured for TB.**
        ii. **The requirement that sputum be collected for symptoms of cough greater than 3 weeks is hard to monitor. But monitoring the number of sputum specimens per quarter per region, or health center, would be a suitable index.**
        iii. **From Inuvik region, Catherine Steel MLS reported that between Sept 2003 and Sept 2004 there had been 885 specimens from 84 in patients and 203 outpatients from all 11 communities in the region. If this were broken into specimens per region and persons submitting specimens, and reported quarterly, one would be able to gauge activity. To my knowledge these tests did not yield any cases. So one has to wonder if the appropriate patients were selected.**
    c. **The goal of Zero tolerance for paediatric TB means that transmission must be interrupted before an adult case can infect youth. Hence early detection of coughers is essential.**
6. **Case Management is excellent with good lines of communication between hospital and Public health**
    a. **When information is received to notify suspect and active cases, there is aggressive pursuit of confirmation, isolation, treatment and contact follow-up is instituted under direction of this central team. The outcome of cases is detailed and thorough to cure.**
    b. **As long as the case is in Stanton hospital it is discussed at weekly rounds. The communication in this setting between clinical care and Public health is excellent and should be sustained. It is also useful to involve the radiologist in the**

discussion.

c. **The group is to be congratulated on a very good format for sharing information, and for teaching about clinical and PH issues. Is there someway of extending this to include the Inuvik hospital and the regional health centers regularly?**

7. **Contact follow-up outcome seems dependant on the regional staffing situation.**

B. Maintain awareness

In order to ensure early diagnosis of TB, and avoid complications of advanced disease, awareness of TB risk populations must be maintained among health care staff and communities throughout the territories. However, once TB disease is advanced, prognosis for a good outcome of this usually curable disease is much more guarded.

2001 responses

- The Department of Health and Social Services agrees with this recommendation. The CMHO and CDCs already provide in-service training and site visits to orient and educate health care practitioners to the TB program.
- The Department will seek to make completion of a competency based TB Education Program a mandatory credentialing requirement for health care professionals in the NWT, similar to the current NWT's Immunization Certification Program. This change will require input and support from professional groups and boards before it can be fully implemented.
- The Department of Health and Social Services will partner with Aurora College to ensure quality TB surveillance and control modules in the training program curriculum for nurses and Community Health Representatives (CHRs).

2004 Comments and Recommendations

1. Knowledge

- **Awareness of TB is a major problem in all areas of North America as rates decline experience diminishes. This is a challenge for case finding and recommendations for prophylaxis**
- **Some misconceptions were encountered, e.g. one physician thought that a TB skin test convertor over age 35 should not receive INH. There is no age cut off for prophylaxis. If the risk of TB is significant. A convertor, no matter what age, is in their first year after infection and in the highest risk period for TB reactivation**
- **Training of health personnel is a major challenge with rapid turnover of staff. Several observations were made about issues that discourage long stay of nurses. There is not a sufficient level of incentives.**

2. Recruitment

- **Human resources are the key to a successful program. There was a time when the nursing staff of the northern health centers were a proud cadre of competent experienced people. They received northern and travel allowance and should do so again. They are the best insurance against future TB epidemics. This need should be brought to the attention of those people responsible for the Government's Human Resources Recruitment & Retention.**
- **Nurses coming from the south often stay less that 3 months partly because for that period of time they don't have to pay board but longer stays have to pay board. This is seen as a**

major deterrent to longer stay

- **The department of health has partnered with Aurora college to insert TB training**
- **Four annual visits to Rae and once a year to Inuvik are used for training**
- **An MD orientation manual for public health has been developed, but I did not see it.**

2004 Recommendations:

Re recruitment and retention of health workers

1. **To alert the public service of the impediments to recruitment of long stay health workers to NWT.**
2. **To encourage longer stay nursing staff in NWT**
3. **To remove the 3 month limit on board**
4. **To offer bonus to long stay recruits and bonus to training**
5. **That regular in-service by distance learning be incorporated with credit for attendance leading to credentialing**
6. **Innovative opportunities for education through Rounds, in-service supervision and use of experienced field nurses**
    a. **I don't know that either pre-service training at Aurora College or credentialing will address the need to know.**
    b. **I have been impressed at the advances made in the partnering between public health and clinicians with regular rounds and suggest that this be increased with the imaginative use of tele-health and videoconference of cases and practice points and public health issues. This seemed to be very effective during the Sept 2004 visit with video conference between Yellowknife and Inuvik:**
        i. **add to these regular rounds attendance by the assigned TB doctor in Inuvik and other regional health centers and the nurses where there are cases.**
        ii. **quarterly attendance by all**
        iii. **Link to Nunavut who will need support with their increase in cases**
        iv. **Link to Edmonton regularly to TB rounds. This will provide the TB docs in Edmonton with northern experience and the northerners the expertise in the south.**
        v. **Public health and MDs attendees may be required to prove their attendance for privileges, with extra bonus for case presentations.**
    c. **The global standard of National TB control programs requires supervision of the field by regional staff and of regional staff by the central team, and of the central team by external review periodically. These reviews are intended to be for support and education. In fact without supervision following training, programs are weak. It is strongly urged that such a structure be established for NWT. Such visits take place but should be formally organized into review of cases, review of surveillance programs, education session at least quarterly. The occurrence of an active case and need for contact follow-up is an occasion for this training visit.**
    d. **An advisory committee of the TB docs of Stanton and the experienced field nurses such as Lou Richard should be used for regular review of cases, contact follow-up situations, programs and operations research to strengthen case finding.**

e. **The possibility of linking the Public Health TB nurses from each region in regular conference calls for purposes of creating a community of co-interest in control of TB, so allow reporting of outcomes of cases, contact follow-up and surveillance. This would be educational for new staff and a training ground for the rapid turnover. It might also create a sense of competition for reaching targets and a platform for undertaking operational research**
f. **Form a committee of Public health nurses meeting at least quarterly by conference call to present their experiences with case finding and contact follow-up. This will create collegiality, allow the sharing of tools and offer education to new staff.**

C. Urgent contact follow-ups

That all contact/follow-up of infectious pulmonary tuberculosis be undertaken with 7 days of the diagnosis of the source case, with the inner circle of contacts having tuberculin skin test (TST), and if positive, or symptomatic, or under 10 years of age, have a chest x-ray and sputum culture. All reactors and children under 5 years, who have been exposed, shall be started on treatment for latent infection immediately that active disease is ruled out. If the rate of reactivity in the close contacts is greater than expected (10%), the contact follow-up should be extended to the next risk level (casual).

2001 responses

1. A central team (CMHO and CDCs) for the TB Control Program will be responsible for ensuring these standards are implemented, and will audit each case of TB and provide feedback to all key stakeholders when standards are not met.
2. The Department of Health and Social Services will work to improve its capacity to provide additional supports at the community or regional levels when outbreaks occur (surge capacity). One such way will be, within the next year, to provide training on TB surveillance and control to the pool of float nurses, which provides relief to health centres in times of crises.
3. Additionally, the Office of the CMHO will clarify its authority with the boards in respect to ensuring standards are met and the monthly surveillance and contact/case disseminator reports are submitted to HPU as per the current standards and requirements.

2004 comments and recommendations

1. **The central team audits each case in detail, so they are not lost to follow-up, and so that all doses are directly observed**
    a. **it is less clear how rapidly contact follow-up is carried out. It seems to be related to staffing.**
    b. **contact follow-up is an opportunity for catch –up of previous positives for proph, so a goal would be to try to put all reactors around a case on proph**
    c. e.g. The contact follow-up a case diagnosed October, 2004 from Lutsel 'Ke who was smear positive , and has remained smear positive. The total number of contacts listed was 26. Seven were skin tested and all negative, but 4 youngsters were started on primary prophylaxis as is appropriate. Of 8 previous reactors, and 8 previously treated (??prophylaxed) none were put on proph. Yet this is a great opportunity to emphasize the need for proph and for education within the community. Perhaps this opportunity will be taken with the 3-month follow-up. She had many contacts as a respected elder who was being treated for metastatic breast cancer.

2. **This case would be good as a PBL for teaching, disguised to protect the patient. (*70 yo with chronic cough, weight loss is being treated for bone metastases when RUL infiltrate noted. She had TB in 1966 fully treated at the Camsel. What would you do to investigate?)***
3. **See training comments under Rec 2**
    a. **Additional staff is needed for strong public health programs and they need to be encouraged to stay.**
    b. **There is a complicated relationship between the territorial health authority and the autonomy of the regional boards that I don't understand but which is related to land claims.**
    c. **The plan to assure 3 PH nurse positions in each region starting April 2005 should be assured by the minister. It is essential that the importance of public health be recognized and the balance with acute care addressed. Both tasks are important and one should not be favored.**

Recommendation 4

Every case that provides contact/follow-up should be analyzed for lessons learned and the information widely disseminated to health workers and health boards.

2001 responses

1. The Department agrees with this recommendation.
2. Presently, case management evaluation and assessment of contact tracing is done manually. Each case is assessed prior to the end of treatment for adequacy. The NWT is one of the few jurisdictions in Canada that actually provides this information to the National TB Program. The evaluation of the contact tracing is also done manually at three and six months. Deficits are reported to the Nurse-in-Charge (NIC) of the health centre and to the Medical Health Officer. If the deficits persist, the regional nurse managers are alerted and requested to intervene. Public health legislation assists to enforce this standard. Patients who do not comply with treatment can be legally forced to do so.
3. The HPU staff publishes reviews of TB cases and program activities annually in EpiNorth. The Office of the CMHO will also provide an annual report on communicable disease control to the Legislative Assembly on an annual basis.

2004 Comments and recommendations

1. **While the cases are summarized very clearly, it is more difficult to link contact follow-up with cases and to know the impact of the case. The timing of the contact follow-up should be monitored with a goal that all contacts be listed within one week, tested within two and started on prophylaxis within three. This will require the collaboration of the nursing staff and the physician who is reading the x-ray and recommending prophylaxis. The advisory physicians could be engaged in this exercise. The event of an active case be used for teaching of all staff and the community so that everyone understands the rationale for contact follow-up and prophylaxis**
2. **Details of cases are very complete**
3. **The report to the legislature should be in terms of outcome of program.**
    a. **Cases cured.**
    b. **Contacts yielding new cases or proph events, and the timing of the activity's completion.**

c. **Yield of each surveillance activity (eg school survey, seniors, correctional settings, health care staff) in terms of cases found and prophylaxis given.**
d. **Cost of the program. If I were a legislator, I would like to know the cost and yield of each activity. For example the review of x-ray reports is time consuming and yield in cases or proph should be known.**

Recommendation 5:

That information on all contact/follow-up be reviewed monthly with the MHO or Department, to assure that guidelines are followed promptly, and maintained in summary form to ensure that information about rate of transmission and treatment of latent infection for every case and every community is readily available.

2001 responses

1. The CDCs will continue to provide systematic feedback to the field staff, and ensures follow-up of all recent TB converters.

2. Contact tracing prioritizes recent converters because of their higher risk of proceeding to active disease. All other cases of latent TB infections will also be followed. The HPU will assist the boards to develop a proactive action plan to treat all latent TB infection within the next 4 years. This plan will place emphasis on building local capacity. Community Health Representatives (CHRs) and TB Workers can assist with this proactive program. Recruitment and Retention strategies will continue to be a key for sustainability of this effort at the community level.

3. The Department will seek, in consultation with boards, to protect positions intended for the support of core public health programs, such as the Regional Medical Health Officer positions and others. The Department will strengthen ministerial directives to this effect.

2004 Comments and recommendations

1. **Summary of activity in the regions is quarterly and detailed with respect to cases and TSTs and chest x-rays. It appears that the report is fed back to the community and the workers. This is a critical element of supervision, so that they see the work has a yield. However, it is not clear to me what that yield was. For example there were 2018 TSTs done in 2003. And 169 were positive and 70 were treated for LTBI i.e. given prophylaxis. It is important to know why the TST was done. Testing should target high risk, and if positive be a reason to treat. The use of the report should be determined, i.e. what do you want the nurses to do with it. Summary comment to the boards with request for responses from the boards might generate more interest, perhaps even comparison of one regions activity with another as has been shown to work for provinces!**
2. **See under recommendation 3, the recognition that human resources will make for a successful program and must b e sustained**
3. **Recommend that programs be analyzed for yield to determine if they are effective. The yield should be not only positive test but treatment outcome**

Recommendation 6:

That adequate funding is available to the responsible board so that program can be maintained.

2001 responses

- The Department will work with health and social services board, within the annual business planning process, to ensure adequate levels of resources are assigned to the support of core public health programs, such as TB surveillance and control.

2004 comments and recommendations:

- **It is not possible to comment on funding, as this information was not provided to me. It should however be part of any future mandate.**
- **Funding has been identified for 3 additional regional Public Health Units. These persons should be recruited, trained for northern experience and sustained.**

Recommendation 7:

That surge capacity be built into the TB Program so that communities which have an outbreak can rapidly access resources for managing the contact/follow-up, prophylaxis and DOT of the case. This will require at least one year of extra staff over a year in which no cases are found.

2001 responses

- The HPU will continue to assist boards in determining when extra staff is needed, and in finding staff when necessary, when dealing with new TB cases and the required follow-up.
- The Department of Health and Social Services in partnership with the boards will augment this surge capacity by providing TB training to the current float pool of relief nurses, which could then be used to provide communities/regions with the resources and expertise required.

2004 Comment and Recommendation

1. **The need for surge capacity still exists and is not limited to NWT as TB outbreaks are occurring in Nunavut, recently in Saskatchewan and occasionally in Alberta. It would be reasonable to have a cadre of nurses who could be triaged into a community needing to do contact follow-up urgently. They could be kept busy in high burden communities with a more aggressive regular program.**
2. **The suggestions in Recommendation 2 for using skilled health workers already in the north as advisors and part of a virtual cadre for the outbreak problem should be developed. The team must include BOTH public health and clinicians.**

Recommendation 8:

Individual health board data should be sent to board members annually with comparisons to other boards, the NWT average, and the Canadian average. Those boards with obvious TB problems should receive recommendations (or should receive direction) and support from experts in dealing with the problem.

2001 responses

- Yearly analysis of TB program data will continue to be done at the Department level. Boards responsible for communities with high endemic rates of TB will be provided with direction on priority issues and recommendations for action.
- The HPU will audit health centers to ensure monthly TB activity reports are prepared and submitted in a timely fashion, and will provide summary reports back.

2004 Comment and recommendations

Quarterly reports are going to health boards, but it is not clear what they should do with it. Do

they have a chance to discuss and debate among the other boards? Would there be a chance at regional board meetings to present the challenges, and some comparisons?
Not only should TB data be fed back to health boards but also to the nursing centers and physicians so that they are aware of the impact of their good work and so that they can learn for events.

Recommendation 9:
Target all infected persons in communities with rates above the national average, for treatment of latent infection, after active disease is ruled out.
2001 responses

- Work on this recommendation was initiated in 1997. So far, the HPU has already worked with 8 communities who were experiencing higher rates of TB to develop a pro-active plan to identify and treat latent TB infection. Such a program is already fully functional in Hay River, and Lutselke, and partially implemented in Yellowknife, Rae Edzo, Inuvik, Wha Ti and Fort Liard.
- The Department will work with other health centres to fully implement this component of the TB Program in all communities by the end of fiscal year 2002/2003.

2004 comment and recommendations
Although I know that there is a program in some centers, I could not determine the yield.

Recommendation 10:
Assure full support of the community and Board is in place for such an action.
2001 responses

- The HPU will support the boards and to support their own staff at the community level to ensure the TB Program is delivered according to the standards set out in the TB Manual.
- The addition of a second CDC staff member within the Department will effectively double the support capacity of the HPU in this regard.

2004 comments and recommendations
The only community visited was Fort McPherson. There was clear interest and enthusiasm for controlling TB. There was also a wish to tell stories from those who attended the public meeting. I think such community meetings will be vital to elimination, and also to any decision to stop BCG.

Recommendation 11:
Provide adequate staff, with up to date training and supervision to enable such an effort, to substantially reduce the burden of TB high incidence communities.
2001 responses

- The Department agrees with this recommendation.
- The Department will ensure that dedicated public health positions are protected. Increased emphasis will be placed on orientation and training of regional nurse managers and NICs.
- A second CDC position has been developed in the Department to enhance support.

2004 Comments and recommendations
See Rec 2

Recommendation 12:
Give serious consideration to centralizing the responsibility for training and supervision and enable the central team with adequate travel and training budget to provide necessary support.
2001 responses

- This recommendation falls within the scope of the system review currently being done by George Cuff and Associates. The Fanning Report has been forwarded to the review team for consideration.
- In the meantime, the HPU will enhance its liaison with and support to the three regional nurse educators and one regional medical health officer in providing appropriate orientation and training to front line health care providers. The boards have been supplied with TB Standards and Orientation Guidelines for both nurses and physicians. The HPU will augment the community and regional training and continue to provide one-on-one training at the request of the boards.

2004 Comments and recommendations
See Rec 2

Recommendation 13:
Ensure that all new staff and existing staff are trained in TB program execution, based on the standards in the Department's TB manual.
2001 responses

- The Department's HPU will continue to provide training for regional nurse educators and medical health officers, and will assist the boards in documenting and auditing TB training. Capacity at the central level is being increased immediately to enhance service delivery to the boards.

2004 comment and recommendations
See Rec 2

Recommendation 14:
Assure surge capacity so that when a case occur and contact/follow-up is large, that retraining is available and that staff is centered in the region involved for the next year or two complete the execution of the task.
2001 responses

- The Department will look at options to develop surge capacity, such as accessing nursing resources through the float pool established by the Recruitment and Retention strategy.
- Stability of regional and community health care providers is an issue. Retention of staff is a priority at all levels, but it must be remembered that all provinces and territories are struggling with recruitment and retention issues. This problem will not be resolved in the short term
- The Department is currently working with Aurora College to revise the training curriculum of CHRs. Enhancing community capacity using locally available resources will be a feature of the TB program review and the revised TB Manual.
-

2004 comments and recommendations

see Rec 2

Recommendation 15:

Centralize and computerize all data on case and outcome of cases, as well as, contact/follow-up and targeted testing and treatment of latent TB infection. This information must be current, readily available, and reported quarterly to the Minister and each health board, and more frequently during outbreaks. The data must be summarized and analyzed annually for the Minister and boards so that appropriate decisions regarding program interventions and staffing can be made to address problem areas.

2001 responses

- Analysis of data occurs centrally.
- The HPU will enhance current services to the boards, and provide data at a minimum of every three months for remediation.
- Updating the TB Registry Database to enhance timeliness and effectiveness of this process will be a priority in the Department=s next business plan.

2004 Comments and recommendations

Data on cases is complete. Data on the contacts and lab summaries could be more readily available

Recommendation 16:

Since the TB Manual is a standard and not a guideline, boards are expected to implement: it is not an option. The Department is responsible for monitoring to ensure that standards are being met. This should include identifying barriers such as lack of resources or expertise, and assisting boards to correct and achieve the standards.

2001 responses

- The HPU staff currently does field trips to audit communicable disease programs, and provides the boards with a copy of the reports from these field trips.
- The Department recognizes that the Communicable Disease Program requires extra staffing. A second CDC has been approved and a staffing action has already been initiated for this position.

2004 Comments and recommendations

See rec for supervision plan

Recommendation 17:

Medical Officers of Health in regions should be supervised by the Central Health Protection Unit. Assigned physicians must expect to be trained in and familiar with public health programs and be appropriately remunerated to participate in strengthening them. Centralization of these positions might attract and retain the appropriately trained persons.

2001 responses

- The Department agrees in principle with the recommendation to centralize the reporting relationship of Medical Health Officers. However, this recommendation does fall within the scope of the current system review and cannot be acted upon in abstraction or the overall service delivery model.

- Standards for public health orientation are already available to the boards through the NWT Physicians' Public Health Manual, NWT TB Protocol Manual, and NWT Communicable Disease Manual. Independently of the reporting relationship, all medical health officers receive orientation and ongoing support from the HPU on TB surveillance and control.
- The Department will consider making orientation and training to public health a mandatory credentialing requirement for working as a primary care provider in the NWT.

2004 Comments and recommendations
See recommendation for supervision and rounds

Recommendation 18:
A permanent nurse health educator to support the Department's Health Protection Unit in training and supervision of health care workers in TB control is essential.
2001 responses

- Although, the HPU is in the process of staffing an additional CDC position, it is not feasible, nor desirable, to do all training and orientation centrally. There is greater flexibility and synergy in ensuring that a number of people, at the Department, board and Aurora College levels, are able to support the training needs of front line health care workers.

2004 Comments and recommendations
Training should be multifaceted but must be the concern of the program to access all possible avenues of innovation with limited resources

Recommendation 19:
Training should be a line item in the central budget to provide for development of teaching schedules and protocols and to provide for transportation. It should also be a line item in every board's budget to ensure training is carried out for all past and new staff and annually reviewed and updated when there is an outbreak.
2001 responses

- The HPU's workplan already includes specific objectives related to training.
- Ensuring appropriate staff training for all clinical and public health programs is also a responsibility of each board. The Department will monitor to what extent this is occurring to be able to provide reports on an annual basis, as part of the accountability framework for the delivery of core programs.

2004 Comments and recommendations
Unfortunately even the global strategy for TB control DOTS neglects to mention training without which no program can continue. They assumed countries and regions would look after it. Human resources are the most important part of any disease control program. They must be treasured. Health ministries need to assure that health workers have support to do their job well, training opportunity to grow and job security. The result will be a strong competent work force and a good program.

Recommendation 20:
Increase the number of central TB nurse coordinators within the Health Protection Unit to enable the training of all staff and their subsequent supervision.
2001 responses

- The HPU is in the process of staffing a second CDC position, which will be primarily dedicated to the TB program. However, it is important to maintain flexibility for staff coverage of all communicable disease issues. The impact of this second position will be assessed after one year.

2004 Comments and recommendations
The CDC team is strong and effective but needs more field support.

Recommendation 21:
Community education should be a component of the TB Program planned centrally and executed from the regions. Buy-in from boards is essential.

2001 responses

- Community TB education tools in the form of videos, written materials and community radio information has been supplied to communities in a limited fashion.
- Community education is often best designed locally. The Department can provide opportunities for sharing best practices in this regard, for example, in the context of community health representatives and nursing workshops and conferences.
- The HPU will work with the boards and health promotion to do a needs assessment that will form the basis of a community-wide education strategy.
- The Department will develop a communication strategy for the purposes of enhancing public awareness at the territorial level. World TB Day on March 24th will be used annually as an annual opportunity to highlight this issue.

Recommendation 22:

The TB Registry in the hands of the Health Protection Unit allows the opportunity for tracking individual cases, contact/follow-up, background surveillance, and to generate reports at any time. This registry should be maintained on a current basis with information coming from the field and being entered to maintain currency and to allow generation of reports quarterly and annually for boards and throughout any contact follow-up for updating purposes.

2001 responses

- Enhancement of the TB Registry has been prioritized within next year's business plan and a contract for initial design work has now been awarded.

2004 Comments and recommendations

Recommendation 23:

A complete review of the TB program should be undertaken by external reviewers working with the central team. Like all other supervisions, this would serve as educational.

2001 responses

- The Department will arrange for an external review of the TB program to be done no less than every three years.

2004 Comments and recommendations

see rec 2

Recommendation 24:

The existing TB Registry should be assessed by a consultant for its capacity for currency, and for generation reports.

2001 responses

- The existing TB Registry has already been assessed and plans for its replacement are in place. (See Recommendation #21).

Recommendation 25:

Provision of full time data entry person should maintain the program receiving information from the field, and generating regular reports for the health centres and the boards under the direction of the central team.

2001 responses

- The Department supports this recommendation. A casual position is currently doing TB data entry, but plans are being made to create a term position for at least the next three years, or until the NWT TB rates have come down to the national level. This will be considered within the next business planning cycle.

2004 Comments and recommendations

- **Data availability has increased**

Recommendation 26:

Special high-risk groups and settings (such as corrections facilities and health care settings) deserve special attention for targeted testing and treatment of latent TB infection.

2001 responses

- Target testing of high-risk groups are clearly defined in the TB Standards. Consistent screening of inmates and patients in long term care facilities has occurred since 1996. Community screening of high-risk groups is extremely variable, and depends on staffing.
- The HPU will assist in identifying high-risk groups with the board over the next two years, and provide recommendations, and report to key stakeholders as to the status of this program.

VII Additional issues

a. BCG vaccine use in NWT

By request of Dr André Corriveau, the issue of BCG vaccination use is reviewed and recommendation made.

Global

BCG, Bacille Calmette Guerin is named for the two men who developed the vaccine from *Mycobacterium bovis.* Its use is intended to induce immune recognition, which will subsequently provide immediate response with lymphocyte proliferation and defense against the more virulent *M tuberculosis*.

Although the many prospective and case controlled trials have yielded variable degrees of protection the vaccine continues to be used globally. It is given to about 88% of all newborns. Complications from the vaccine are local abscess formation, regional bone infection and disseminated disease. Although BCG fails to prevent infection, it does protect children from severe forms of TB miliary disease and meningitis consistently in all studies.

It was recommended that the criteria to be in place when BCG is discontinued should be:

1. presence of an efficient surveillance system
2. average annual notification rate of smear positive of <5/100,000
3. annual meningitis rate of < 5/1,000,000 in previous 5 years

4. Annual rate of infection of <0.1%. Annual rate of infection is determined by cohort testing of children of a specific age of several years.

Local

In Canada the vaccine was field tested in the 1930s by Ferguson and showed protection. In most provinces health workers were given the vaccine until the 1960s. Quebec continued its use until the 1970s. But consistently until the last decade BCG was offered to First Nations children at birth.

The use of BCG as measured in 2004 continued only in North western Ontario, Thunder Bay and Sioux Lookout, most first nations communities of Manitoba, Saskatchewan Northern Inter-Tribal Health authority, and 25/65 communities and in NWT and Nunavut.. In the NWT BCG is offered to all newborns at risk of exposure because of family or community history of TB.

During the past decade, the rates of TB in Canada have fallen to 5/100,000, so low that the criteria for discontinuation of the vaccine have been reached.

But the recommendation warns that the population in question must be aware that there will be some occurrence of miliary disease and meningitis in children.

During the past decade the occurrence of childhood TB in Canada has fallen to 2.2 for <1 age and 3.2 for 1-4 age but in the 2002 data the 1-4 age group for the north was 65 (is this a rate per 100,000). This would have to be broken into the northern regions and measured over 3 year to average, because of the small population. However at the same time there have been 10 cases of disseminated BCG in immune compromised children

In September 2004, a consensus conference on BCG was hosted by National Advisory committee on Immunization (NACI) with all provinces and territories and with First nations representatives who recommended when the ARI is less than 0.1%, rate for smear positive pulmonary TB cases is less than 5/100,000. The 2002 immunization guide had recommended BCG where annual rate of infection was greater than 1%, based on skin test surveys. In that year there were 1634 cases a rate of 5.2/100,000, only 93 were in <15 year olds a rate of 3/100,000. First nations and Inuit people have 3 % of the population and 15-20% of the TB. But in 97-2000, 38% of the cases came from only 10 communities. In northern Saskatchewan the rate of TB in 2002 was 117/100,000.

The criteria for discontinuation of BCG require determination of smear positive rates, meningeal rates over 5 years and ARI. **It is my opinion that although not yet reached the time will soon come that BCG discontinuation will be appropriate. However, in preparation, an education program which involves the community would be appropriate because of the possibility of the occasional case of TB meningitis or miliary disease likely to occur after stopping BCG.**

b. Laboratory issues

1. The region is well served by the Stanton Hospital TB lab, which processes all specimens received from the NWT. The number of specimens received all regions is ---

For example the Inuvik region provided 885 specimens in the 12 months Sept 2003-Sept 2004. 203 came from outpatients and 84 from inpatients. I did not ascertain if this represented specimens or patients.

Culture Summary:

# Positive Cultures	33 (1.1%)	55 (1.7%)
# M. tuberculosis	18 (0.6%)	39 (1.2%)
# Patients with MTB **NT patients** **NU patients**		 8* {2} 1
# MOTT's	15 (0.5%)	16 (0.5%)
M. gordanae	5	11
M. avium	1	
M. avium-complex	3	2
M. fortitum	2	
M. kansasii	2	1
M. pergrinum		1
M. terrae	2	
M. senegase		1
M. scrofulaceum	1	
# Contaminated Cultures (cultures discarded before 7 weeks due to contamination)	45	13 (0.4%)
LJ Slants		96 (3%)
Liquid	1.5% **Bactec**	32 (1%) **(Bactec/Mgit)**
Both Cultures		13 (0.4%)
Notes:		**LJ was instituted Feb 2003** **MGIT was instituted May 2003** ***This number does not include positive surgical/tissue samples that were not processed at Stanton {patients positive from samples not processed at Stanton ie tissues etc.}**

The results of TB culture in Stanton hospital lab in Yellowknife lab is 1.1% of all specimens, of which about 50% were nontuberculous mycobacteris (NTM). The ideal number of positive, I don't know but am seeking advice. This low yield suggests that the patient selection may be missing the symptomatics. There is an apparent increase in the contribution of NTM to the total, likely the result of the more sensitive culture techniques. From Inuvik region the 885 cultures were 85 from the hospital in one year and the rest from outpatients. One would like to detect symptomatics in the community but the more ill are hospitalized, and likely to have greater TB risk.

An effort to increase the number of symptomatics having sputum culture should be considered as a pilot. The lab is a great source of information regarding quality control and time should be spent in arranging summary information each year. It will tell you hwo many specimens are sent per region and the yield. This could be another Operations research question.

In the community the cough register may increase submissions. In the hospital the engagement of the physician community in the program may be helpful as rounds are increased.

c. Special groups for Targeted testing
Targeted Screening – South MacKenzie Corrections

Total # of Inmates Tested	55
Total # of Mantoux Tests	38
# of Negative Mantoux tests	34
# of Positive Mantoux tests	2
Total # of CXR	19
# of Negative CXR	17
# of Abnormal CXR	2
Total # of Sputa	2
# of Negative Sputa	2
# of Positive Sputa	0
#of LTBI	3 (2 treated previously)
# of Inmates on treatment (TB/LTBI)	0
#of Inmates with TB	0

Comment: This exercise was costly in terms of human resources and nice to know no cases were found, but it would be an opportunity to give prophylaxis to the two reactors and any previous positives.
All programs should be analyzed for impact, output and cost.

d. Challenges of Managing TB control in low incidence areas

The greatest challenge is finding the case in the low incidence setting. It has been said that the hardest to find will be the last. The last infectious cases may have spread disease during the interval of misdiagnosis. It is estimated that for every one year during which a case remains infectious, 15 new infections are caused.
In Extrapulmonary TB, which is less likely to be infectious, if the disease is missed the disease progresses and is more difficult to treat. Even today in Canada 10% of all TB cases die usually because of late diagnosis.
The CDC US, published Progressing Toward Tuberculosis Elimination in Low-Incidence Areas of the United States: Recommendations of the Advisory Council for the Elimination of Tuberculosis (reference).
In elimination phase outbreaks may occur because of delayed diagnosis. Hence it is critical to maintain surge capacity to manage the treatment of the case and the contact follow-up and prophylaxis of those with new infections,

Coalitions of expertise in medical nursing lab personnel meeting quarterly to review existing cases and their delay in diagnosis and treatment challenges will maintain a level of expertise in the region

CDC recommends:

The review and revision of TB regulations and management guidelines every two years. Topics reviewed are: administration of the program; training; reporting practices and surveillance; program evaluation; laboratory testing for mycobacteria; case finding, holding, and management; treatment of persons with TB disease and latent TB infection; contact investigations; targeted testing for latent TB infection; and standard responses to foreseeable adverse situations (e.g., uncooperative patients, outbreaks, and multidrug-resistant TB).

It recommends that each state have an elimination plan, which would include the following: strategies for addressing specific epidemiologic features of TB in the state, including the needs of specific groups or communities with higher rates. TB control services require an approach adapted to cultural and jurisdictional distinctions, ideally, one that has been developed in collaboration with tribal health authorities

Case finding

CDC points out that no matter how good the central team is at managing the case they are dependant on the practitioner to find the case. General awareness of TB as a potential cause of cough-illness is difficult to sustain if the disease occurs rarely. Delayed case detection at the local level is a potential factor contributing to TB transmission. Known expertise should be supported and encouraged and engaged in team approaches to decision making about policy.

Training should be targeted to expand the diagnostic knowledge of primary care providers, and it should be focused on the localities with gaps in expertise. Many state health departments offer conferences and outreach initiatives to inform local health-care providers about public health issues, and the TB program can take advantage of these events for delivering and updating messages in the context of continuing education.

A management team allows the TB program to monitor the progress of the patient, train the provider, and promote the services of the program by building rapport between public and private sectors. Private providers who otherwise would reject directly observed therapy for their patients might reconsider this option after learning about the services offered by the health department.

Prevention: Finding and Managing Latent Tuberculosis Infection

The contribution of treatment of latent infection should be emphasized. It requires three steps. First only those who if infected are at risk of reactivation should be skin tested! this means that if a positive is found , once disease is ruled out with symptom inquiry and chest x-ray INH should be started. I found a common misconception that age over 35 was a contraindication to INH. This is not the case.

Risk of disease	**Risk of exposure**	**Others**
• **HIV+ or risk** • **HH contact** • **Abnormal xray**	• **Immigrant<5y** • **IDU** • **Resident or employee in residential settings** • **HCW/lab** • **Silicosis** • **DM, RF, Lupus, wt loss** • **Leuk lymph, head /neck ca10%**	
>= 5mm	**>=10mm**	**>15mm**

Application of CDC recommendations to NWT as it moves toward elimination
(Expansion of the existing Stanton Hospital rounds structure to include the regions through video conferencing, at least monthly with case discussion will also increase level of awareness and capacity to find cases and cure them.
The existing lab capacity is good, but reference cultures are referred to Edmonton. The capacity to do quality work depends on the frequency of doing it; hence a time might come when specimens should be referred.
Similarly the management of cases in the community when they are no longer infectious should be regularly practiced to engage the community nurses in knowing and understanding TB. Every case is an opportunity for education to maintain awareness in the nursing staff of the stringent requirements for directly observed therapy (DOT).

Keeping people in hospital solely for the delivery of medications is singularly counter productive, unpleasant for the patient and sending a message to the community of lack of confidence in their ability, and lack of trust that once treated the patient is no longer infectious.)

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Appendix I
Visit Notes September 2004
Appendix notes
briefing session

central team activities
Team is in the health protection branch , office of the Chief medical officer. It consists of Andre Corriveau the CMO, two CDC consultants one 0.5 TB Cheryl Case, one 0.2 Wanda White.
Their relationship to the regions is advisory. They set standards, monitor the work, and intervene if outbreak or inadequate .
Their training responsibilities are in the regions about annual for each region, a one day visit of the region PH staff on CDC. Site visits are 3 communities per authority per year.(18) to do a TB audit.
Comparison of the lab with the clinical is done by having one single Lab who copies all reports to the central team, who immediately call the NIC or doctor, to confirm that treatment is started.
TB rounds are being heldQ2 weeks with international medicine consultant, radiologist, micro lab supervisor, paediatrician a hospitalist, ie the weekly doc on call for all admission.
Hospital beds are Stanton 125 beds, with 5 resp isolation rooms about to be renovated from 9-12 air exchanges/hour and one will have an anteroom. there will also be an alarm for malfunction of the negative pressure.

1. review the manual
2. Review of cases- treatment record with diagnosis, drugs, calendar DOT, monitoring.
3. The case manager is the NIC of the PH side. But some have only community health nurses, and the **turnover is high**

site visits

1. Yellowknife Public health unit: the – staff of the health unit has – public health nurses. Lou Richard is responsible for TB. She is notified of all new cases by the hospital and visits them in hospital beginning her role as treatment supporter by establishing lines of communication. the topic of discussion immediately is around the issues of contact follow-up. This work should be used as a teaching tool for nurses in other regions . It links the public health arm of the health care system to the acute care side which must link to be really effective.
2. Inuvik public health unit
3. Fort Macpherson sub office
The visit to Fort McPherson on Wednesday included the 2.5 hour drive from Inuvik giving a sense of the remoteness of the community of 800. Cheryl and Anne were accompanied by Dr Chuck McNeil a physician who has been in Inuvik for a decade and who has been the physician for Mcpherson for the same period visiting for a week every 5 weeks. Her warmth and familiarity with the region and its peoples is obvious and has created an obvious sense of trust by the nursing staff and the people.

The nursing station is 12 years old but clean and well kept . The facilities include an emergency for acute care, a dental unit a dispensing room with drug dupplies. (the supplies of TB drugs are obtained through the Inuvik regional hospital and purchased through Shoppers drug mart. I see two potential problems, one that the price could be cut by bulk purchase and the appearance of the meds and doses change wfrom region to region. So central ordering would be a good plan, but requires estimation of necessary supplies so no stock outs and plan for distribution. In particular the pharmacy stipulates what drugs should be on hand in that HU and Rifampin waas one of those not on hand.. Since the community has only two cases on prophylaxis with INH it is not urgent and sine the road from Inuvik is open withthe ferry til freeze up and then with ice rodad only has a month of difficult supplies.
the staff at the health center desreves mention. The acting charge nurse is Eileen WilsonEvelyn a nurse from the communityh . The NIC is on Maternity leave . The nurse with greatest longevity in the community is Sandra McIver who has a strong community commitment though from outside. Her interest and commitment is clear and her concern about diagnosing TB appropriate. The CHR of the Community Winnie Greenland is an invaluable asset as her trust by the community allows pilll dispensing with good compliance(I saw two INH 2/week records which were up to date in both and showed full compliance in one and two weeks missed in the wother. the possibility of adding those two weeks and the end was discussed. the second case was supervised at home by good parents and could be checked by urine INH dip sticks.
A community meeting took place at 3 pm with about 25 community members attending.Anne Fanning described the disease with some case illustrations and theninvited questions. There were several community members who volunteered their past experience with TB. Neil when he was 7 spent two weeks in med and got better and then got 18 months of needles. His esperience revealed that TB chad killed many of his friends. It was pointed out that prevention would protect him from future reactivation. His testimonial encouraged three others to describe their treatment in Aklavik hospital with PAS and Streptomycine. During the meeting there were two who coughed constantly and it was encouraged to check with nursing station to rule out TB.
4. Visit to Inuvik community hospital was for the purpose of participating in rounds. Teh hospital is hosting Dr John Morse who is doing a week of consulting with Dr Cheryl resident from the internal medicine program in Edmonton. Marguerite – from Queens community medicine program, Winlai student from UBC, Dr Brom de Klerk chief of staff, Dr Mike Mulherin Dr Davey Dhillon new staff man who has worked with MSF in DR Congo Dr Leah Seaman--, Dr Gordon Mowat, Psychiatrist from Edmonton.

I will repeatedly return to the subject of staff recruitment and retention by assuring that there is job satisfaction , a secure environment adequate hosing and benefits for northern work. The possibility of offering advanced training while on the job would be added incentive and might be offered through the internet.
links
government
hospital

Stanton
A personal visit to emergency found a sympathetic physician with fine suturing skills.
Inuvik
The beautiful new faciliity in the growing town of Inuvik serves 6800 people in the twon and the
lab
Stanton number of specimens a year, and % cuture positive, and % NTM??
Number and % positive by region??
regional bands

Task 3.

Training
ideas
Create a nursing study group of the PH nurses iin each region meeting
Quarterly by conference call to compare cases, have a presentation
Create a web-based course for PHNs in TB

Prepare a schedule for on-site visits with assignments of tasks to team members and a calendar of the visit.

For this task, identify and indicate appointments with those you will need to see. Prepare a list of the information you would like to obtain from each of these individuals.

Appendix II Suggested outline of bi-annual review from IUATLD and WHO country review manual

Preamble

The initiative to conduct this review is at the behest of the Ministry of Health of the government of_____. Co-ordination with all sectors is important. Planning in advance is important to avoid interruptions to program.

The agency requesting the review owns the product.

At country level the review should involve National TB control and first nations representative

Reason for Review:

1. _____TB control program of determined to strengthen its outcomes in 2001 with bi-annual follow-up.
2. Goal
   - to measure progress
   - to shore up support
   - to address problem areas.

AIMS OF review

1. to secure or reinforce government commitment (High burden or poor program)
2. to refocus goals and direction
3. broaden support from academe, public health other sectors, NGOs
4. to manage change eg decentralization
5. to improve effectiveness
6. to strengthen problem solving and supervisory skills of the NTP

Frequency

It is suggested that reviews biannually be done internally and five yearly externally with a view to enhancing and improving the services that currently exist.

Schedule for on-site visits

Days of visit	M	T	W	T	F		M	T	W	T	F		M	T	W	T	F
Central team	x																
ministry		x															
Hiv team			x														
Ngo partners			x														
Essential drugs			x														
Urban HU				x	x												
AssignedRegion							x	x									
AssignedRegion2									x	x							
AssignedRegion3											x		x				
Summary														x			
Final central															x		
writing																x	
finalMOH																	x

Planned visits:

First week (and final meeting with the minister to present the report.)

Note: Planning for the report's dissemination is critical. The report will belong to the contractors, but to make best use of it to assure the recommendations which are approved are carried out, a plan should be made early in the process for its wide dissemination.

The purpose of the first week is to become acquainted with the health care system and the essential components necessary for the logistics of executing a National TB program. The central team is the Group on which the success or failure of the program rests and the consultants are there to support the team and to strengthen it.

1. Central team meeting
    a) review the tuberculosis status since last visit and the success in meeting last targeted recommendations
    b) discuss the perceived problems
    c) plan the visit

2. Minister of health

A meeting with the ministry is very important as a courtesy and more , to express the importance of the mission, the contribution TB Control makes to the broader general health care system and to the larger economy. It also serves to assess the importance the minister attaches to the mission, and to set the stage for the final report

3. Other relevant national health programs
    a) the HIV control program is especially important in countries with high rates but establishing links for training purposes and future shared program is wise
    b) Lung health
    c) Child lung health
    d) immunization to establish clear understanding of the immunization policy and rates of BCG
    e) Health surveillance personnel
    f) Central government drug supplies and stores personnel
    g) Military, police, and prison health personnel

4. Other ministry officials:
    a) Education (Higher) to determine the availability of trained health care workers, nurses, lab technicians, doctors, pharmacists. Not only is the number of such staff important but their curriculum and the link between public health

5. Donor partners and other players in disease control in the country. It is helpful to participate in the country national planning team for GFATM or other parallel bodies which co-ordinate health planning
    a) Donors governments, e.g. Norway, Japan
    b) international orgs WHO, UNICEF
    c) others MSF
    d) religious leaders?

Second week

The review committee will divide into two or three teams with one external per team and will visit representation regions. The nature of the visit to regions is to determine the function of the program in finding cases, diagnosing accurately and treating to cure.
The visits should center on the management unit presumably the hospitals in Sudan and since all cannot be visited there should be a careful selection of rural and urban of well functioning and problematic ones.
Visits should always begin with the district officer or the one in charge of the district. This is for courtesy and to gain confidence in and support for the program. Visits should include:
Nurse in charge of the case registry, to see the registry and to compare the case registry with the lab registry for diagnostic smears. The registry also provides information on the outcome of cases and an opportunity to check on the validity of the central report
Lab technician, to see equipment and files of positive and negative slides
Drug stores to assure safety and assurance of supply
Patients records for accuracy of the drug taking
It is important to actually see patient and if possible their drug taking practices.
For advocacy purposes it is useful to determine how the program is perceived.

Third week

The findings are summarized by the review team and the report written by the team in consultation with the central team of the NTP. Once all are agreed on the conclusions, the report is ready for presentation to the minister.
At the conclusion of the week a meeting is set with the minister to present to him or her conclusions and recommendations of the review committee.
A plan must be devised for wide dissemination of the report, to an agreed upon list.
Finally next date of review and targets for the recommendations should be in place.

Appendix III Presentations to Inuvik and Stanton hospital staff by Anne Fanning , available on request