TORONTO

STAFF REPORT
ACTION REQUIRED

Toronto Public Health Initiatives to Control Tuberculosis in the Homeless Population

Date:	October 29, 2007
To:	Board of Health
From:	Medical Officer of Health
Wards:	All
Reference Number:	

SUMMARY

In May 2004, a Coroner's inquest into the death of a homeless man in Toronto due to tuberculosis (TB) made 13 recommendations directed primarily at the provincial government, aimed at reducing TB transmission among the homeless/underhoused population as well as improving their access to health care. The Medical Officer of Health and the Commissioner of Community and Neighbourhood Services, in a report to Community Services in February 2005, supported the jury recommendations and reported this to the Board of Health in April 2005. Toronto Public Health (TPH) has worked on two of the recommendations, at the request of the Ministry of Health and Long-Term Care. These include developing TB Environmental Control Best Practice Guidelines for Shelters and Drop-In Centres and recommending a centralized model of TB clinical care in Toronto. TPH has also created a team of public health staff in the TB program dedicated to working with the homeless and under-housed.

This report summarizes the results of these three projects.

The evaluation results from the TB Homeless initiative, implemented in September 2005, support the effectiveness of a dedicated team in the TPH TB program working with the homeless and under-housed and their service providers. This approach will be continued within the current budget, but requires support from other services. A key challenge is that the Provincial Central Public Health Laboratory (CPHL) does not have sufficient capacity within their budget to provide laboratory testing of large numbers of sputum samples collected for active case finding in the TB Homeless initiative. Furthermore, this population requires consistent care from physicians with expertise in TB and this can be a challenge given the limited resources of the current TB clinics in Toronto.

The TB Environmental Control Best Practice Guidelines for Shelters and Drop-In Centres in Toronto and the accompanying Implementation Guide are the first of their kind in Canada and will help guide decisions about enhancing ventilation in shelters and drop-in centres. An assessment of nine shelters and one drop-in centre in relation to the guidelines did not identify any immediate risks. However there are capital and operating costs associated with retrofitting ventilation systems to the Best Practice level and maintaining them.

Over the last decade, a number of experts and reports have recommended a centralized model for TB care in Toronto but provincial funding has not been available to provide this type of service. There continues to be a need for a coordinated approach to provide clinical care for people who have TB.

TPH presented these projects at the first annual TB update sponsored by the Board of Health TB Subcommittee in September 2007. Approximately 100 people attended, including representatives from the shelter and drop-in sectors, community health centres, community agencies, TB clinics, and other public health units.

RECOMMENDATIONS

The Medical Officer of Health recommends that:

1. The Chair of the Board of Health request the Ministry of Health and Long-Term Care to provide adequate funding to the provincial Central Public Health Laboratory (CPHL) to allow the laboratory to accommodate the increased workload generated by the TB homeless initiative active case finding;

2. The Chair of the Board of Health request the Ministry of Community and Social Services and the Ministry of Health and Long Term Care to provide capital funding for assessment of the shelter and drop-in facilities not yet assessed and for improvements to the ventilation systems in the shelter and drop-in sector as per the Best Practice Guidelines;

3. The Board of Health recommend to the General Manager, Shelter, Support and Housing Administration (SSHA) that operators of shelters and drop-in centres receive specialized training on ventilation systems, ultraviolet germicidal irradiation, ventilation system maintenance requirements and upgrade considerations as per the Best Practice Guidelines;

4. The Chair of the Board of Health request the Ministry of Health and Long-Term Care and the Local Health Integration Networks serving the Toronto area, to fund a centralized TB clinic system for Toronto including the expansion of the four existing TB clinics in Toronto and the addition of two new TB clinics, one in the former Scarborough and one in the former Etobicoke; and

5. The Board of Health forward this report to the TB Subcommittee for information.

Financial Impact

There are no immediate financial implications as a result of this report.

DECISION HISTORY

In May 2004, a Coroner's inquest into the death of a homeless man in Toronto due to TB made 13 recommendations directed primarily at the provincial government, aimed at reducing TB transmission among the homeless/underhoused population as well as improving their access to health care.

In response to the Coroner's jury recommendations, the Ministry of Health and Long-Term Care (MOHLTC) provided TPH with funding to develop TB Environmental Control Guidelines for Shelters and Drop-In Centres in Toronto. Specifically, the jury recommended that a committee of experts review the ventilation systems in shelters and make recommendations to ensure that ventilation standards meet or exceed appropriate guidelines. The jury also recommended that the Committee recommendations be implemented with capital funding from the Government of Ontario.

The jury also recommended that *"The MOHLTC establish a centralized clinic system for the management of TB in the province of Ontario, and that this system be 100% provincially funded."* This approach would provide the homeless and under-housed, as well as all others diagnosed with TB, with improved access to health care for TB.

In November 2004, the Board of Health approved a budget request for a TB program for the homeless/under-housed population in Toronto to facilitate early identification, treatment and follow-up of active TB and to reduce transmission in this highly vulnerable population. TPH also indicated in the report to the Board that it would monitor and evaluate the program. City Council approved the funding for this program in February 2005 as part of the 2005 TPH operating budget. In addition, the Internal Audit Division reviewed the TB program in 2004 and recommended that a report on the success of the program be submitted to the Board of Health.

ISSUE BACKGROUND

TB in the homeless/under-housed population is a significant public health concern in Toronto. This population is at high risk of TB infection and of the infection progressing to active disease. Homeless/under-housed people also experience barriers to treatment. There are usually 10 to 15 TB cases reported in this population in Toronto per year, with each case presenting a substantial risk to the individual affected and others. This represents approximately four percent of all TB cases in Toronto annually.

Following an outbreak of TB in residents of two men's shelters, Seaton House and Salvation Army-Maxwell Meighen Centre, TPH launched the TB Homeless Initiative at

the end of September 2005. This report highlights the results of the evaluation of this initiative.

To address one of the recommendations from the Coroner's inquest, TPH received provincial funding to develop TB Environmental Control Guidelines for shelters and drop-in centres in Toronto. TPH has developed these guidelines with the assistance of an expert panel and will distribute them in collaboration with SSHA.

To address another recommendation from the inquest and at the request of the MOHLTC, TPH and TB experts in Toronto prepared and submitted a report to the MOHLTC in June 2006, recommending a TB clinic model that would provide co-ordinated, high quality TB care. TPH has requested but not received a formal response to this report from the MOHLTC.

COMMENTS

Not only is the homeless/under-housed population at high risk of TB infection and active disease, but this vulnerable population experiences barriers to treatment and prevention services. Each of the three initiatives reviewed in this report aims to reduce TB transmission among the homeless and under-housed in Toronto.

A. Toronto Public Health TB Homeless Initiative

TPH launched the TB Homeless Initiative at the end of September 2005. The goal of this program is the early identification and effective management of respiratory TB to reduce transmission among persons who use or work in shelters and drop-in centres.

The Homeless Initiative provides most of the services of the TB program through a centralized team of specialized staff. As part of the initiative, TPH formed a Community Reference Group that includes representatives from the three main shelter and drop-in sites where TB outbreaks have occurred in the past, the TB clinics, the CPHL and health care service providers who work with the homeless/under-housed. This reference group provided input into the planning of the initiative, gave feedback on the evaluation results and continues to provide ongoing advice to staff.

There are four parts to this initiative:

(1) Case management;
(2) Contact tracing and follow-up;
(3) Advocacy, education and health promotion; and
(4) Active case finding.

The team manages all cases of TB in Toronto who are homeless or under-housed according to current TPH policies and procedures to ensure clients receive appropriate medical care and to minimize TB transmission. This team also works to identify and locate contacts associated with these cases, follows the contacts to determine whether they have been infected with TB, and recommends prophylaxis if indicated. The

Advocacy, Education and Health Promotion component of the initiative provides TB education to clients and service providers as well as advocating on a system wide basis for changes to improve the services provided to this population.

The fourth component of the initiative is active case finding. TPH defines active case finding as the surveillance of designated high-risk populations in order to identify active TB in its early stages through TB symptom assessment and the systematic, targeted collection of sputum samples. This component is unique to the homeless initiative and can facilitate earlier diagnosis, thus reducing the risk of transmission to others and making it possible to obtain a cure more quickly than with more advanced disease.

TPH conducted active case finding at three sites where clusters of TB cases had occurred (Seaton House, Salvation Army-Maxwell Meighen and Good Neighbours Club). Seaton House and the Maxwell Meighen site are the two largest single men's shelters in Toronto and the Good Neighbours Club is a drop-in centre for men 55 years of age and older. TPH started active case finding in late September 2005 and implemented it at four-month intervals.

Evaluation of the TB Homeless Initiative

TPH conducted an evaluation of the TB Homeless Initiative to assess the feasibility and effectiveness of the various strategies used from September 2005 to the end of December 2006. The results of this evaluation will contribute to evidence-informed practice in TB prevention and control among the homeless and under-housed population. A copy of the full evaluation report is available through the City Clerk.

Case Management

During the 15-month evaluation period, 10 cases of TB were reported in the homeless/under-housed population. One person died prior to commencement of treatment from causes unrelated to TB. TPH achieved the primary goal of identifying cases earlier in their illness. The mean number of days from onset of symptoms to diagnosis was 34 days compared to 87 days in 1999-2000. This is an important reduction in community exposure to undiagnosed infectious TB.

After the cases were identified, they were all managed by experts at a TB clinic according to the Canadian Tuberculosis Standards, and received directly observed therapy from TPH. All cases had DNA finger printing performed in order to determine whether they were infected with the same strain, which would suggest ongoing transmission of infection. The findings demonstrated both transmission of infection within the population as well as progression from latent infection to active disease.

Contact Follow Up

For the ten cases associated with the Homeless Initiative, there were a total of 1094 contacts identified. Five hundred and thirty-four of these contacts were residents of Toronto and TPH located 156 (or 29%) of them.

The evaluation indicated that contact follow up is an area that requires further improvement since TPH could only locate 29% of the contacts identified. Data are not available to compare with the experience in 1999/2000. Contact follow up is particularly challenging aspect because of the transient nature of the population and the difficulty experienced by many clients in receiving ongoing medical care. However, contacts located by TPH had a high likelihood of completing medical follow up. Of the 156 contacts located during the evaluation, 81% completed follow up. Benchmarking and a review of the literature demonstrated that the proportion of located contacts who received adequate follow up is comparable to other jurisdictions.

Active Case Finding

Active case finding was a new strategy employed by TPH based on its use during the 2004 outbreak response. Clients seen during active case finding are assessed for symptoms and/or sputum is collected to rule out active TB. TPH conducted an active case-finding pilot between the end of September 2005 and December 2006. A total of 3,037 site users were screened, with 1,327 sputum samples collected. However, through this new strategy TPH only identified one active case of TB among the targeted population.

The evaluation showed that the primary benefit of active case finding is to help monitor high-risk clients, including lost contacts in the homeless and under-housed community. TPH staff also became more familiar with the facilities, the staff and the clients, which will help TPH's response to any future cluster of TB cases in this population.

Advocacy, Education and Health Promotion

Advocacy, education and health promotion contributed to the success of this initiative. TPH has implemented a communication protocol to notify community partners of new cases and locations for contact follow up. In addition, TPH provided TB education to over 1,300 staff in the shelter and drop-in sector and developed and implemented a strategy for providing accommodation to minimally infectious TB patients which does not involve a return to the shelter system.

In 2006/07 TPH, in partnership with Shelter, Support and Housing Administration, provided 74 training workshops to over 1,600 shelter, drop-in and Out-of-the-Cold staff on the Communicable Disease Prevention Manual, Breaking the Chain. TB is one of the communicable diseases covered in this training.

These approaches enhance the shelter and drop-in centre sector's ability to respond more effectively when they suspect a client may have TB. The transitional accommodation strategy minimizes the number of infectious clients in the shelter system.

Future Plans

The Homeless Initiative evaluation indicated that having a dedicated team to work with the homeless and under-housed and their service providers has enabled TPH to work more effectively with this high-risk population.

TPH will continue to provide symptom screening and appropriate follow up at the three sites twice per year instead of four times per year. TPH will assess, on an ongoing basis, the need to provide regular symptom screening at other shelters and drop-in centres based on patterns of disease transmission. Given that the CPHL does not have ongoing funding to provide the required laboratory support to test large numbers of sputum samples and the small number of cases identified through active case finding, TPH will review and tighten the criteria for collecting sputum to focus even more on those individuals most likely to have active TB.

TPH will place more emphasis on locating contacts and providing client and service provider education. TPH has developed a manual alert list and experience over two years has indicated that approximately 15% of contacts lost to follow-up could be located through active case finding. TPH will attempt to use a secure, electronic alert list to provide staff with on site access to the provincial information system (iPHIS) to enhance our ability to identify contacts when doing symptom assessments at the targeted sites. TPH will also be offering tuberculin skin testing at the sites to contacts identified as part of active case finding.

B. TB Environmental Control Best Practice Guidelines

One of the 2004 Coroner's Inquest recommendations was that a committee of experts review the ventilation systems in shelters and make recommendations to ensure that ventilation standards meet or exceed appropriate guidelines. While this recommendation was directed at the Ministry of Health and Long-Term Care, the Ministry agreed that it would be appropriate, given the significant number of homeless shelters and drop-in centres in Toronto, to fund TPH to conduct this work. The goal of the project was to develop practical guidelines to implement in Toronto, based on expert opinion and best practices.

TPH assembled an Expert Panel and a Stakeholder Advisory Group to assist with the development of the environmental control best practice guidelines. The expert panel consisted of physicians with expertise in TB and environmental controls from Canada and the United States, a City of Toronto engineer and an occupational hygienist. The Panel developed the Environmental Control Best Practice Guidelines. An Implementation Guide supports the guidelines by providing additional information about the shelter and drop-in system in Toronto, and providing information about TB, how it is spread and how to reduce TB transmission. The Implementation Guide is intended to assist homeless service providers in using the best practices in their own site. TPH also hired engineering consultants to assess the existing conditions in a sample of shelters (9) and drop-ins (1) between October and December 2006. Copies of the Environmental Control Best Practice Guidelines and the Implementation Guide are available through the City Clerk.

Environmental Control Guidelines

The best practice guidelines recommend minimum ventilation and air disinfection targets to reduce TB transmission. They also identify priority areas such as dormitories and dining areas for improved ventilation and disinfection. The guidelines set a target for air

changes per hour and outdoor air requirements, and recommend additional disinfection (preferably ultra violet germicidal irradiation) in sleeping areas or in rooms where 20 or more people congregate regularly.

These guidelines are the first to be developed in Canada. They draw heavily from the document, *TB in Homeless Shelters: Reducing the Risk through Ventilation, Filters and UV*, by the Francis J. Curry National Tuberculosis Centre, Institutional Consultation Services and California Department of Health Service, published in 2000, with adaptation to the Canadian situation.

An Implementation Guide for Operators of Shelters and Drop-In Centres

The Expert Panel was very conscious of the fact that program operators would require assistance and support in implementing the Best Practices that had been developed. The Panel wanted the Best Practices to be achievable for operators without large physical plants, or custodial resources.

A Stakeholder Advisory Committee advised on the development of the Implementation Guide. The purpose of this guide is to provide operators with information about ventilation systems and the options available. Because the built form, configuration and size of shelters vary greatly, the Implementation Guide is designed to assist operators in achieving the best possible results in each situation.

The guide will assist operators in setting priorities the for improvement of ventilation and maintenance in each facility.

Assessment of a Sample of Shelters and Drop-In Centres in Relation to the Environmental Control Guidelines

The third component of this project involved air quality assessments of a sample of shelters and drop-in centres in Toronto. These assessments were conducted in order to identify practical issues that should be addressed in the TB Environmental Control Implementation Guide, as well as possible challenges and costs that operators would face in implementing best practices.

The Stakeholder Advisory Group wanted a representative sample of shelters and drop in centres to be reviewed and selected one drop-in centre and nine shelters in Toronto based on the following criteria:

1) Locations where TB cases have been identified.
2) Shelter capacity.
3) Building type.
4) Population served.

An engineering firm with expertise in ultraviolet germicidal irradiation conducted the assessments in the fall of 2006.

The Engineering firm aimed to make practical and feasible recommendations, working with the existing ventilation systems as much as possible. Based on the engineering assessments the total cost to achieve the priorities listed in the guidelines ranges from $37,000 to $300,000 or $2.35 per square foot to $20 per square foot. These costs include required maintenance, and the size of the facility is based on occupied space. The estimated costs are preliminary and relate strictly to changes to the mechanical systems to meet the intent of the TB guidelines without architectural and electrical changes. Operational costs may increase at a number of facilities due to the continuous operation of the outdoor air handlers as recommended to meet the intent of the TB Environmental Control Guidelines.

The engineering firm presented the results of their findings to each site, based on the final version of the guidelines. They completed the site presentations in July 2007 and representatives from TPH and SSHA were present at each of the meetings. Since the assessments were completed, one shelter has closed.

The engineering firm noted as part of their findings that many service operators lack knowledge about their existing ventilation systems and how best to maintain them. They felt that this was an area where, with minimal financial investment, improvements could be achieved in ventilation systems. SSHA, using federal funds, has previously provided training and workshops for operators on the development of annual and longer-term maintenance plans. Shelter, Support and Housing Administration plans further work in this area for 2008 in collaboration with TPH.

The Expert Panel also visited several Out-of-the-Cold sites since these are used by the same population. These facilities operate only one night a week for 24 nights a year (mid November to mid April).

Considering the limited amount of time spent by the homeless at these sites and the attendant reduction of TB transmission risk compared to shelters, the cost to upgrade ventilation systems to meet the environmental control best practice guidelines is not warranted. Instead, in such facilities, the Expert Panel recommends improving air mixing with the use of destratification fans and to achieve the recommended air changes per hour in rooms where staff and clients spend time by using upper-room ultraviolet germicidal irradiation, and, if not feasible, using in-room disinfection units.

Toronto Public Health submitted the guidelines, implementation guide and summary of the findings from the site assessments to the MOHLTC in July 2007.

Implications for Shelters and Drop-In Centres in Toronto

TPH, in conjunction with SSHA, has identified the following issues arising from the site assessments and the development of the guidelines:

1) There is a general lack of knowledge about ventilation systems, required maintenance and factors to consider when upgrading systems.

2) While the assessments did not identify any immediate risks to health, implementation of best practices will require significant costs to improve ventilation and to provide ongoing maintenance.
3) Other shelters and drop-in centres may require facility assessments.

To address these issues TPH and SSHA plan to hold an information session for operators of shelters and drop-in centres in early 2008 to review the guidelines and provide training on the maintenance of ventilation systems. SSHA has already identified the upgrade of ventilation in shelters and drop-in centres as an eligible item for funding under the federal Homeless Partnering Strategy Community Plan. TPH is also recommending that the Board of Health support the jury recommendations from the Coroner's inquest and ask the Ministry of Community and Social Services and the Ministry of Health and Long-Term Care to provide capital funding to perform assessments on other locations and to improve the ventilation system in the shelter and drop-in sector.

C. Centralized TB Clinic Task Force

The MOHLTC convened the Centralized TB Clinic Task Force in 2005. Dr. Barbara Yaffe, Director, Communicable Disease Control and Associate Medical Officer of Health at Toronto Public Health co-chaired this task force with Dr. Jae Yang, a Respirologist and Medical Director of the TB Program at St. Michael's Hospital. Other members of the Task Force were from the MOHLTC, other TB Clinics, and the CPHL. In response to the jury recommendations from the Coroner's inquest, the Task Force was requested to recommend a preferred model for centralized TB clinic management in Toronto. Since 2000, at least seven reports by organizations such as the Ontario Medical Association have recommended this model for TB care.

Current Status

TB management is currently decentralized. A large number of physicians, many of whom have little TB experience, may provide medical care for persons with TB. Furthermore, TB cases are becoming increasingly complex due to factors such as co-infection and drug resistance. This has resulted in inadequately managed TB cases with poorer health outcomes and longer periods of infectivity, which increase their likelihood of spreading the disease to others. There are four TB clinics in Toronto, all located in and funded by hospitals (at St. Michael's Hospital, Toronto Western Hospital, The Hospital for Sick Children and West Park Healthcare Centre). However, these clinics are unable to respond to the growing demand for their specialized services.

Task Force Recommendations

The Task Force reviewed the previous reports as well as existing literature and recommended that the MOHLTC establish a centralized TB clinic system in Ontario in two stages. The first stage would address the issue in Toronto since it has the highest concentration of cases in Canada. This would involve establishing a collaborative network of TB clinics by expanding the four existing TB clinics and adding two new TB clinics, one in Scarborough and one in Etobicoke, over a five-year period. The Task Force also recommended a central office to integrate all clinics in the network using a

centralized database and standardized TB protocols. The second stage would expand this model to the rest of Ontario.

Dedicated provincial funding is needed to establish and maintain the TB clinic network, which would eventually care for all TB cases, all high-risk contacts and all urgent immigration medical surveillance cases in Toronto. The current operating cost for the four clinics is $1.3 million per year. An additional $3.7 million is required to establish a centralized TB clinic system in Toronto.

The Task Force submitted their report and recommendations to the MOHLTC in June 2006. The co-chairs have since had one meeting with Ministry representatives but have not received a formal response to their recommendations. Hospital funding has now been devolved to the Local Health Integration Networks.

Conclusion

Over the past three years, TPH has worked on three important initiatives to prevent and control TB among Toronto's homeless and under-housed population and those who work in the sector. As a result of these projects, TPH will continue to have a team of staff from the TB program working specifically with the homeless and under-housed and their service providers. TPH will also work with SSHA to distribute the TB Environmental Control Best Practice Guidelines and facilitate the recommended training for shelter and drop-in centre operators. Finally, TPH will continue to advocate with the MOHLTC and the relevant Local Health Integration Networks to formally establish a centralized TB clinic network and expand clinic services in Toronto.

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