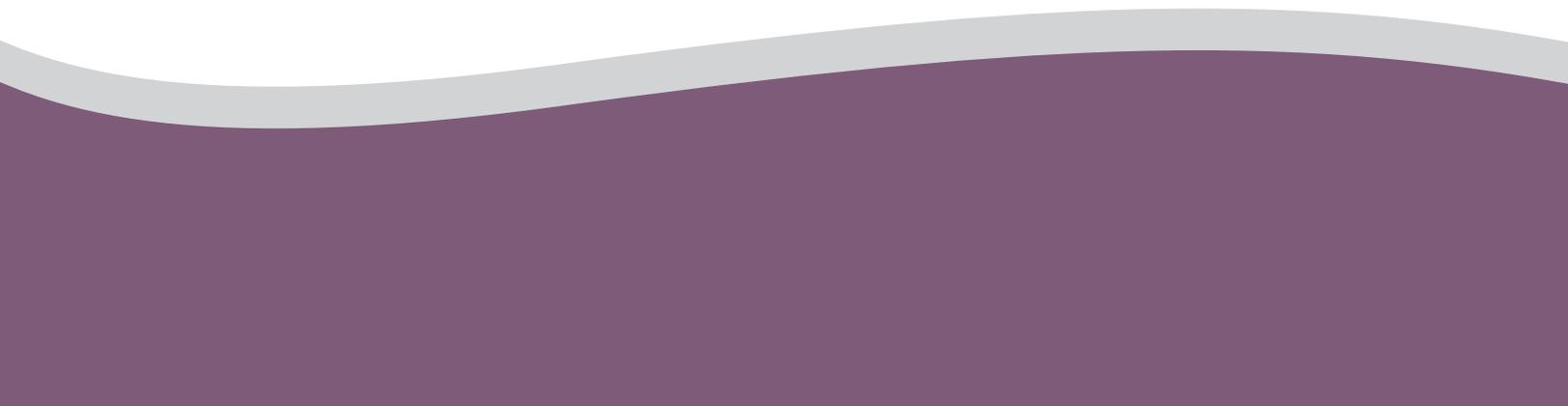


SASKATCHEWAN PROVINCIAL TUBERCULOSIS STRATEGY 2013-2018

Prevention, Treatment, Education and Control

TB Partnership Working Group

JUNE 2013

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Executive Summary

A comprehensive strategy is required to respond to the high number of new cases of TB in at risk populations in Saskatchewan and to prepare for potential new drug-resistant strains of bacteria.

Tuberculosis (TB) in Saskatchewan has gone from epidemic levels in the early 1900s to a disease that can be successfully prevented and treated through appropriate screening and treatment practices. Currently, rates in Saskatchewan are higher than national rates, with 7.5 cases per 100,000 people in Saskatchewan compared to the Canadian average of 4.7 per 100,000. Of our provincial cases, 54 per cent are experienced in the north, home to only 3.6 per cent of the provincial population.

A complex array of factors impact TB rates. Access to screening and treatment services in rural or remote regions, early detection, public awareness regarding symptom recognition and stigma reduction, and social factors, including housing or income all contribute to high rates of TB.

In addition to environmental contributors, there are a number of risk factors that can increase susceptibility to TB including contact with active TB cases, the presence of other diseases, immuno-compromised individuals and other health considerations. Drug resistant TB is an issue of emerging consideration that complicates treatment. Drug resistance can be prevented through early detection and follow-through of treatment practices. Most drug resistant cases stem from endemic countries; therefore, the increasing number of foreign born individuals moving to Saskatchewan may also impact our approach to drug resistance.

The TB Partnership Working Group was established to ensure a collaborative approach to addressing the complex issues that contribute to TB in Saskatchewan. Membership includes TB Control Saskatchewan, the Ministry of Health, regional health authorities, First Nations health authorities, and First Nations and Inuit Health Branch (FNIHB) – Health Canada. The TB Partnership Working Group has been integral in the development of the Saskatchewan Provincial Tuberculosis Strategy and will continue to play an important role in implementation.

Cost

Tuberculosis has a significant impact on health care expenditures in Canada and Saskatchewan. National data estimates that approximately \$74 million was spent on TB treatment in 2004 (Menzies 2006). This is \$84.4 million when translated into 2012 dollars. Data shows that treatment of multi-drug resistant TB cases can increase costs anywhere from \$41,225 to \$195,078 per patient. The treatment of active TB does not include costs associated with screening, education, prevention or training efforts, nor does it account for lost productivity time of TB patients, their families, or the community.

Goals

The goals of Saskatchewan's TB strategy are to:

- Reduce the number of new and relapsing cases of TB;
- Facilitate quality patient care through early detection, best management, and timely treatment;
- Support ongoing capacity for health care providers to ensure consistent and collaborative management and treatment of TB; and
- Provide TB education and support for the general population, especially for those at highest risk.

The strategy will inform current and future work to prevent and treat TB in Saskatchewan as well as provide a guideline to monitor emerging issues and evaluate the provincial approach.

It is rooted in evidence and considers efforts across Canada at national and provincial/territorial levels to reduce TB rates. Actions within the strategy will be responsive to new evidence as it becomes available.

The approach of the strategy will be patient centered, community designed and team delivered and will continue to be a collaborative effort involving TB Control Saskatchewan, regional health authorities, communities, FNIHB, First Nations health authorities and health care providers. Linkages will be established with other work across government and in other sectors that contribute to addressing the factors which impact TB rates.

Coordination of efforts is a priority within Saskatchewan's TB strategy. The overall target is a 25 per cent reduction in the rate of new and relapsing cases of TB by 2017/2018 and a 50 per cent reduction by 2022/2023. Achieving these targets will be possible through consistent, collective action across the partnership.

Five Areas of Focus

1. Clinical Diagnosis and Treatment

Work will ensure the appropriate use of best practices to support effective management and treatment of TB cases in Saskatchewan.

A client-centred approach will be used to identify and implement strategies to improve screening, treatment, management and follow-up practices. Working towards a standardized approach across Canada through reviewing current practices and evidence will also support effective clinical efforts.

Emphasis on addressing the unique needs and challenges in northern Saskatchewan will be realized through the development of high incidence community strategies that coordinate and take into account local community needs.

2. Public Health, Prevention and Community Engagement

Strengthening the public health aspects of TB control will support a more efficient and effective response across the partnership group.

Strengthening and expanding partnerships between public health and other TB partners to encourage collaborative discussion and responsiveness in TB control is important in a coordinated approach.

Efforts to ensure early identification through enhanced and targeted screening will prevent disease transmission and progression. Providing general education and awareness to community members will assist in client and community involvement in TB prevention, identification and treatment. Engaging community leaders and the

broader community will continue to be a priority especially in the development of new strategies to build awareness of TB. This will also support community and client involvement in addressing the broader social factors that impact TB.

3. Training and Education

Building TB knowledge and capacity in health care practitioners and community partners is required to ensure a consistent and responsive TB program.

Efforts will focus on providing education related to best practices in appropriate TB treatment and management within the TB workforce; and awareness campaigns that ensure accessible and appropriate resources and programming for clients and the community.

4. Epidemiology and Surveillance

Improved surveillance reporting and monitoring are required to inform a current and relevant TB program.

Regular and on-going monitoring, analysis and evaluation of data will identify areas of success or where efforts need to be strengthened. Special attention will be paid to the reporting needs in the north as well as those within high incidence communities.

5. Quality Improvement, Program Evaluation and Research

Regular reviews of programs and initiatives within Saskatchewan's TB strategy will occur to continue initiatives in a proactive, efficient and effective manner.

Tuberculosis programming will remain a shared effort by TB partners with a renewed focus on the priority areas within the strategy. Opportunities to be involved in relevant research projects will be examined to better understand and support the needs of the TB program. An evaluation of the strategy will be completed to inform, review and amend the plan as necessary.

Introduction

Tuberculosis (TB) in Saskatchewan: A Historical View

Scientists have shown that TB is an ancient disease. Evidence exists in the skulls and spines of Egyptian mummies and Hippocrates noted it was the most widespread and fatal disease of his time. Historically, a TB epidemic could last up to 300 years, but was largely contained due to the fact that people were not nearly as mobile as today and populations were not concentrated in large cities. The Industrial Revolution in Europe in the 18th century, with severe poverty and overcrowded cities, was the key element in instigating the wide spread transmission of TB among the population.

New European settlers and traders carried their infection with them when they arrived in Canada. Exposure of the First Nations people occurred at different periods; the inhabitants of the East Coast were exposed 100 years earlier than the Prairie population. In the 19th century, one fifth of all Canadians were infected with TB and large numbers died as a result of this disease.

Saskatchewan has not been immune to the ravages of TB. Epidemic TB came to the Saskatchewan First Nations populations shortly after many changes in social circumstances with the signing of treaties, the arrival of the railway, the disappearance of the buffalo, crowded conditions on reserve settlements, and the use of residential schools.

Often referred to as “consumption” or “white plague”, TB is spread from person to person through the air in tiny droplets that occur when a person is coughing or sneezing. People nearby inhale the bacteria and most can harbour the bacteria without developing symptoms – this is called “latent infection”. However, the disease can become active. It is estimated one third of the world population is latently infected.

The advent of medications to treat TB in 1948 resulted in sharp declines in the death rates with further improvements due to the adoption of prophylaxis treatment 10 years later. This progress led to a shift from a sanatorium based care model to an outpatient, community based model and finally to the closure of the sanatoriums by 1978.

Although the disease has not been eradicated, the discovery of the tubercle bacillus, interventions for treatment and new medications have had a significant impact and saved many lives. Despite our history and our success, Saskatchewan continues to face challenges in eradicating TB. Rates remain high in Aboriginal communities, particularly in the north due to a number of factors.

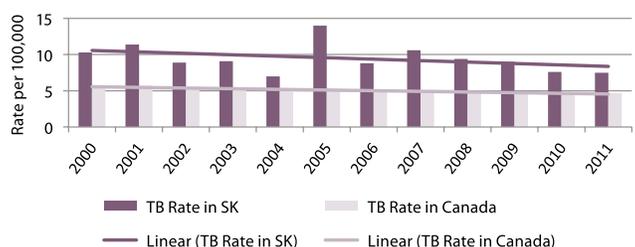
Today, the TB program in Saskatchewan is centrally administered by the Ministry of Health’s TB Control Program based in Saskatoon and works in collaboration with provincial, federal, and First Nation partners. With an emphasis on patient centered care that is community and outpatient based, a multidisciplinary team of healthcare professionals treat and prevent active disease with a focus on children and high risk individuals.

Tuberculosis in Saskatchewan: the 21st Century

While Saskatchewan showed leadership and innovation in the 20th century with remarkable successes in TB control, it is time to adjust and re-focus our strategies based on the changing epidemiology of the disease. In 2011, Saskatchewan had an overall new case rate of 7.5 per 100,000 people as compared to the Canadian national average of 4.7 per 100,000 (Public Health Agency of Canada 2011; see Figure 1). Upon further review, the 7.5/100,000 Saskatchewan rate breaks down as: Registered Indian Status 42.9/100,000, Métis 29.1/100,000, foreign born 14.5/100,000 and Canadian born at 0.6/100,000.

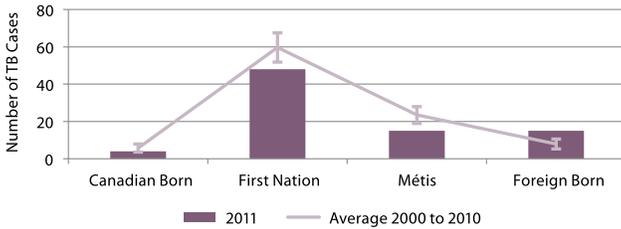
In Canada, there are approximately 1,600 TB cases diagnosed each year; Saskatchewan’s most recent data shows 82 new cases in 2011.

Fig 1. Rate of TB in SK & Canada 2000-2011



Saskatchewan has one of the highest rates of TB among Canadian provinces. The epidemiology of TB in Saskatchewan is different from other provinces in that the majority of cases are in First Nations, Métis, and northern populations rather than foreign born, as per Figure 2.

Fig 2. Ethnic Distribution Trend in SK 2011



Tuberculosis in the North

It is clear from the information presented that a focus of the TB strategy must be on First Nations living on-reserve in the north as well as others living off-reserve in the three northern health authorities. They experience 54 per cent of the TB cases in Saskatchewan (see Figures 3 and 4) yet comprise only 3.6 per cent of the provincial population (aggregate data from 2000-2011).

Rates of TB in young people are also elevated in the north compared to the rest of the province. Currently, screening efforts are focused on youth in the north to ensure early identification and treatment of TB infection (latent or active). These enhanced screening measures, as well as a younger northern population base, attribute to higher rates; however, ongoing measures will continue to enhance efforts to protect current and future generations.

A review of TB cases over the past 10 years identified a number of high incidence communities in the North. That is, TB cases are not evenly distributed in the North and targeted interventions to address this disparity are required.

Fig 3. TB Cases Comparing North SK with Rest of SK 2000-2011

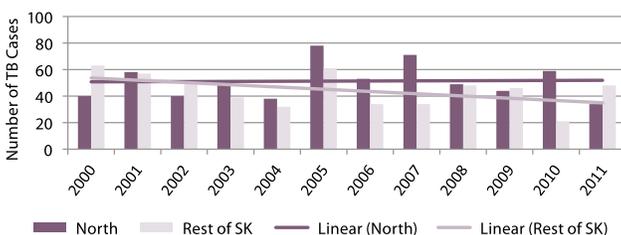
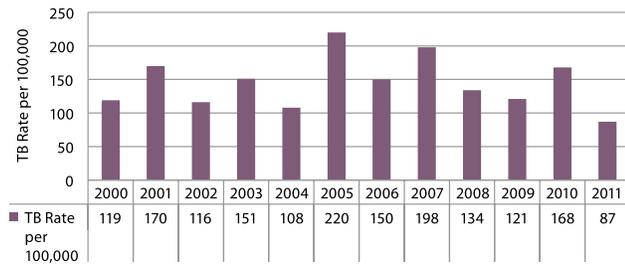


Fig 4. TB Rate per in Northern SK 2000 - 2011



Tuberculosis is generally a disease of poverty, its spread influenced by the social determinants of health - the social factors that play a role in how healthy a person may be. High rates of TB strongly correlate with poor socio-economic conditions, poor quality housing and overcrowding, and living in an isolated community (Pepperell et al. 2011; FNIHB 2011). Approximately one in four families were deemed to be low income, a rate almost 2.5 times higher than the province as a whole. The cost of healthy food is substantially higher in the north and the north has four times the proportion of homes requiring major repair and over 10 times the rate of over-crowding compared to its southern counterparts (Irvine, Quinn, Stockdale 2011). When considering these statistics it is clear that the environments people live in contribute to high TB rates and thus, action must be taken across sectors to improve the general socio-economic status of these residents, along with improving diagnostic and treatment services.

A Patient Perspective

A patient in the north is diagnosed with TB and requires specialized treatment in Saskatoon. Following five days in the hospital, the patient returns home to complete treatment with the support of a TB worker. In addition to the use of mobile clinics, expanded TeleHealth services are being made available to the patient which will help eliminate the need to travel hundreds of kilometers to Saskatoon for follow-up appointments.

Risk Groups

The main risk factor for developing TB is close contact with an infective case of the disease. Even among those exposed, the risk of developing TB infection and

ultimately active disease can be greatly increased via a number of other risk factors. People who are immunocompromised due to certain medications, have chronic diseases (such as diabetes or kidney disease) or other conditions (such as HIV, AIDS or cancer), have undergone organ transplants, or are cigarette smokers are more susceptible to developing active TB. Consideration must also be given to foreign born individuals moving to Saskatchewan from endemic regions.

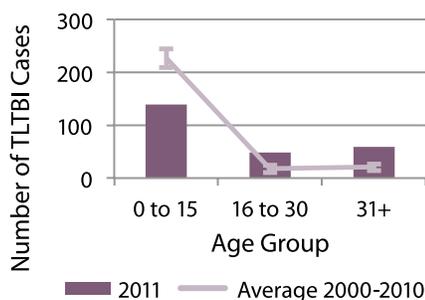
Monitoring and reporting on the prevalence of these risk factors in the population affected by TB will be enhanced.

Latent Tuberculosis Infection

Latent Tuberculosis Infection (LTBI) occurs when an individual contracts TB and the infection remains dormant, or latent, in that individual with no clinical evidence of active disease. Individuals with LTBI have a 10 per cent lifetime risk of developing active disease, with half the cases occurring in the first two years of infection. The decision to treat someone with LTBI includes consideration of the age of the patient, contact history, chest radiographic findings and the presence of other risk factors. In Saskatchewan, the focus has been to provide prophylaxis, a treatment for latent TB to prevent development of active disease, in children under the age of 15 years.

Currently, treatment for LTBI is recommended for those who recently tested positive to a tuberculin skin test, have been in contact with an infectious TB case, and who have high risk characteristics.

Fig 5. Treatment of Latent Tuberculosis Infection (TLTBI)



Drug Resistance

Resistance of bacteria to the drugs used in the treatment of TB has emerged globally as a major public health problem. It is the mark of failure of a TB program resulting from improper use of drugs. Patients who develop active disease with a drug-resistant TB strain can transmit drug-resistant TB to others.

A person who develops drug-resistant TB might do so because they are infected by someone else with a resistant strain (*primary drug resistance*) or they may initially have drug-susceptible TB which later becomes drug-resistant as a result of inadequate, inappropriate or irregular treatment, most often the result of non-adherence to medication administration (*acquired drug resistance*).

There are many levels of drug-resistance from mono-resistance, when bacteria becomes resistant to one of the first line drugs, to multi-drug-resistant, to extensively drug-resistant, where resistance to front line and secondary drugs is present. In 2012, a strain of TB was reported in India which was totally drug-resistant. This strain had been previously reported in Italy (2007) and Iran (2009) (CTBR 2013).

Globally, approximately 3.4 per cent of all new cases of TB and 20 per cent of re-treatment TB cases are multi-drug-resistant (WHO 2011). Treatment is longer, more complicated and less effective than for drug-susceptible TB.

In Saskatchewan between 2001 and 2010 of the 591 specimens with positive cultures for acid-fast bacilli (AFB), 3.4 per cent showed resistance to at least one drug, with two specimens identifying multi-drug-resistant TB. Primary resistance was deemed to be the cause of 85 per cent of resistant cases. The rate of resistance was 10.8 per cent in foreign born people and 2.2 per cent in aboriginal people. Primary resistance is most likely to develop in people from countries with high rates of drug-resistant TB and these cases require extensive clinical management.

Fortunately, Saskatchewan has low rates of drug-resistant cases of TB; however, it is an emerging issue internationally and, with an increasing foreign born population in the province, it is important to consider it as one component in controlling TB and reducing the associated costs. Within the Saskatchewan TB program work is being done to prevent acquired drug resistance

through measures to ensure patients are prescribed the required numbers of drugs in proper doses and to ensure the drug regime is adhered to through Directly Observed Therapy (DOT). Currently a review of the DOT program in Saskatchewan is underway.

A Patient Perspective

As our patient returns home to complete treatment for their TB infection, TB workers provide DOT to the patient to ensure that the treatment protocol is administered appropriately and reduce the chance of retreatment or the potential development of drug resistance.

Cost

In 2004, \$74 million was spent in Canada combating TB. This equates to \$47,290 for every active TB case diagnosed in that year. Treating active TB accounted for 60 per cent of provincial/territorial spending on TB (Menzies 2006). Using the “health and personal care” Consumer Price Index (CPI) values calculated by Statistics Canada, this translates to \$84.4 million in 2012.

The cost of TB programming in Saskatchewan is shared by the provincial and federal governments. The FNIHB - Health Canada is responsible for First Nations and Inuit persons living on reserve and the Ministry of Health is responsible for all persons living off reserve.

While there is no clear data reflecting the current cost of treating a case of active TB in Saskatchewan specifically, there are many components that contribute to the financial burden. Costs include the cost of the medications, supplies for tuberculin skin test screening, radiographic and laboratory diagnostics, patient incentives, and salaries for health care professionals and other providers. All TB medications are dispensed from

the central dispensary to multiple locations throughout the province, resulting in shipping charges for couriers and transit by road or air.

Transportation costs are accrued by patients, health care professionals and other partners working in the community. Access to specialist TB services is provided throughout the province. Providing mobile clinics outside of the major urban centers is unique to Saskatchewan. Clinics are held as needed throughout the province, to facilitate patient access to care.

Acutely ill patients or new infectious cases requiring isolation in a negative pressure room or within the Intensive Care Unit carry additional treatment costs that will vary depending on the length of stay. In addition, drug-resistant cases increase costs of treatment. For example, specialized treatments for extensively drug-resistant TB cost approximately \$100,000 per patient (Centre for Tuberculosis Research 2013).

Another 2012 research article entitled ‘A Systematic Review of the Cost and Cost Effectiveness of Treatment for Multidrug-Resistant Tuberculosis’ estimated the average cost (using 2005 dollars) of treating one multidrug-resistant case ranged between \$41,225 for outpatients and \$195,078 for inpatients.

Consideration has to be given to the in-kind costs that are incurred through visits to primary care practitioners, emergency room visits, regional health authority costs associated with medication delivery, tuberculin skin test screening, contact investigation, and other agency costs associated with large screening events. Also, prevention programming accounts for a large portion of TB control spending in the province and is important to reducing the cases of active TB in Saskatchewan.

Tuberculosis as a Priority

Prevention and treatment of TB is a strategic focus for the Saskatchewan public health system with priority being placed on the development of a targeted strategy to reduce rates in the province and improve patient outcomes. A comprehensive, integrated and provincially implemented approach to TB is required – one which considers the complexity of TB management and treatment, especially when compounded with other conditions such as diabetes or HIV. A combined clinical, population health, social, and community development approach is essential to address TB in Saskatchewan.

Addressing TB will require TB Control, regional health authorities, FNIHB, First Nations health authorities and community stakeholders to collaborate and to be accountable as partner members in order to enhance the current prevention and control strategies.

Goals

The goals of Saskatchewan's TB strategy are to:

- » Reduce the number of new and relapsing cases of TB in Saskatchewan;
- » Facilitate quality patient care through early detection, best management, and timely treatment throughout Saskatchewan;
- » Support ongoing capacity for health care providers to ensure consistent and collaborative management and treatment of TB; and
- » Provide TB education and support for the general population, especially for those at highest risk.

It is important that we coordinate our actions with our health partners to address the root causes of preventable diseases and conditions. In addition, as many root causes are outside the control of the health sector, it is important to link with those partners in other sectors who are working on priorities that also influence TB. Work will be patient focused, community designed, and team delivered.

Strategic Approach

Saskatchewan's TB strategy provides a guideline for steps to address the high rates of TB in the province. Saskatchewan has a strong TB control program with numerous involved partners. The strategy builds upon current successes while offering direction in establishing next steps to move forward in addressing Saskatchewan-specific considerations.

It will use a patient and family centered approach, by ensuring a community-based team environment with involvement from all levels. Regular and consistent communication will be important in ensuring a coordinated response and alignment of partners, including patients and their families.

The TB strategy is aligned under five main areas of focus:

- » Clinical Diagnosis and Treatment;
- » Public Health, Prevention and Community Engagement;
- » Training and Education;
- » Epidemiology and Surveillance; and
- » Quality Improvement, Program Evaluation and Research.

The following describes the detailed components for action to ensure coordination as well as actions which will contribute to each areas of focus within the Provincial TB Strategy. Appendix A provides additional details on the work identified.

Coordination

Objective

A 25 per cent reduction in the rates of new and relapsing cases of TB in Saskatchewan by 2017/2018 and a 50 per cent reduction by 2022/2023.

How will we meet our objective?

The Saskatchewan TB Partnership Working Group was established in 2011 and has already made progress by improving testing, clinical availability, linkages with other communicable disease work, and changing screening processes. The group will continue to inform the strategic direction and provide oversight for TB initiatives in the province.

It will also be important to maintain ongoing and expanded partnerships with other jurisdictions. One way this is being enhanced is through the work of the Inter-provincial TB Working Group. Membership includes representation from TB control programs and FNIHBs from Saskatchewan, Alberta, and Manitoba. It provides a forum for exchange of information, fostering an inter-provincial network, promoting continuity and best care for patients moving between provinces, identifying common issues and collaborating on strategies. In addition, work to develop consistent guidelines and standards has been undertaken at a national level.

Saskatchewan participated in the development of *Health Canada's Strategy Against Tuberculosis for First Nations On-Reserve* and *The Canadian Tuberculosis Guidelines (Revised Edition)* from the Public Health Agency of Canada, the latter of which will be released in 2013. Saskatchewan will review these best practices and implement them as appropriate within the Saskatchewan context and according to the circumstances of the patient.

In an effort to ensure the best patient experience, client feedback and involvement will be required. A review of the roles and capacity of all care providers will be completed. Using the LEAN philosophy, work will continue to evaluate resource needs and improve the operation of TB control initiatives. Several communities are exploring the use of Telehealth and other services in TB service delivery. Work will focus on those communities with the highest incidence and on working across jurisdictions to provide consistent services both on and off reserve.

Consideration of the impact of the increased number of foreign born individuals in Saskatchewan will be a growing priority. Ensuring a consistent referral and screening process for new Canadians in Saskatchewan, working with Federal, Provincial and Territorial partners to develop processes and resources to support consistent practices, and educating health care practitioners and community groups on the issue of TB in the immigrant population while ensuring cultural competency will be considered.

Areas of Focus

1. Clinical Diagnosis and Treatment

Objective

Ensure appropriate use of best practices to support effective management and treatment of TB cases in Saskatchewan.

How will we meet our objective?

Ensuring the best management and treatment practices for TB control begins with a review of current practices in the province. New ways to include clients in the effective management and treatment of their TB, access to laboratory testing locations, current and new practices, and strategies for specific cases will be examined with efforts made to improve efficiency and effectiveness in TB control.

Other jurisdictions in Canada use a variety of approaches to screening and follow-up. Work is underway in Saskatchewan and inter-provincially to review and evaluate these approaches with efforts to move towards standardization. Provincial guidelines may be beneficial to outline standardized Saskatchewan strategies for screening across population groups. It is also important to screen for risk factors that may impact TB treatment responses and link with appropriate health care practitioners as necessary.

Strategies to address the unique needs of the North require collaborative, well planned, and sustained efforts. The high incidence community strategies, standardization of the Pediatric Screening Policy, and formation of outbreak teams to coordinate local community needs are key components in supporting best practices in clinical diagnosis and treatment.

A Patient Perspective

Our northern Saskatchewan TB patient resides in a high incidence community. Additional supports will be implemented in the community to reduce transmission and ensure efficient and effective treatment services through a targeted strategy to address the community's unique needs.

2. Public Health, Prevention and Community Engagement

Objective

To strengthen the public health aspects of TB control.

How will we meet our objective?

Public Health

The Public Health Working Group was put into place to ensure responsiveness to public health needs in TB control and strengthen existing partnerships between public health and TB programs. The group provides a forum for discussion and collaboration and promotes linkages with other public health programs.

Focusing on ensuring a collective provincial public health response will ensure consistent, efficient, and effective TB control in Saskatchewan.

Prevention

Early identification, including targeted screening, appropriate and timely treatment of active and latent TB cases, and subsequent treatment programs, will be a focus in preventing disease transmission and progression.

Work will engage community leaders, First Nations and Métis communities and partners in promoting awareness and addressing TB in their populations. This will include client involvement to strengthen measures that protect children.

General education and awareness of TB prevention and control within the public and with service providers is required. Focused collaboration with HIV/AIDS prevention and treatment programs will also enhance work to prevent TB.

A Patient Perspective

Risk factors for TB include other communicable diseases such as diabetes. When our patient was diagnosed with TB, they were also tested for other communicable diseases. This work supports a collaborative approach with other health care programs and specialists to ensure patients receive timely patient-centred care.

Community Engagement

Community engagement is a vital component in ensuring early detection and compliance with treatment. Work to engage organizations and communities across the TB partnership working group and beyond will support awareness of, and involvement in, addressing TB with a focus on community-specific needs. This will also support community involvement in working across sectors to address the social determinants of health, such as housing, as a mechanism of addressing the root causes of TB transmission.

3. Training and Education

Objective

To ensure adequate capacity in health care practitioners and TB knowledge in Saskatchewan communities.

How will we meet our objective?

A task group has established a workplan to ensure best practices are being used in education and training efforts related to TB. This will include consideration of cultural safety and competency.

Broad-based public awareness campaigns for the general public, as well as targeted efforts to ensure accessible, appropriate resources and programming for clients and service providers,

and the development of a network of community champions that can support those with TB are priority actions.

In addition to educating the public and those affected by TB, it will be important to build an informed and dedicated TB control workforce. Champions will be identified to support the ongoing development of practitioners in TB care. Work will be done to promote increased training opportunities and to ensure that the curriculum in health care practitioner programs is current and accurate regarding TB and its management.

4. Epidemiology and Surveillance

Objective

Improve surveillance reporting and monitoring of the TB program.

How will we meet our objective?

An epidemiology and surveillance task group has been established to review and develop tools and reports on TB in Saskatchewan. A full-time position has also been implemented to support the monitoring, reporting and evaluation of the TB program.

Regular monitoring, analysis and evaluation of data will identify areas where efforts need to be strengthened to improve outcomes. Special attention will be required to support the diverse reporting needs of the north and especially those areas that are most affected by high TB rates. There will also be a focus on ensuring adequate and appropriate access to TB information across the province.

5. Quality Improvement, Program Evaluation and Research

Objective

Review existing programs to ensure a proactive, efficient and effective TB program.

Tuberculosis programming will continue to be supported with special focus on the areas of priority under the identified strategic pillars. The province, TB Control, FNIHB, First Nations health authorities,

regional health authorities and other interested stakeholders will continue to work together and fund a sustainable provincial TB program.

The Saskatchewan TB Program has been, and will continue to be, engaged in research opportunities to understand and strengthen the needs of the program. Lessons can be gleaned from research projects in other areas of Canada. These projects can inform the research needs specific to Saskatchewan as well as strategies to develop capacity for local research and application of TB prevention, management, and treatment.

An evaluation of the strategy will be completed to inform, review and amend the plan as necessary. Program evaluation is essential for assessing program effectiveness and efficiency and will require input from clients, TB partners, care providers and communities.

Conclusion

Tuberculosis rates remain high in Saskatchewan when compared to the national average and significant disparities exist across the province. It is clear that there is good work occurring across the province in TB control; however, a renewed, focused, collaborative response to TB in Saskatchewan is required.

Over the past two years, extensive consultation has resulted in a partnership between the province, TB Control Saskatchewan, regional health authorities, FNIHB, First Nations health authorities and other interested stakeholders. This strategy will build on the strength of current partnerships and look to grow our

experience and success in engaging those within the TB community - from policy makers within and outside of the health sector to care providers, communities, patients and their families. Partnership work to engage those who support the prevention and treatment of other communicable diseases will also strengthen collaboration within communities, public health and the broader health sector. The goals of the strategy will be realized through joint ownership by all partners with shared accountability.

The strategy aligns with Health Canada's Public Health Strategic Framework and the Saskatchewan FNIHB's strategic direction, and will be updated when the *Canadian Tuberculosis Guidelines* (Revised Edition) are released to ensure a strong linkage to the identified best practices in Canada.

Tuberculosis programs will be informed by epidemiological information through a robust approach that emphasizes a review of evidence to support best practices across the province.

The strategy will take a patient and family centered look at improving TB rates in the province through a Saskatchewan-specific approach to targeted settings and populations, and by ensuring a well-trained and fully prepared health care system. It will only be possible through strong and sustained partnerships across the health care sector and beyond.

Glossary

Acid-Fast Bacillus (AFB)

Micro-organisms that retain specific stains even after being rinsed with an acid solution. The majority of AFB are mycobacteria, including the *Mycobacterium tuberculosis* complex. The relative concentration of AFB per slide (smear grade) is associated with infectiousness.

BCG (Bacillus Calmette–Guérin) Vaccine

A vaccine that is made up of attenuated (weakened) live bacteria that has lost its virulence in humans by being specially subcultured. It was used to reduce complications of active TB in children under the age of five; however, its use was discontinued in Saskatchewan in September 2011.

Client and Community Engagement

People working collaboratively, through inspired action and learning, to create and realize bold visions for their common future (Tamarack Institute 2013).

Culture-positive

The isolation of *Mycobacterium tuberculosis* complex (excluding BCG strain) from sputum, body secretions, or tissue.

Directly Observed Prophylaxis (DOP):

The process by which the TB program worker or other health worker watches the client swallow each dose of medication to ensure higher treatment completion rates for latent TB infection.

Directly Observed Therapy (DOT)

The process by which the TB program worker or other health worker watches the client swallow each dose of medication to ensure higher treatment completion rates for active disease.

Foreign Born

Individuals who are born outside Canada and reside in the province.

High Incidence Community

A community that consistently has a significantly higher number of cases of TB than other communities in Saskatchewan. The most innovation will be applied to highest priority communities.

IGRA

Interferon-Gamma Release Assays (IGRAs) are whole-blood tests that can aid in diagnosing *Mycobacterium tuberculosis* infection. They do not help differentiate latent TB infection (LTBI) from TB disease. (CDC 2011)

Infectious

The condition whereby the patient can transmit infection to others by virtue of infectious aerosols. Those with smear-positive cavitory and laryngeal disease are usually the most infectious.

LEAN

A quality improvement philosophy to improve efficiency, identify and eliminate non value adding activities, and reduce waste.

Mobile Clinic

A method of delivering TB services in remote settings.

Northern Medical Services

Employs a unique team approach, working toward equitable, accessible health care in a geographically and culturally distinct setting. The physician's role is much more than the clinical care of patients and involves liaison with other healthcare personnel, local community and other agencies providing services to the community.

Outbreak

An increase in the number of active TB cases over what is usually expected for that community or region over a given time.

Panorama

The integrated, electronic pan-Canadian Public Health Surveillance System that provides authorized public health professionals with the ability to collect, share and analyze a wide range of health information.

Portal Access

The eHealth portal is a "viewer" of certain health care information (lab results, pharmacy, immunization data) for authorized health care professionals.

Prophylaxis

A treatment for latent TB to prevent progression to active disease.

Retreatment or Relapse

A patient previously treated for TB, who is started on a retreatment regimen after previous treatment has failed (treatment after failure), who returns to treatment having previously defaulted (treatment after default), or who was previously declared cured or treatment completed and is diagnosed with bacteriologically positive (sputum smear or culture) TB (relapse) (WHO 2013).

Social Determinants of Health

The conditions in which people are born, grow, live, work and age, including the health system. These circumstances are shaped by the

distribution of money, power and resources at global, national and local levels, which are themselves influenced by policy choices. The social determinants of health are mostly responsible for health inequities. (Nutbeam 1998)

TBIS

Tuberculosis Information System is the database system utilized by TB Control Saskatchewan for clinical management of patient care and surveillance.

TB Partnership Working Group

The Saskatchewan committee that considers and advises on matters related to TB in the

province. Membership includes: Saskatchewan Ministry of Health, FNHIB - Health Canada, First Nations health authorities, regional health authorities, and TB Control Saskatchewan.

The North/Northern Health Authorities

Refers to on and off reserve land within the geographic area of the three northern health regions of Keewatin Yatthé and Mamawetan Churchill River Health Regions and Athabasca Health Authority.

References

- Al-Azem, A. 2006. *Social Network Analysis in Tuberculosis Control Among the Aboriginal Population of Manitoba*. Thesis submitted to The Faculty of Graduate Studies In Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy University of Manitoba May 2006.
- Centre for Disease Control (CDC). 2011. *Fact Sheets: Interferon-Gamma Release Assays (IGRAs) - Blood Tests for TB Infection*. As retrieved from: <http://www.cdc.gov/tb/publications/factsheets/testing/igra.htm>
- Centre for Tuberculosis Research. (2013). *About Tuberculosis*. Retrieved from <http://ctbr.ubc.ca/about/> on January 4, 2013.
- Fitzpatrick C, Floyd K. Jan 2012. *A systematic review of the cost and cost effectiveness of treatment for multi-drug-resistant tuberculosis*. *Pharmacoeconomics*. 30(1):63-80.
- Hader, J. 1990. *The Effect of Tuberculosis on the Indians of Saskatchewan: 1926-1965*. Thesis submitted to The Faculty of Graduate Studies and Research In Partial Fulfillment of the Requirements for the Degree of Master of Arts in the Dept. of Anthropology and Archaeology University of Saskatchewan.
- Health Canada. 2012. *Health Canada's Strategy Against Tuberculosis for First Nations On-Reserve*. Ottawa, Canada.
- Hoepfner, V. 1995. *Tuberculosis in Saskatchewan Treaty Indians*. *Prairie Medical Journal*: 65(1).
- Graham-Cumming G. 1967. *Health of Original Canadians 1867-1967*. *Medical Services Journal Canada*. Vol XXIII (2):115-166.
- Irvine J, Quinn B, Stockdale D. 2011. *Northern Saskatchewan Health Indicators Report 2011. Athabasca Health Authority and Keewatin Yatthé and Mamawetan Churchill River Regional Health Authorities*. Population Health Unit, La Ronge.
- Long, Dr. Richard. 2013. Comments and Feedback.
- Menzies, D. 2006. *Costs for Tuberculosis Care in Canada*.
- Nutbeam, D. 1998. *Health Promotion Glossary*. World Health Organization: Geneva.
- Pepperell, C., Chang, A.H., Wobeser, W., et al. 2011. *Local epidemic history as a predictor of tuberculosis incidence in Saskatchewan Aboriginal communities*. *Int J Tuberc Lung Dis*. 15 (7): 899-905.
- Public Health Agency of Canada. 2010. *Tuberculosis: Drug Resistance in Canada*. Ottawa, Canada.
- Saskatchewan Archives. *Saskatchewan Anti-Tuberculosis League*. As retrieved January 13, 2013 from: <http://sain.scaa.sk.ca/collections/index.php/saskatchewan-anti-tuberculosis-league-fonds:rad>.
- Stead, WW. 1997. *The Origin and Erratic Spread of Tuberculosis*. How the past explains the present and is the key to the future. *Clin Chest Med*;18(1):65-77.
- Tamarack Institute. 2013. *Community Engagement*. As retrieved February 15, 2013 from: <http://tamarackcommunity.ca/g3s1.html>
- WHO. 2011. *Global Tuberculosis Control: WHO Report 2011*. Geneva.
- WHO. 2013. *Tuberculosis (TB): Table A2.1. Definitions of tuberculosis cases and treatment outcomes*. As retrieved February 15, 2013 from: http://www.who.int/tb/publications/global_report/2008/table_a2_1/en/index.html

Appendix A

Target: A 25 per cent reduction in the rates of new and relapsing cases of TB in Saskatchewan by 2017/2018 and 50 per cent by 2022/2023.

Goals	Current Successes	Future Steps
Coordination		
Reduction of TB in Saskatchewan by 25 per cent by 2017/2018	<ul style="list-style-type: none"> • Analysis and review of previous 10 years of TB history 	<p>Ongoing review and development of:</p> <ul style="list-style-type: none"> • Strategies to improve completion and compliance rates • Targeted initiatives to meet the needs of the communities • Epidemiology review of new cases and retreatment cases • Develop action plans to address cause
Ensure appropriate TB partnership composition and governance to obtain strategic and operational objectives	<ul style="list-style-type: none"> • The TB partnership working (TBPWG) group has been meeting since 2011 	<ul style="list-style-type: none"> • TBPWG will be responsible for strategic direction and oversight • Re-evaluate group membership based on upcoming work items • Ensure appropriate definition of roles, responsibilities, and accountabilities for partners (including public health) • Ad hoc groups formed as needed to address specific issues
Foster partnerships with other jurisdictions	<ul style="list-style-type: none"> • Presentations at inter-provincial conferences • Guidelines for TB prevention and control programs in Canada are being developed by PHAC • Health Canada's Strategy Against TB for First Nations On-Reserve was released in 2012 • Inter-provincial TB Working Group involving Manitoba, Alberta, Saskatchewan hold quarterly meetings 	<ul style="list-style-type: none"> • Continue to explore and expand new partnerships as appropriate • Review current practices against new guidelines and adopt new practices • Improve communication across jurisdictions • Review and ensure alignment of the Canadian Tuberculosis Guidelines (Revised Edition) to be released in 2013

SASKATCHEWAN PROVINCIAL TUBERCULOSIS STRATEGY: 2013 - 2018

Goals	Current Successes	Future Steps
<p>Ensure most effective use of resources available to manage TB in Saskatchewan</p>	<ul style="list-style-type: none"> • Review and analysis of 10 years of data to inform targeted initiatives • Ad hoc outbreak team meetings to determine resource needs and coordinate efforts • Acute care discharge protocol for TB patients developed • Exploring the use of Telehealth clinics in remote communities 	<ul style="list-style-type: none"> • Strengthen relationships between TB Control, public health and primary health care • Explore cross training/sharing staff between TB and HIV • Use of Lean methodology to improve efficiencies in TB management • Refine process for use of Telehealth clinics to provide improved client access to TB specialist services • Ensure timely, accurate, and appropriate access to patient information for required care providers through connections with electronic medical records (EMR) and “portal” access
<p>Development of customized strategies to tackle TB in high incidence communities</p>	<ul style="list-style-type: none"> • Ad hoc groups established to address issues related to TB service delivery in communities • Proposal for high incidence community work has been completed including defining recommendations for prioritization of work based on highest need 	<ul style="list-style-type: none"> • Joint strategies between FNIHB, TB Control, Northern Inter-Tribal Health Authority (NITHA) and regional health authorities for on- and off-reserve that are individualized for high incidence communities • Proposals around high incidence communities will be brought to the TBPWG • Targeted and tailored interventions are being refined • Review of screening practices for low and high incidence communities based upon local data
<p>Assess and monitor the effect of immigration on the epidemiology of TB in Saskatchewan</p>	<ul style="list-style-type: none"> • New Canadians identified and referred by Citizenship and Immigration Canada are assessed by a TB specialist 	<ul style="list-style-type: none"> • Establish a clear referral and follow-up system for all new Canadians • Educate health care providers and community groups around TB in immigrant population • Cultural competency and language to be considered

Clinical Services

<p>Introduction of potential new methods for diagnosis e.g. Interferon-Gamma Release Assays (IGRA)</p>	<ul style="list-style-type: none"> • Limited pilot underway in Saskatchewan to explore feasibility • IGRA currently being initiated in HIV clinics in Saskatoon and Regina • The pilot work will be re-evaluated in 2014 	<ul style="list-style-type: none"> • Determine feasibility and use of IGRA • Review of new practices for consideration • Review of lab (Saskatoon/Saskatchewan Disease Control Laboratory) capacities • Ensure strategies are in place to deal with drug resistance
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SASKATCHEWAN PROVINCIAL TUBERCULOSIS STRATEGY: 2013 - 2018

Goals	Current Successes	Future Steps
<p>Evaluation and Review of current practices</p>	<ul style="list-style-type: none"> • Ongoing treatment of active cases and prophylaxis of vulnerable populations • In September 2011, BCG vaccination in Saskatchewan was discontinued after consideration of several factors including local epidemiology, poor vaccine uptake and information on vaccine adverse effects. It was replaced with efforts towards early case-finding • Enhanced childhood screening process was implemented in November 2012 • Establishment of 24 hour, seven days a week TB specialist physician coverage across SK through an on call system 	<ul style="list-style-type: none"> • Review and implement strategies for earlier identification of cases and interruption of transmission • Different approaches are used across jurisdictions--evaluation of these approaches is being completed with a view to standardization within Saskatchewan • Provide recommendations for care based upon updated clinical guidelines • Evaluation of pre-school, school and other screening uptake and outcomes • Review of screening of health care workers/long term care workers/at risk workers and long term care residents and volunteers in high risk areas • Review pediatric screening policy in 2016 • Review protocol for latent TB infection treatment
<p>Identifying and managing other modifiable risk factors (e.g. diabetes, HIV)</p>	<ul style="list-style-type: none"> • Clinical assessment and health history includes identification of risk factors such as diabetes, commercial tobacco use, alcohol and substance abuse at initial clinic visit • Routine testing for HIV in TB clients ages 14 years and older on an opt-out basis 	<ul style="list-style-type: none"> • Link in with primary care for aggressive management of diabetes • Symptom screening for diabetes, HIV, chronic renal disease • Close monitoring of TB treatment response • Referral to other support services as required (medical specialists, mental health and addictions, etc.) • Joint TB and HIV clinics are being planned
<p>Strengthen delivery of TB medications by Directly Observed Therapy (DOT) or Directly Observed Prophylaxis (DOP)</p>	<ul style="list-style-type: none"> • Review underway of DOT/DOP programs • Quality enhancement work by NITHA and TB control nurses 	<ul style="list-style-type: none"> • Engagement of community in supporting workers • Investigate new model of delivery options • Explore use of technology for treatment and DOT/DOP delivery • Identifying targets for LTBI treatment

Goals	Current Successes	Future Steps
<p>Review current roles of various health care providers in TB clinical practice</p>	<ul style="list-style-type: none"> • Revision of the First Nations TB Program Worker Manual has begun 	<ul style="list-style-type: none"> • Clarify the roles of primary health care physicians and nurses, nurse practitioners, and Northern Medical Services and their coordination with the role of TB specialists in TB programming • Engagement and training of health care providers to support consistency of practice • Establish role of public health in TB: <ul style="list-style-type: none"> • contact tracing and improved service delivery in remote/isolated communities • screening • review and re-circulate discharge protocol • Role of health care professionals involved in the delivery of specialized TB and primary health care (family physicians, public health nurses, community health nurses, Northern Medical Services)

Public Health, Prevention, and Community Engagement

<p>Support appropriate, timely and efficient public health involvement in TB prevention and control</p>	<ul style="list-style-type: none"> • Ad hoc teams are established to respond to outbreaks • TB and Public Health Task Group established 	<ul style="list-style-type: none"> • Enhance and strengthen contact tracing, especially among high incidence populations/ community groups • Provide forum for discussion, coordination, and to establish linkages with other public health programs • Assist TB control in establishing, implementing, and coordinating outbreak protocols • Collaborate to oversee high incidence community strategies • Serve as liaison with stakeholders
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SASKATCHEWAN PROVINCIAL TUBERCULOSIS STRATEGY: 2013 - 2018

Goals	Current Successes	Future Steps
<ul style="list-style-type: none"> • Increase prevention, education and training for health-care providers, clients, and communities • Increase leadership and community engagement by engaging champions and mentors 	<ul style="list-style-type: none"> • Presentations to health care providers and community groups throughout province 	<ul style="list-style-type: none"> • Leadership engagement in each of the communities - formal and informal leaders • Development of a variety of targeted strategies and approaches depending on special populations based on risk factors • Strengthen prevention to protect children • Broad public awareness of TB prevention within populations and communities at risk • Provide education and awareness by utilizing social media marketing/campaigns
Respond to the need for action to tackle broader determinants of health	<ul style="list-style-type: none"> • Environmental scan from FNIHB on housing on reserves • Northern Saskatchewan housing information published in the Northern Saskatchewan Health Indicators Report 2011 	<ul style="list-style-type: none"> • Collaborate with government and intersectoral organizations to address concerns related to housing and overcrowding • Encourage First Nations and off-reserve partners and communities in developing strategies to ensure fair and appropriate housing

Training and Education

Increase access to TB prevention and education resources/ materials for clients and service providers	<ul style="list-style-type: none"> • The Prevention, Education, and Training task group has established a work plan • Provincial Primary Care TB Education Day was held in October 2011 • Presentations to Nursing Education Program of Saskatchewan students, Saskatchewan Association of Licensed Practical Nurses, pharmacy students 	<ul style="list-style-type: none"> • Build capacities to enhance education proposals and service delivery • Training and education materials should support multi-culturalism • June 2013 Provincial Primary Care TB Symposium • Encourage partnership with TB Control, FNIHB, Métis in training and education • Use of social media, translation services • Develop peer-led training resources for health-care provider champions/mentors • Provide annual nursing and TB/DOT worker continuing education opportunities open to all nurses and workers across jurisdictions and practice settings • Develop strategies to include primary care physicians and nurse practitioners in TB continuing education
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Goals	Current Successes	Future Steps
Epidemiology and Surveillance		
<p>Determine the information needs for surveillance and performance monitoring for all partners</p>	<ul style="list-style-type: none"> • Analysis and review of previous 10 years of TB history completed in 2011 • A full time position has been implemented to support program monitoring, reporting and evaluation • Epidemiology and Research task group has been revising/ developing new reporting tools and reports • Use innovative methods like molecular typing (MIRU), GIS and contact tracing through social network analysis as a tool to assist in TB control activities to conduct more informed and efficient activities 	<ul style="list-style-type: none"> • “Portal” access in March 2013 • Potential to link TBIS with Panorama information system • Implementation of improved reporting requirements to ensure timely reporting (e.g. monthly and quarterly reporting schedules) • Development of an enhanced annual report (every three to five years) • Identify new and emerging epidemiology tools to analyze and inform progress
Quality Improvement, Program Evaluation and Research		
<p>Determine research needs to allow us to better prevent and control TB</p>	<ul style="list-style-type: none"> • Ongoing work to connect with research studies with impact in Saskatchewan 	<ul style="list-style-type: none"> • Review research projects being conducted outside Saskatchewan and determine if applicable to Saskatchewan • Determine approach for approval of research projects • Investigate opportunities for future research projects within Saskatchewan



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