Treatment Of T.B. By Directly Observed Therapy (Dot)
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ABSTRACT
Directly Observed Therapy (DOT) is a program to help cure TB. DOT by definition means watching clients swallow each dose of anti-TB medication. A DOT Lay Worker meets with clients to help with TB medication, and provide support and education. Treatment of latent TB infection (LTBI) is also called prophylaxis or preventative therapy. Treating TB infection with medication kills the bacteria and significantly decreases the chance that TB disease will develop in the future. The decision to offer clients preventative treatment is made by TB doctors. DOT is important to cure and prevent the spread of TB in the community. The client is supported to successfully complete the full course of medication.

KEYWORDS: TB, Tuberculosis, DOT, DOTS.

INTRODUCTION:
Welcome to the Tuberculosis (TB) program. Whether you are a Directly Observed Therapy (DOT) Lay Worker, Community Health Representative (CHR) or Community Health Nurse (CHN) you will be a vital member of your community’s TB team. Together, the team can provide the best possible standard of TB care for your clients. This manual is intended to provide guidance to all staff involved with delivering TB medications by Directly Observed Therapy, also known as DOT.

DOTS (directly observed treatment, short-course), is the name given to the tuberculosis control strategy recommended by the World Health Organization.[1] According to WHO, “The most cost-effective way to stop the spread of TB in communities with a high incidence is by curing it. The best curative method for TB is known as DOTS.”[2] DOTS has five main components:

- Government commitment (including political will at all levels, and establishment of a centralized and prioritized system of TB monitoring, recording and training).
- Case detection by sputum smear microscopy.
- Standardized treatment regimen directly of six to eight months observed by a healthcare worker or community health worker for at least the first two months.
- A regular, uninterrupted drug supply.
- A standardized recording and reporting system that allows assessment of treatment results.

The DOT manual:
• defines the roles and responsibilities of the various DOT partners
• provides a tool for the education of all team members about the delivery of TB medication by
directly observed therapy
• outlines the process needed for a registered nurse to
  assign the task of DOT delivery to another
  member of the TB team.

TB Program Partners
A number of partners are responsible for the delivery of
the TB program for on-reserve communities. These
partners include the local community health team,
BCCDC – TBSAC, the FNH Pacific Region, physicians
and local laboratories and x-ray facilities. These partners
work together to implement the TB program elements of
case finding, contact tracing, surveillance, screening and
education.

The Role of the TBSAC Physician Consultant
• Advises the Programs Medical Officer (PMO) on all
  matters related to the control of
tuberculosis in First Nations communities, including
planned revisions to TBSAC program
  policies.
• Reports all cases of active tuberculosis to the PMO,
  Regional Medical Health Officer (MHO)
  and Community Health Nurse (CHN), and recommends
appropriate management.
• Provides telephone consultation to physicians and
  nurses regarding management and treatment
  of active or suspected cases of active TB disease and
  Latent Tuberculosis Infection (LTBI).
• Reviews case management requests from the CHN
  and/or physician regarding home
  conditions, obstacles, or other issues that may impede
  the success of home treatment for clients
  with active TB disease.

What is Directly Observed Therapy?
Directly Observed Therapy (DOT) is a program to help
cure TB. A DOT Lay Worker meets with clients to help
with TB medication, and provide support and education.
DOT by definition means watching clients swallow each
dose of anti-TB medication.
DOT has been shown to reduce the risk of drug
resistance and to provide better treatment completion
rates (Canadian Tuberculosis Standards 6th Edition,
2007). Therefore, DOT is the standard for providing TB
medication to all clients taking TB therapy, for both
treatments of active disease and latent TB infection
(prevention).
The education the DOT Lay Worker must complete in
their orientation with the CHN and/or TBSAC program
nurses includes:
• Basic information about TB infection and disease
• Information on managing and conducting DOT
• Information about the medications for TB and their
administration

Available online on www.ijarpb.com
History of Tuberculosis

Other names for tuberculosis include TB, consumption, wasting disease and the white plague. TB has affected humans for centuries. Evidence of TB was found in the ancient mummies. Until the mid-1800s, people thought that TB was hereditary; they did not realize that it is spread from person to person through the air. In the late 1800s, a German scientist by the name of Robert Koch discovered the bacterium that causes TB. It is called *Mycobacterium tuberculosis*. It was not until the end of the 20th century that a cure for TB was found. Until then, people were sent away to TB sanatoriums to prevent the spread of TB in the community. This was the only way to protect friends and family from contracting TB. Treatment at the Sanatoriums included: bed rest, fresh air and healthy food. Some received extensive surgeries to remove parts of diseased lungs.

Bacille Calmette-Guerin – BCG Vaccine

BCG is a live, attenuated vaccine derived from *Mycobacterium bovis* and is the only vaccine currently in use for the prevention of serious forms of TB. BCG vaccination in the past was universally promoted throughout Canada. As anti-TB drugs became available in Canada, and therates of TB declined, the Bacille Calmette-Guerin (BCG) vaccine was discontinued for most Canadians. However, the BCG vaccine was still used in First Nations communities, specifically for children living on-reserve to provide some protection against serious forms of tuberculosis such as miliary TB or TB meningitis.

TB Bacteria

- Require oxygen to survive
- Have a slow replication or growing rate
- Have a thick fatty membrane

Looks like thin, slightly curved rods under the microscope

- Can survive in the air for several hours depending on the environment
- Are not filtered by simple gauze masks or stopped when a patient covers his or her mouth and nose when coughing

TB Transmission

TB is spread or "transmitted" through the air.

When someone with infectious active TB disease in their lungs or voice box coughs, laughs, or sings, tiny droplets containing the TB germ may be released into the air. If another person breathes in these droplets, TB germs may be spread.

TB Infection

Most often when we hear the word infection, we think of being sick with something like a throat or chest infection. The language around TB is different. TB is a slow growing germ. Most people who breathe the TB germ into
their lungs have immune systems that are strong enough to protect themselves. Their immune system builds a wall around the TB germ, putting the germ to sleep, and stops the TB germ from growing. The germ is in the lung but is not doing any damage.

**Risk factors for being infected with TB**
- Being born in or traveling to countries where TB is common
- Being in close contact with a person who has contagious TB disease
- Living in communities with high rates of TB disease (past and present)
- Being homeless in an urban centre
- Living in overcrowded and poor living conditions
- Having lived in a time period when TB was more prevalent and cure was not possible (e.g. some First Nations Elders)
- Immune-compromised

**Diagnosis of TB infection**
The main tool to diagnose TB infection is the tuberculin skin test (TST). This test consists of the intradermal injection of purified protein derived from *Mycobacterium tuberculosis* bacteria. The CHN or trained DOT Lay Worker can read the client’s TB skin test 48 to 72 hours later. In persons who are exposed and become infected with the TB germ, the reaction will cause localized swelling and will manifest as an induration, or hard bump, of the skin at the injection site. The client then proceeds with a chest x-ray and is followed by TBSAC and the local TB team.

**SIGN AND SYMPTOMS OF TB:**

**Treatment of TB Infection**

Treatment of **latent TB infection (LTBI)** is also called **prophylaxis** or **preventative therapy**.

Treating **TB infection** with medication kills the bacteria and significantly decreases the chance that **TB disease** will develop in the future. The decision to offer clients preventative treatment is made by TB doctors. Decisions are based upon many factors including:
- Age and health status of client
- Presence of risk factors for progressing to TB disease
- Likelihood of side effects from medications
- Likelihood of completing treatment

Accepting preventative therapy for **TB infection** is the client’s choice. Treatment for LTBI is voluntary and the risks and benefits of taking the medications should be clearly outlined to the client so that they are able to make an informed decision. In an effort to eliminate TB, health care professionals need to support clients in their decision to initiate and complete treatment for **TB infection**. It is important to let the clients know that by taking the prevention pills he or she will be protecting his or her family and friends, as well as themselves, from TB disease. Medication for TB infection can be and should be administered by **DOT**.

**Principles of Directly Observed Therapy**
- A trained health worker delivers each dose of TB medication.
- A **DOT** worker can be a:
  - Community health nurse
  - Community health representative with special training, assigned by the supervising RN
  - Lay person with special training, assigned by the supervising RN
- A close family member of the recipient of medications may not be an appropriate choice as that client’s **DOT** worker.
- The **DOT** worker watches the client swallow each dose of medication. Medication must never be left with the client.
- The **DOT** worker asks and observes the client for side effects with each dose of medication.
- The **DOT** worker documents all pertinent information of **DOT** administration in a timely way.
Advantages of DOT
• DOT is important to cure and prevent the spread of TB in the community.
• The client is supported to successfully complete the full course of medication.
• The client is monitored closely for side effects of medications and supported to work through the side effects appropriately.
• The client is encouraged and supported to complete required check-ups – blood work, chest x-rays, etc.
• A trust relationship often develops between DOT worker and the client. This relationship:
  • reduces fears about TB and its treatment
  • increases client’s comfort level so he/she will ask questions
  • improves client’s quality of health care as DOT workers can be an important link to other community resources for the client reduces the possibility of TB germs becoming resistant to the medication.

DOT Procedures
Initiating Treatment of LTBI (prophylaxis/preventative treatment)
Once the TBSAC physician reviews the client’s chest x-ray and 939 form, a recommendation will be made and the consult note will be sent to both the client’s physician and the CHN.

GOAL: To work as a team and to have the client’s physician actively involved.
The physician and/or the CHN will discuss the recommendation to initiate treatment for LTBI (preventative therapy). This conversation includes:
• Purpose of treatment
• Type of medications and length of treatment
• Side effects of medications and required follow-up
• Importance of adhering to treatment

The 5 R’s
The CHN is responsible for dispensing the medication the DOT Lay Worker delivers to the client. This means it is the CHN’s role to place the TB medication in the individual dose packaging (if medication is not yet in a blister pack). This could be envelopes, dosettes or other methods clearly labeled with client identifiers. It is important for the DOT Lay Worker to also be aware of the principles of medication dispensing and administration, also known as the 5 Rs. These include:
• Right patient
• Right medication
• Right dose
• Right route
• Right time

Frequency DOT
Most DOT is twice weekly. A Monday/Thursday schedule is recommended as it allows some leeway in the work week to still give both doses required should the client miss the first (Monday) dose. There should be at least a 72 hour interval between twice weekly doses. There may be circumstances when DOT is daily, or 5 times weekly, or 3 times weekly, usually when beginning treatment of disease or if a client is unable to tolerate twice weekly doses. The direction for frequency of medication will come from TB Control, BC Center for Disease Control (BCCDC).

Monitoring, DOTS, and DOTS-Plus
DOTS stands for "Directly Observed Treatment, Short-course" and is a major plank in the WHO Global Plan to Stop TB. The DOTS strategy focuses on five main points of action. These include government commitment to control TB, diagnosis based on sputum-smear microscopy tests done on patients who actively report TB symptoms, direct observation short-course chemotherapy treatments, a definite supply of drugs, and standardized reporting and recording of cases and treatment outcomes.

SIDE EFFECT:
Rashes are most frequently due to PZA, but can occur with any of the TB drugs. Test dosing using the same regimen as detailed below for hepatitis may be necessary to determine which drug is responsible.
Itching RMP commonly causes itching without a rash in the first two weeks of treatment: treatment should not be stopped and the patient should be advised that the itch usually resolves on its own. Short courses of sedative antihistamines such as chlorpheniramine may be useful in alleviating the itch.

Fever during treatment can be due to a number of causes. It can occur as a natural effect of tuberculosis (in which case it should resolve within three weeks of starting treatment). Fever can be a result of drug resistance (but in that case the organism must be resistant to two or more of the drugs).

REFERENCES: