TEACHING TUBERCULOSIS

A RESOURCE GUIDE *for* ABORIGINAL *and* NON-ABORIGINAL YOUTH

UNIVERSITY OF ALBERTA

UNIVERSITY OF SASKATCHEWAN

WHY TEACH TB?

KNOWLEDGE
is
POWER

to
CARE FOR
ONESELF
is to
CARE for ONE'S
COMMUNITY

EVERYONE
SHARES
THE
AIR

Currently,
ONE THIRD
of the world's population
is infected with the tuberculosis germ

TUBERCULOSIS
is a part of
ABORIGINAL PEOPLES'
HISTORY *and* COMMUNITY
KNOWLEDGE OF THE PAST
leads to
STRENGTH FOR THE FUTURE

tuberculosis is
PREVENTABLE
and
CURABLE!

ACKNOWLEDGEMENTS

Thank you

A Federal investment of $10 million was made in 2009 to the National Lung Health Framework by Health Minister Leona Aglukkaq, and administered by the Public Health Agency of Canada (PHAC). It aimed to provide information to Canadians on how to better identify, treat and manage respiratory disease. The funds were dispersed in two phases to fund product and knowledge development that fulfill the goal of increasing national awareness of respiratory diseases. Phase I projects were undertaken to identify any knowledge gaps, and Phase II projects were meant to fill those gaps.

In 2010, as a Phase I, PHAC funded initiative, members of the Tuberculosis Program Evaluation and Research Unit (TB PE & RU) undertook a Baseline Needs Assessment (BNA) of Tuberculosis Knowledge in Aboriginal Youth in the Prairies. Findings indicated that knowledge about tuberculosis was grossly lacking, even in high TB-incidence communities. As a Phase II, PHAC funded initiative; the TB PE & RU produced this guide to provide information to teachers, schools, educators, community health nurses, and most importantly to students about the tuberculosis germ, its transmission, how to recognize TB symptoms and disease, and where and how to seek treatment. For the support of both of these initiatives, the TB PE & RU would like to thank the Public Health Agency of Canada (PHAC) and the National Lung Health Framework.

The development of this resource was guided by valuable input from an Advisory Committee, to whom we would like to say a big thank you. In addition to members of the Steering Committee, the Advisorty Committee included: Maxine Cartier, Carrie Eagle, Dr. Paul Hackett, Scott Lauzon, Rose Martial, Dr. Maria Mayan, Dr. Helle Møller, Tamra Murray, Josy Roske and Lori Sparling; your support and encouragement is most appreciated.

This guide went through multiple iterations, but started in the schools with which we had developed a relationship in Phase I. As such, we would like to thank Stephen King, Ralph Klyne, Chris Goodman and Judy Anderson for your cooperation and welcoming us into your schools. In addition, a big thank-you goes out to the students in the classrooms where these materials were piloted for providing feedback and sharing your thoughts with us; without you this document would not be possible.

For sharing your thoughts, resources and teaching experience, we would also like to thank Jennifer Desjarlais, a teacher from Regina.

For providing spiritual support and for sharing traditional knowledge with us, and all members of our Advisory Committee, we offer special thanks to Elder Rose Martial and Heather Poitras from Edmonton, Alberta and Faye Isbister North-Peigan from Ahtahkakoop First Nation.

This guide could not have been completed without the vital administrative and research support provided to us by Andrea Still, Norah Landry, Kaelyn Boyes and Jill Stanton. Jill has also completed the design and layout of the guide, for which we are ever grateful.

Finally, thank you (to you!) the reader of this guide, for thinking, as we do, that teaching TB is important!

PREFACE

This guide, *Tuberculosis Education for Aboriginal and non-Aboriginal Youth,* was developed to provide high school teachers across Canada, but in particular in the Prairie Provinces, with an abundance of information related to tuberculosis identification, the connection of tuberculosis to other diseases and behaviours, and tuberculosis history that they might use in the classroom. Tuberculosis has been called a "social disease with a medical aspect", and this guide emphasizes that. Included are suggested activities and resources to help teachers build their lessons. In addition suggestions about how to fit the topic of TB in to a number of different subject areas and adaptations for all activities are provided.

On the one hand, *Tuberculosis Education for Aboriginal and non-Aboriginal Youth* recognizes that Aboriginal peoples—particularly the First Nations and Métis in the Prairies and the Inuit in the central Arctic—are at increased risk of having latent TB infection (LTBI) and developing active TB disease. As such, the guide has been developed to identify possible risk factors in these communities and to approach discussion in a culturally appropriate manner with on-reserve or in-settlement youth. On the other hand, the guide recognizes that non-Aboriginal youth know little about the history of TB as it pertains to their own roots or the history of the Aboriginal peoples, and thus is an excellent resource for use in all classrooms across Canada that teach history, geography and health.

The aim of Tuberculosis Education for Aboriginal and non-Aboriginal Youth is to help teachers make teaching about TB fun and interesting, and in turn, prevent the spread of this preventable disease, to encourage healthy behaviours, and to promote public health career choices.

So please, have fun teaching TB!

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with

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TABLE OF CONTENTS

INTRODUCTION

Introducing the Resource Guide

This resource guide will cover three broad themes, or "Topics":

1. *What is Tuberculosis?*
2. *Interconnectedness of TB to Other Diseases and Social Determinants*
3. *History of Tuberculosis*

These Topics (or parts of them) may be integrated in a number of different lessons, and in a variety of subjects at the grades 8-12 levels. Since tuberculosis has long been known as a "social disease with a medical aspect" (see Appendix B, p.42), it lends itself well as a topic of discussion in Health, Wellness, Social Studies and History classes. It is also a great teaching example for discussion in Native Studies, Career Education, Practical and Applied Arts, Language Arts and even Information Processing. This guide will provide useful information for teaching the key concepts related to tuberculosis—the difference between TB infection (sleeping, or *latent*) and active TB disease, transmission, risk factors and the history of TB in the Prairie Provinces. In addition, this guide will provide useful examples of activities for each of the three themes, as well as a number of additional resources from which to draw. Each activity will be described in such a way that adaptations for your classroom can be easily made. Materials for activities are simple, and will be provided, or listed.

How to Use This Resource Guide

Each Topic in the Guide has been colour-coded for easy reference and cross-reference. At the top of each page is a tab, and the colour of this tab indicates which Topic the information is associated with.

BLUE

All pages with a BLUE tab at the top will relate to *Topic One: What is Tuberculosis?*

GREEN

All pages with a GREEN tab at the top will relate to *Topic Two: Interconnectedness of TB to Other Diseases and Social Determinants*

MAGENTA

All pages with a MAGENTA tab at the top will relate to *Topic Three: History of TB*

Helpful Icons

Located at the tops of pages that may be used as printouts

PRINT ME and use as a handout

PRINT ME and use as a worksheet

Appendices

The Appendices Section is located at the back of the Resource Guide. Just like the pages within the Topics themselves, the Appendices have coloured tabs at the top of each page, indicating which Topics they are relevant to. If an Appendix is relevant to more than one Topic, the tab at the top of the page will be divided into the two or three related colours.

APPENDIX A

APPENDIX E

Appendix A relates to Topics 1, 2, and 3, while Appendix E relates to Topics 2 and 3 only.

PRIOR KNOWLEDGE

Concepts to Understand

This resource guide will provide information about the kinds of circumstances that give rise to active TB disease, but your students should have a basic understanding of the germ theory of disease. We have included some helpful pieces of information to get you started if you have not covered this in your classroom already!

Before teaching from this guide your students should understand these concepts:

DISEASE

A disease (or sickness) is an abnormal condition of the body that causes pain, discomfort, social problems or death. For our purposes, there are two main kinds of disease:

1. *Infectious diseases*, which are caused by micro-organisms or pathogens. In the case of TB, the micro-organism is a bacterium, called *Mycobacterium tuberculosis. TB is an infectious disease!*
2. *Diseases other than infectious disease*. These might be inherited (eg. cystic fibrosis), degenerative (eg. diabetes or heart disease), or due to environmental factors (eg. the relationship between smoking and bronchitis and emphysema).

COMMUNICABLE DISEASE

Some infectious diseases are communicable from one person to another, for example TB, or HIV and other sexually transmitted infections (STIs). Germs can be spread in many ways. TB is an *airborne* germ; that means it is spread when people cough, sneeze, or otherwise emit tiny droplets of phlegm into the air, which can then be breathed in by other people. These people are then at risk for getting the disease.

BACTERIA

Bacteria are a kind of germ that can cause disease. *TB is caused by the bacterium (singular form of bacteria!),* Mycobacterium tuberculosis.

TRANSMISSION

Transmission is the event of the germ being passed (for example, though the air, by droplets of phlegm, from person to person).

THE IMMUNE SYSTEM

The immune system is the part of the body that is responsible for fighting off disease and sickness. The immune system is made up of cells and antibodies that recognize and eliminate germs and disease causing cells from your body! Having a strong immune system can help you from getting disease.

After the TB germ has been transmitted, the immune system keeps the germ sleeping inside your body and prevents you from getting sick. If your immune system is weakened, the germ can be awakened and make you sick. This is the difference between latent infection *and* active disease.

For a cool way to show your students how infectious diseases work with a simple, hands-on activity, visit this website:
www.csiro.au/helix/sciencemail/activities/infection.html

TOPIC ONE what is tuberculosis?

IMAGE:
Mycobacterium tuberculosis,
viewed under a microscope.

TOPIC ONE: *WHAT IS TUBERCULOSIS?*

What's inside?

A poster for printing, with all the symptoms of TB!

IF YOU ONLY DO ONE THING FROM THIS TOPIC:
Print the Symptoms Poster (APPENDIX M, p.64) and hang it up in your classroom. This provides useful information, and may generate some discussion!

A poster for printing, with background information about pathogens!

APPENDIX D, PAGE 44

A TB fact sheet to read together, or send home as a hand-out!

FACT SHEETS, PAGES 40-41

A fun role-playing activity that touches on symptoms and diagnosis!

ACTIVITY, PAGE 10

and MORE!

TOPIC ONE what is tuberculosis?

Concept

Tuberculosis (TB) is a curable and preventable disease caused by the germ *Mycobacterium tuberculosis* (*M. tuberculosis*). While the germ infects many people, it only makes a few people sick. This is because the germ usually remains dormant, latent, or asleep in its host. When it is awakened, which can happen for a number of reasons including stress, poor nutrition, other health problems like diabetes or HIV/AIDS and recreational smoking (including marijuana), it can cause active TB disease. Mostly, TB affects the lungs, but it can affect any organ of the human body. TB is also a communicable disease—that is, it is transmitted from person to person—in the case of TB, by way of small droplets of phlegm coughed up by the person with active disease and transmitted to (inhaled by) the person who was not previously infected. In the new person it will cause latent (sleeping) TB infection, and may cause active TB disease. Transmission is preventable; TB disease is curable.

Globally, tuberculosis killed approximately 1.7 million people in 2009 (according to the World Health Organization, or WHO).

One of the main reasons to teach your students about TB is that it has a lot of non-specific symptoms, which can easily be confused with the symptoms of the common cold or the flu or other respiratory infections. Delays in diagnoses lead to a greater number of people being infected with TB and continues the cycle of TB transmission. It is important to teach knowledge of TB history, signs and symptoms of TB and what to do if someone is experiencing symptoms. Understanding and recognizing WHAT TB IS will help people seek health care earlier, thereby protecting family, friends and community from the potential spread of disease. So have fun, and teach TB!

DID YOU KNOW?

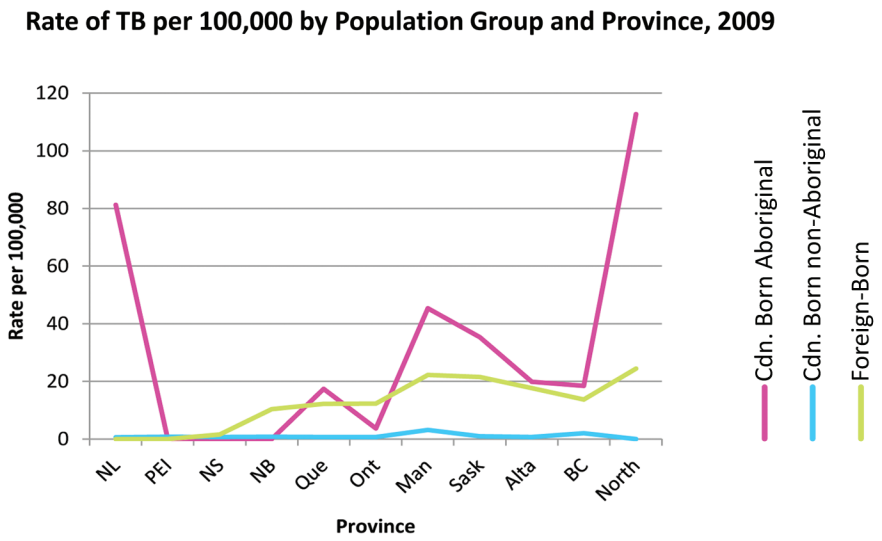
Tuberculosis is very common worldwide. According to the WHO, overall one-third of the world's population is currently infected with tuberculosis bacilli (ie., has latent TB infection). It is estimated that 8 million new cases of tuberculosis occur each year in the world.

TOPIC ONE what is tuberculosis?

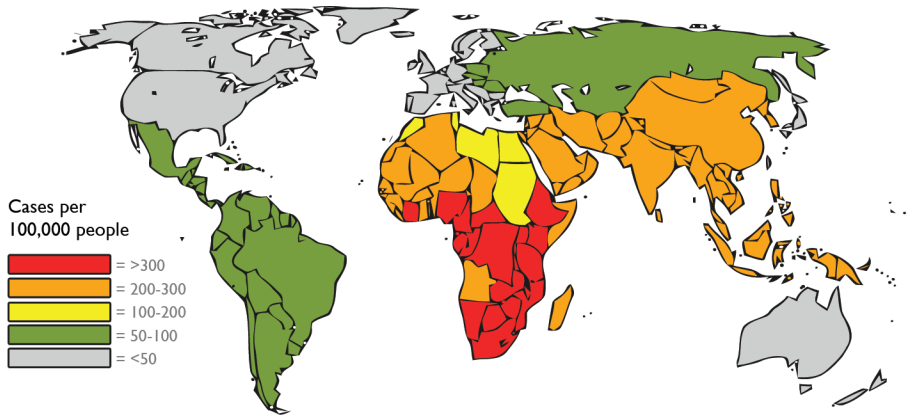
Concept

In Canada TB is not as big of a problem as it is in other countries. However, there are some provinces and regions that have more TB than others. These national "*hot spots*" can be attributed to a couple of things: 1) immigration from countries where TB is endemic and 2) living conditions that make transmission and activation of latent TB more likely. You can use the graph and the figure below to help put the burden of TB disease in perspective both nationally and internationally.

TUBERCULOSIS CASES IN CANADA, 2009



WORLD-WIDE TUBERCULOSIS CASES, ANNUALLY



DID YOU KNOW?

Since the 1960s, an increasing proportion of immigrants have been arriving to Canada from countries in Asia and Africa where the incidence of TB is quite high.

TOPIC ONE what is tuberculosis?

Key Points

- Tuberculosis is caused by a germ—*Mycobacterium tuberculosis (M. tuberculosis)*.
- When the TB germ is latent (sleeping), it does not cause symptoms and cannot be passed from one person to another. When the TB germ has turned into active disease, it comes with symptoms, and is also contagious (communicable from one person to another).
- Active TB of the lungs is infectious and can be spread from someone with active TB disease to those around them through droplets of phlegm released through coughing, sneezing, talking or spitting.
- Sleeping (*latent*) TB infection—otherwise known as *LTBI*—can be awakened when a person's immune system is weakened *(compromised)*, thereby letting the germ wake up and cause active disease.
- Tuberculosis is curable, and preventable!
- Tuberculosis is a "social disease with a medical aspect" (see Appendix B, p.42).
- Tuberculosis can affect many parts of the body, but typically affects the lungs. This is called '*pulmonary*' TB.
- Tuberculosis is a common disease worldwide, and people who come to Canada from countries where TB is more common increase the incidence of TB in Canada.
- Tuberculosis is diagnosed with a number of tests, including a chest X-ray and a phlegm or sputum sample that is sent for microbiological tests.

Discussion Points

- How does TB affect a person's holistic health (eg: physical, emotional, mental and spiritual)?
- Engage a TB worker and Elder in your community to talk about the effects of TB in a way that is culturally relevant. Your school/community Elder is a wealth of knowledge.
- In a talking circle, open up a discussion about the emotional impact that talking about TB may have on your students, if applicable.
- Discuss past and present ways of caring that First Nations and Métis peoples use within their communities. Supporting others is an important part of your discussion of TB!
- Address misconceptions about TB (such as the idea that it is a "dirty disease"or can be spread by touch, etc.). For more information, refer to Appendix E, *Mythbusters!* on page 45.
- How do social inequities lead to the spread of TB?
- What are some things that individuals and communities can do to protect themselves from TB?

NOTE:

See Appendix B, p.42 for more information relating to the *Discussion Points*.

Teacher Resources

This section of the Topic gives detailed information for teachers who wish to gain a better and more thorough understanding of the Topic before relaying information to students. Included are a variety of media which should prove helpful and interesting.

Helpful Websites

A few helpful websites for Topic One include:

Canada / Saskatchewan Lung Association Website:
www.lung.ca/tb/index.html

Centers for Disease Control and Prevention Website:
www.cdc.gov/tb/topic/basics/default.htm

Curry International Tuberculosis Center:
www.currytbcenter.ucsf.edu/

The American Lung Association also has some great in-depth information on their website:

www.lungusa.org/lung-disease/tuberculosis/in-depth-resources.html

LIST OF APPLICABLE APPENDICES

Other Information

The Canadian Tuberculosis Standards, 6th Edition, is an additional source of information about tuberculosis in Canada and globally. A new addition of the Standards is published every 5 or so years in Canada and can be purchased as a hard copy or found online (see link below). The Standards are meant to be a resource on issues pertaining to TB prevention and control in Canada, it is the foundation on which TB programs are based.

An excerpt from the Standards:
It is estimated in 2004, by the World Health Organization (WHO), that one-third of the global population is infected with Mycobacterium tuberculosis (TB) and an estimated 1.7 deaths were attributed to the disease. Although TB is a disease that can affect anyone, in Canada the two population groups most affected by TB are Aboriginal Peoples and Foreign-born individuals (immigrants and refugees). TB is a curable disease if caught and treated in a timely manner. The spread of HIV and the emergence of drug-resistant strains of TB are making it more difficult to prevent and control TB. TB is not a disease of the past!

TB Standards, 6th Edition can be found at:
www.phac-aspc.gc.ca/tbpc-latb/pubs/tbstand07-eng.php

ACTIVITY: Patient Profiles

Overview

Here we have compiled a detailed activity plan that highlights the *Key Points* for Topic One. Students will learn about the symptomology of TB. As well, they will get a general sense of a typical visit to the health care clinic when one is experiencing respiratory symtpoms. We have provided four patient "profiles"—essentially a walk-through of four different disease scenarios in four different patients—from which students can learn the differences between TB symptoms, X-ray imagery, and laboratory (microbiological) testing, and those of other common diseases. Use these patient profiles as a bouncing-off point for several types of activity; why not use them as cue cards, and have students write short skits using the information they provide? Or, maybe students could use the information on the cards to create posters for each of the "patients", and then compare and contrast each one, deciding who has TB and who does not.

Patient Profiles

This card includes the patient's symptoms, as well as his or her health history, and general lifestyle. When a patient goes to the health care clinic, the doctor or nurse may ask questions that relate to this, to get a better understanding of what could have made them sick, and what kind of disease they might be dealing with. Students can use these patient profiles as information, or can take it a step further and use them as a character study in a role-playing activity, depending on the time and resources available. Some of these patients will have TB, and some will not; see if students can diagnose who has TB and who does not, just from this first step!

X-Ray

This card gives students a look into what an X-ray looks like. Each of the patients' X-ray images are provided only as an informational exercize; in real life, patients that do not experience TB-like symptoms will likely not need an X-ray. Use the information on these cards to compare and contrast the difference between a healthy lung and a lung with disease. You can also use these cards to emphasize the importance of keeping your lungs clean and healthy!

Laboratory Testing

This card covers laboratory microbiological testing, what it is and how it is used to look for the TB germ. Each of the illustrations on these cards show what the patient's respective phlegm or sputum samples would look like if they were tested and studied in a laboratory and observed under a microscope. Teachers may take this step as an opportunity to teach students more specific information pertaining to other pathogens that can be found in a laboratory sample, such as viruses and other bacterium. For additional information on laboratory testing, see Appendix C.

Care Plan

Please refer to Appendix F, page 47

The Care Plan provides an opportunity for the students to think about how to care for the patient. This is meant to encourage the students to take part in their own care and become their own health advocates as well as learn how to care for others. We have included a worksheet for students to use in respect to the patient profiles.

Patient Profile:

BLANCHE

Symptoms:

Blanche has come into the clinic and she has a sore throat with a severe headache and body aches. Her temperature is 38°C. She has been sore for a couple of hours and her other symptoms started last night. She had night sweats and a poor sleep.

Medical History:

Blanche is otherwise healthy.

Life Style:

Blanche loves sports and does not smoke or drink. She lives with her 4 sisters, 2 brothers her mom and dad. She shares a bedroom with 2 older sisters and everyone shares one bathroom. Blanche loves to run and goes to track and field practices weekly.

Patient Profile:

DIRK

Symptoms:

Dirk has come into the clinic and he is coughing. He has been coughing up phlegm, that is sometimes bloody, for 2-3 weeks and his other symptoms started about a month ago. He has also lost 10 pounds (about 5kg) of weight, and has been overly tired. Dirk also has night sweats.

Medical History:

Dirk has asthma and had the chicken pox when he was 5 years old.

Life Style:

Dirk smokes half a package of cigarettes per day and marijuana once a week. He lives with 2 of his brothers and his mom. He shares a bedroom with one older brother and everyone shares one bathroom. Dirk goes to a friend's house sometimes but doesn't really go anywhere else.

Patient Profile:

LINUS

Symptoms:

Linus is Dirk's brother. He does not feel ill, but a nurse came to his house and suggested that he come see the healthcare worker in his community to do some routine tests.

Medical History:

Linus has a history of headaches, and allergies.

Life Style:

Linus has two brothers, one of whom (Dirk) is sick. They share a bedroom. He plays video games with friends, and sometimes plays pool at a local bar. He does drink socially on weekends, but is home most nights with his brothers and mom.

Patient Profile:

KARLENE

Symptoms:

Karlene has come into the clinic and she is coughing and her cough is producing greenish phlegm. She also has a fever, chills and a sharp pain in her chest when she takes a deep breath. She has been coughing for 1-2 weeks and her other symptoms started about 3 weeks ago.

Medical History:

Karlene has asthma and a history of bronchitis. She recently had the flu.

Life Style:

Karlene smokes socially when she is out with her friends, but hides her smoking from her parents. She lives at home with her mom and dad, and 3 brothers. Karlene has her own room, but she spends most of her time playing video games with her brothers in the basement.

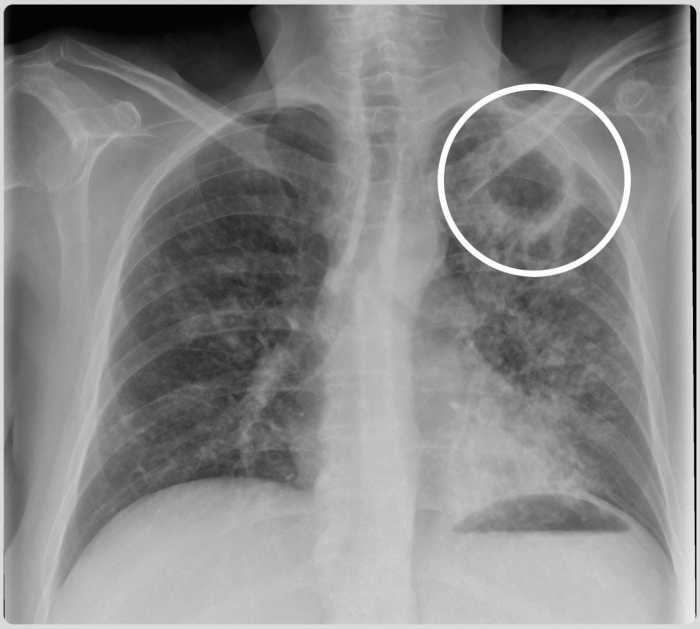
Chest X-Ray: BLANCHE

Description:

When a patient has the 'flu' their chest x-ray is normal. On a chest x-ray, air appears black and the bones and tissues appear white. On this x-ray, you can see the ribs—white—and the heart (a globular appearing structure in the middle of the chest. On the left and right side are the black (normal appearing) lungs.*

*When you view an x-ray, the left and right sides are switched as though you are looking in a mirror, or have the patient standing in front of you!

Chest X-Ray: DIRK

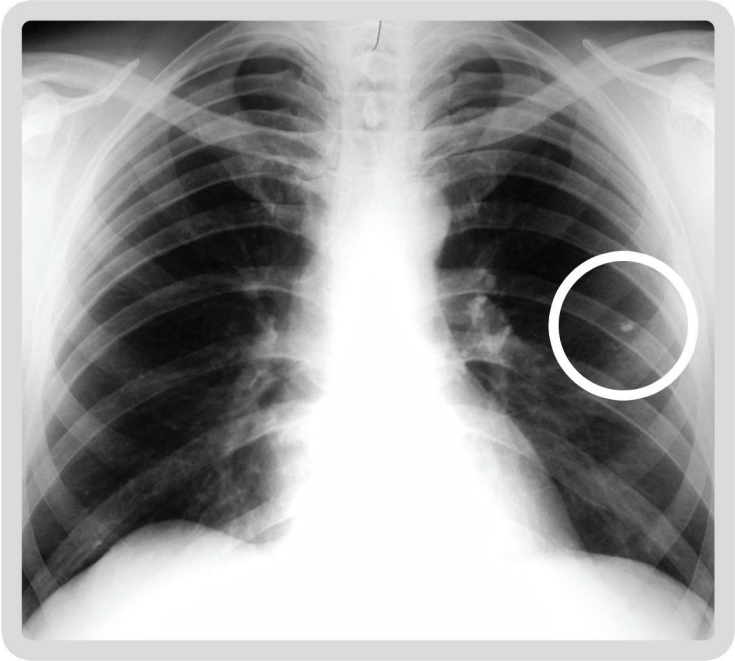


Description:

When a patient has 'TB', their chest x-ray is abnormal. It usually shows a 'pneumonia' in the upper half of one or both lungs. This pneumonia consists of white blood cells and secretions that fill the air sacs and make the normally black appearing lung, white. In TB this 'pneumonia' is also usually 'cavitating'. This means that the germ has eaten a hole in the lung. In this example there is a TB pneumonia with a big cavity in the upper part of the left lung (see the circled cavity).*

*When you view an x-ray, the left and right sides are switched as though you are looking in a mirror, or have the patient standing in front of you!

Chest X-Ray: LINUS

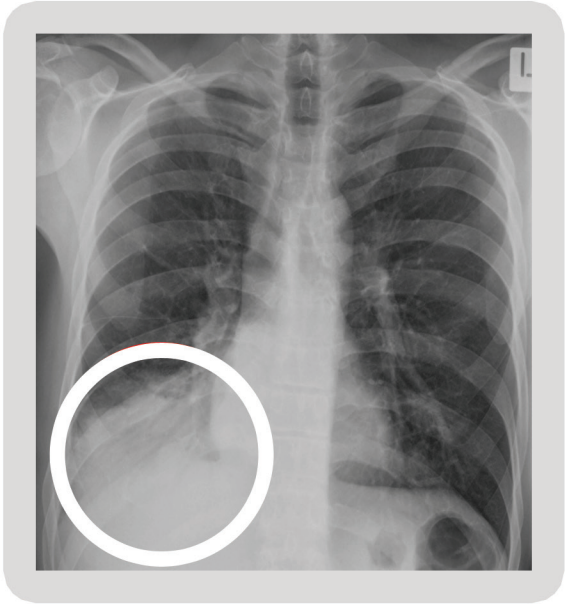


Description:

When patients have the TB germ sleeping in their body, they are not sick and their chest x-ray is normal. In this example the chest x-ray is normal except for a tiny white spot superimposed over one of the left ribs. This is a little calcified nodule that contains the TB germ, not allowing it to break out and cause disease.*

*When you view an x-ray, the left and right sides are switched as though you are looking in a mirror, or have the patient standing in front of you!

Chest X-Ray: KARLENE



Description:

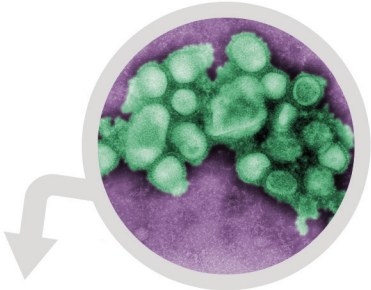
Occasionally a bacterium (like *Staphylococcus*, the germ that causes acne, or a boil) circulating in the community can cause a 'pneumonia'. This is more likely to occur in smokers. This usually causes an abnormality on the chest x-ray. This abnormality is usually in the lower half of one or both lungs and shows up as a 'white' appearing area (caused by white blood cells and secretions) in what is normally a black appearing lung. This type of 'pneumonia' does not usually have a cavity in it.

*When you view an x-ray, the left and right sides are switched as though you are looking in a mirror, or have the patient standing in front of you!

Laboratory Testing: BLANCHE

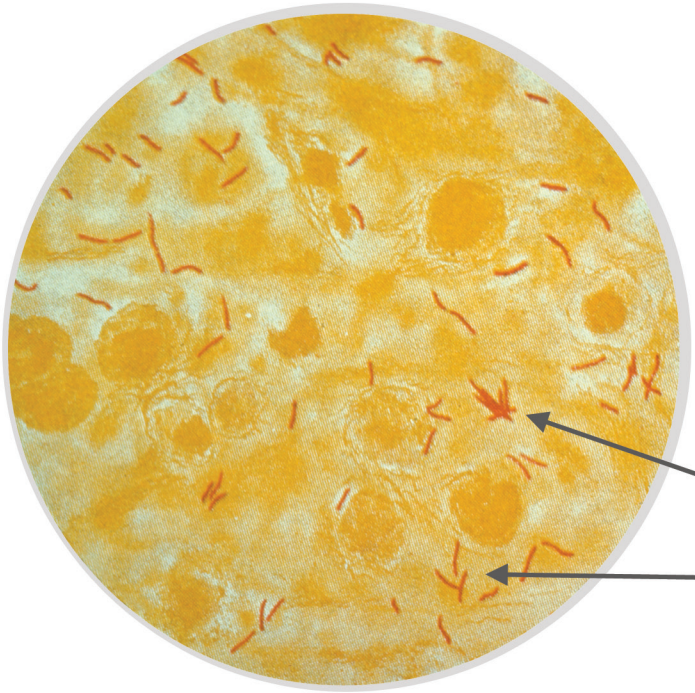
Description:

A person with the flu does not usually undergo microbiological laboratory testing. The person's sputum sample viewed under a microscope would not show any bacteria or virusues.



However, if you looked at the sample under a special tool called an *electron microscope*, the flu viruses would be visible.

Laboratory Testing: DIRK



Description:

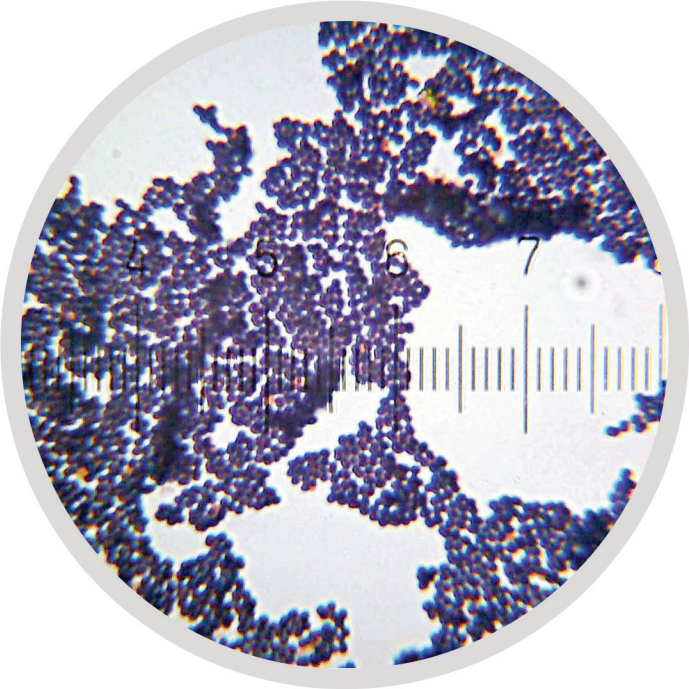
A person with TB of the lungs will usually be able to cough up a sample of phlegm, or "sputum". If this sample is examined under a microscope, the TB germ can be seen. In this example the TB germ can be seen under a microscope. The TB germs are the small red rod-shaped structures in this picture.

Laboratory Testing: LINUS

Description:

As part of a contact investigation, Linus went to the doctor. He was feeling well but they made him cough up phlegm to get a sputum sample. His sputum has no bacteria; in particular, it has no TB bacteria. However, he may be given medicine to prevent an infection from becoming active. A person with sleeping TB infection does not have any cough or phlegm. They cannot cough up the TB germ. They feel well and cannot give the TB germ to other people.

Laboratory Testing: KARLENE



Description:

A person with a community-acquired bacterial pneumonia will usually have a cough and phlegm. Their sputum sample will contain bacteria that can be stained with a special dye so that they can be seen under a microscope. In this example, the pneumonia bacteria appear as clumps of tiny blue-black dots.

The cough and sputum in such patients usually develops rapidly over a few days to a week or so.

WORKSHEET CARE PLAN

Final Assessment

Discuss the final diagnosis for the patient; which disease do they have? How can it be managed and treated? Fill out this worksheet to create a personalized care plan for the patient, as homework or an extra activity.

Treatment Plan

Consider: physical, mental, emotional, spiritual, lifestyle and environmental areas of patient life and decide what a real TB patient would need to get better. Think about what you would need if you had TB.

How good do you think you would be at supporting a sick friend or family member? Why?

Recognize times and situations in which others might appreciate help.

WHO CAN HELP?

If you think you or someone you know might have tuberculosis, there are many people in your community who can help in various ways. Here are a few, can you think of any more?

NURSE DOCTOR COMMUNITY HEALTH REPRESENTATIVE ELDER

The most important thing to do when you have the symptoms of TB is to go see your health care provider right away, so they can give you treatment for your illness (whether it is TB or not). Treatment can help you feel better much sooner!

TOPIC TWO interconnectedness of TB
TO OTHER DISEASES AND SOCIAL DETERMINANTS

TOPIC TWO: INTERCONNECTEDNESS of TB
to other diseases and social determinants

What's inside?

Bust some TB Myths with your class, and help reduce the stigma associated with the disease!

IF YOU ONLY DO ONE THING FROM THIS TOPIC:
Review the Mythbusters Fact Sheet (APPENDIX E, PAGE 45)—this may generate some discussion and help reduce the stigma associated with a diagnosis of tuberculosis in your community!

Read the TB Fact Sheet together, or send it home as a hand-out!

APPENDIX A, PAGE 40

Discuss Food Security, and play our nifty grocery pricing game!

APPENDIX I, PAGE 52

Includes a fun card game that touches on the connectedness of TB to the social determinants of health!

ACTIVITY, PAGE 24

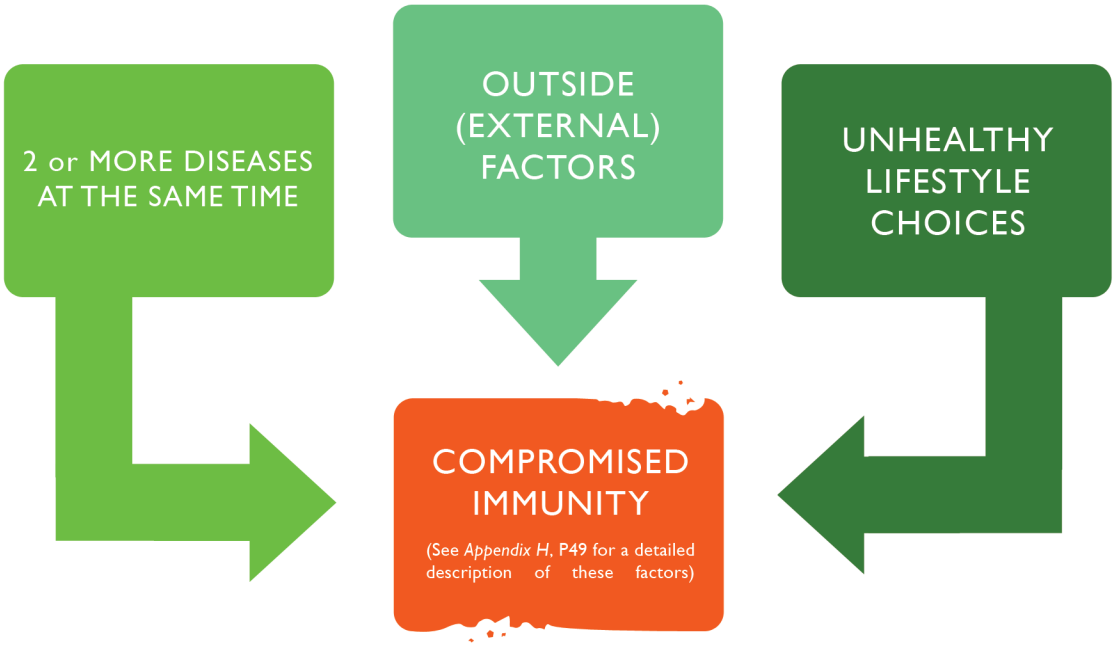
and MORE!

TOPIC TWO interconnectedness of TB

TO OTHER DISEASES AND SOCIAL DETERMINANTS

Concept

TB comes in two forms: latent TB infection (LTBI) and active TB disease. A strong immune system can keep the germ, once acquired, locked in its sleeping form. Sometimes, though, the immune system is compromised (or *weakened*) due to a number of different factors including other diseases, risky behaviours, and even living conditions. This diagram shows how one, or all of a number of different factors can affect the body's ability to fight off TB.



DID YOU KNOW?

Practicing safe sex can help ensure that you do not aqcuire a sexually transmitted infection (STI). Some STIs can affect the immune system and allow latent TB infection (LTBI) to become active disease.

Preventing STIs indirectly prevents TB.

The choice is yours!

interconnectedness of TB
TO OTHER DISEASES AND SOCIAL DETERMINANTS

Key Points

- Tuberculosis is a "social disease with a medical aspect" (See Appendix B, p.42)
- Tuberculosis is caused by a germ—*Mycobacterium tuberculosis (M. tuberculosis)*
- When the TB germ is latent (sleeping), it does not cause symptoms and is not contagious, or communicable to others. When the TB germ wakes up and causes active disease, it comes with symptoms, and is also contagious.
- Sleeping (latent) TB infection—otherwise known as LTBI—can be awakened when a person's immune system is compromised thereby causing active disease
- When your body is fighting one disease it is more difficult to defend against another disease as well.
- TB transmits more readily in conditions of poverty and overcrowding, which are conditions of social and economic inequalities.
- Housing quality can impact your body's ability to fight the TB germ.
- Where poor ventilation exists, transmission of the TB germ is more likely.
- Unhealthy choices such as smoking, illicit drug use and poor nutrition can impact your body's ability to fight the TB germ whereas healthy choices help you fight TB.
- Alcohol and substance abuse can decrease ones' ability to make healthy choices about food and sex. These choices can then impact your body's ability to fight the TB germ.
- Good nutrition plays an important role in making your body strong enough to fight the TB germ.
- Having HIV (the virus the causes AIDS) can greatly increase your chance of getting TB.
- Having both HIV/AIDS and TB makes each disease worse.

Discussion Points

- Open up a discussion about stigma and living with disease—this can be done with the help of your school's Elder, or a talking circle.
- Discuss Holism, and how unhealthy choices affect the balance of health.
- Talk to your students about Sexually Transmitted Infections (STIs) and the elevated risk of combating the tuberculosis germ when your immune system is compromised (weakened) by other ailments such as HIV. Stress the importance of safe sex if it is appropriate to your grade level and students.
- Discuss the concept of balance and harmonious relationships in the context of the medicine wheel, if it is applicible to your classroom.
- Discuss how eating traditional foods can contribute to overall well-being. Health Canada has a good resource on the topic:

  www.hc-sc.gc.ca/fn-an/food-guide-aliment/fnim-pnim/index-eng.php

INEQUALITY vs. INEQUITY

An *inequality* simply points out that there is a difference between whatever two things are being compared. With regards to TB, for example, we may see that more people in Community A have been diagnosed than people in Community B. When we use the word, *inequality*, to describe this observation we are saying the number of people who have TB in each community is not the same. We are not saying anything about that difference, such as whether it is a good thing or bad thing, and if something should be done to make things more equal in some way.

In the case of TB, however, and many other diseases or conditions with which communities or groups of people live, we often describe the difference we see as an *inequity*. An inequitable difference is one that is both avoidable and unfair –meaning not only that something *can* be done about it, but also that something *should* be done about it.

Teacher Resources

This section of the Topic gives detailed information for teachers who wish to gain a better and more thorough understanding of the Topic before relaying information to students. Included are a variety of media which should prove helpful and interesting.

Helpful Websites

A few helpful websites for Topic Two include:

World Health Organization:
www.who.int/hiv/topics/tb/en/

TB/HIV Working Group:
www.stoptb.org/wg/tb_hiv/default.asp

Public Health Agency of Canada:
www.phac-aspc.gc.ca/publicat/ccdr-rmtc/07vol33/dr3308a-eng.php

CHECK THIS OUT!

Parents of Kids With Infectious Diseases (PKIDs) has created an interesting workshop for teaching students about stigma and infectious diseases:

www.pkids.org/files/pdf/idw/teen4.pdf

LIST OF APPLICABLE APPENDICES

Other Information

TB is a curable and preventable disease that affects over 9 million people worldwide, and is responsible for approximately 1.7 million deaths annually. Although TB in Canada is a serious threat to certain communities, its stronghold is even worse in low-income nations. This is largely due to high rates of HIV/AIDS and the synergistic relationship between TB and HIV. Where HIV/AIDS is found in a community, TB is likely. Canada accepts many immigrants from countries where the incidence of TB is high who may bring with them the TB germ in its sleeping form. After arrival, the germ might, for a number of reasons, awaken and cause disease; this can cause an increase in the National rates of TB disease. This indicates that TB is a global threat that knows no borders!

In 2000, a concerted effort was made to STOP TB—in fact, the effort goes by that name. In 2006, a Global Partnership to STOP TB was spearheaded by the World Health Organization (WHO). The Global Partnership to STOP TB has valuable information about recommended policies, and country-specific targets for eliminating TB and HIV/AIDS.

If you want to find out more, you can visit the STOP TB partnership website:
www.stoptb.org/global/plan/main/part2.asp

Or the World Health Organization website:
www.who.org

ACTIVITY: CARD GAME

Overview

Games are an excellent way to help students understand concepts on their own, by gently guiding them to think critically about the subject in order to play and be competitive.

Here is a game of cards we have developed to teach students about how risky behaviour directly results in an increased chance of contracting disease. If you are a Math teacher, consider teaching your students more specific aspects of the game as related to probability and statistics.

GAMES IN EDUCATION

For some interesting research and resources on how games are quickly gaining popularity in well-rounded education and learning, visit:

http://gamesineducation.org/resources/

Card Game Directions + Rules

While it works best with four players, it can be played with anywhere between two and six (for more players, consider making extra copies of each of the cards). Each player is dealt four cards from a shuffled deck of 80 cards (if there are four players). They keep the cards to themselves, and do not let anyone else see them. The rest of the deck is set face-down, accessible to all players. The deck consists of four types of cards: Healthy Lifestyle cards, Risky Behaviours cards, Outside Factors cards, and TB OUTBREAK! cards; each of the first three types of cards are colour-coded and carry their own "risk factor" number, which allows players to keep score in the game. The last type of card, the TB OUTBREAK card, indicates periods of scoring.

The object of the game is to "neutralize" the numbers on the cards (by matching negative numbers with positive numbers) before a "TB OUTBREAK" occurs. Players take turns drawing from the deck to add new cards to their hand. Healthy Lifestyle cards, and their positive numbers, "neutralize" the Risky Behaviours cards and the Outside Factors cards. For example, a player may have a hand of a Healthy Meal card (+2), a Junk Food card (-2), a Community Support Card (+3) and an Unventilated Room Card (-1). The Healthy Meal Card and the Junk Food Card would cancel each other out, leaving the player with the last two cards, which would leave them with an overall score of +2 for that hand. The two neutralized cards go face-up on the table in front of the player. It is possible to use any combination of cards that add up to zero: for example, in a hand of four cards with values of +1, -3, +2, and -4, the three cards with values of +1, -3, and +2 will neutralize each other, leaving the player with an overall hand worth -4.

MORE

MORE

ACTIVITY: CARD GAME

Directions + Rules *(CONTINUED)*

TB OUTBREAK cards, when played, force players to count up all points currently in their hands at the time of the outbreak. The integer they end up with indicates whether they have managed to avoid contracting TB (with a positive number), have contracted active TB (with a negative number), or have contracted LTBI (if their number adds up to zero). Players keep track of their score for each round by either keeping a tally on a separate sheet of paper, or using the game board provided in this guide to advance or go back the appropriate number of steps depending on the number their hand adds up to. A TB OUTBREAK card can be played by any player on his or her turn, if they have drawn this card from the deck. After drawing this card, the player may choose to use it on the turn they got it, or they may choose to keep it in their hand until another turn, depending on what cards the player has in their own hand. To play it, the player simply needs to place the card face-up on the table in front of the other players. At this point, all players (including the player who drew the TB OUTBREAK card) must tally their score. Keep in mind that there are several TB OUTBREAK cards in the deck, and that all players have an equal chance of drawing one. This is to emphasize the fact that a TB OUTBREAK can happen at any time, and if you are prepared for it by always leading a healthy lifestyle that does not put you at risk, you are not as likely to contract the germ when you come into contact with it.

CREATING DECKS

A set of cards has been printed for your convenience; additional copies of the deck can be made by photocopying the card sheets (found at the end of the Topic) on thick cardstock, and cutting them out. You will notice that there are twice as many green cards as red or yellow; this is so that the points in the game will even out. Photocopy one set of each type (8 green, 4 red, 4 yellow, 4 TB OUTBREAK!) per player for the deck.

Scoring + Winning

Players may either choose a designated number to play until before winning (for example, players may play until someone reaches +15, which makes them the winner), OR players may play until the deck runs out. When this happens, players must automatically count up the points in their hands as though a TB OUTBREAK has occurred. That last score is added up with all the scores from the previous rounds, and a winner is declared.

MORE

MORE

ACTIVITY: CARD GAME

Types of Cards and Their Points

(print the cards on the following pages)

Healthy Lifestyle *Cards*

Healthy Lifestyle Cards represent the positive effect that healthy lifestyles can make on your health. These cards have a positive score attached to them, so they fight off the negative points of the other types of cards.

Healthy Meal Card: +2

Physical Activity Card: +2

Community Support Card: +3

Health Clinic Visit Card: +3

Unhealthy Lifestyle *Cards*

Unhealthy Lifestyle Cards represent the negative effects of unhealthy lifestyle choices on your health. They have a greater negative value than the *Outside Factors Cards*, to illustrate the fact that they are much more damaging to your overall health.

Junk Food Card: -2

Smoking Cigarettes Card: -3

IV Drug Use Card: -3

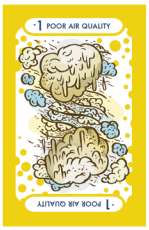
Excess Alcohol Card: -3

Outside Factors *Cards*

Outside Factors Cards represent the things that affect our health that are already in our environment, and out of our control. They have a damaging effect on our health, but not nearly as bad as actual *Risky Behaviours*.

Friend Coughing Card: -1

Travel to TB Hotspot Card: -1



Poor Air Quality Card: -1

Outside Disease Card: -2

+2 PHYSICAL ACTIVITY

+3 HEALTH CLINIC VISIT

+2 HEALTHY MEAL

+3 COMMUNITY SUPPORT

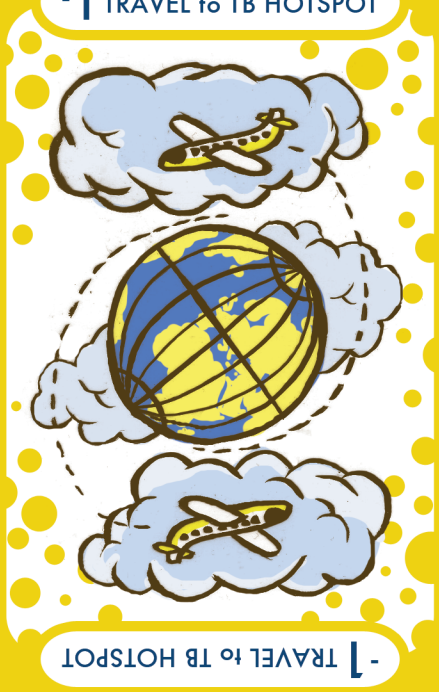
+2 PHYSICAL ACTIVITY

+3 HEALTH CLINIC VISIT

+2 HEALTHY MEAL

+3 COMMUNITY SUPPORT

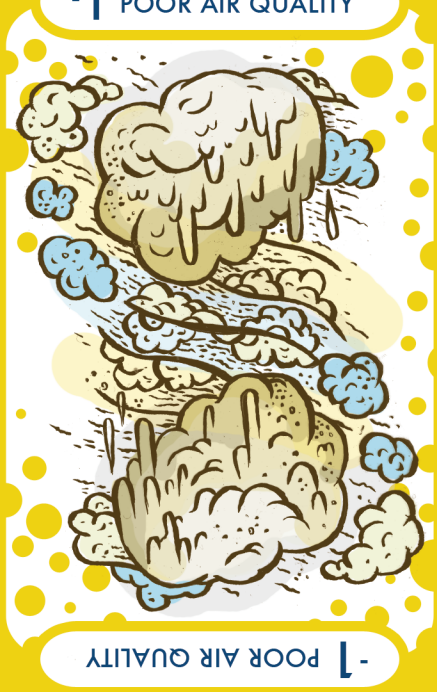
-1 TRAVEL to TB HOTSPOT



-1 FRIEND COUGHING

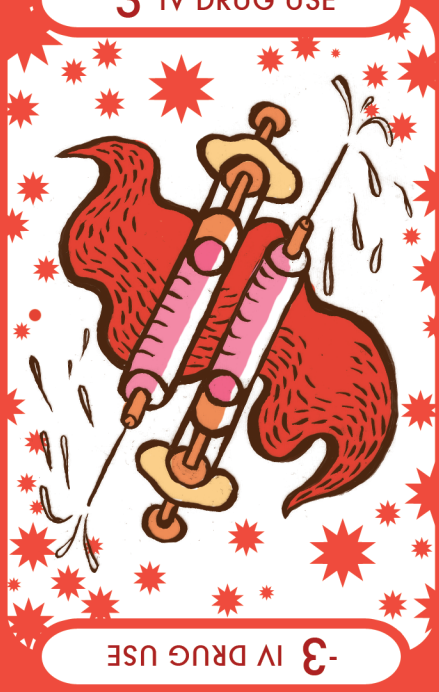
-2 OUTSIDE DISEASE

-1 POOR AIR QUALITY



-2 JUNK FOOD

-3 IV DRUG USE



-3 EXCESS ALCOHOL

-3 SMOKING CIGARETTES

TB OUTBREAK!

CARD GAME

Photocopy these cards onto thick paper or cardstock. You only need to make ONE copy of each page for each player for the deck. For example, if there are four players, you need to copy each of these pages four times!

TOPIC THREE history of tuberculosis

IMAGE:
Gowen Sutton Co. Ltd (Publisher) . Provincial Tubercular Sanitarium, Saskatoon, Sask. Vancouver: Published by the Gowen Sutton Co. Ltd., Vancouver, B.C, [after 1925].

TOPIC THREE: *HISTORY OF TUBERCULOSIS*

What's inside?

Bust some TB Myths with your class, and help reduce the stigma associated with the disease!

IF YOU ONLY DO ONE THING FROM THIS TOPIC:
Review the Mythbusters Fact Sheet (APPENDIX E, PAGE 45)—this may generate some discussion and help reduce the stigma associated with a diagnosis of tuberculosis in your community!

Read the TB Fact Sheet and the Timeline together, or send them home as hand-outs!

APPENDIX A, PAGE 40

APPENDIX J, PAGE 55

Discuss the history of Sanatoria, particularly if the discussion is relevant to your comminity!

APPENDIX K, PAGE 60

Help bring life to historical imagery with the use of "Photo Voice" techniques!

ACTIVITY, PAGE 36

and MORE!

TOPIC THREE history of tuberculosis

Concept

Tuberculosis—a disease also historically known as 'consumption', wasting disease, and the white plague—has affected humans for centuries. Until the mid-1800s people thought that tuberculosis or TB, was hereditary. They did not realize that it could be spread from person to person through the air. Also, until the 1940s and 1950s, there was no antibiotic treatment for TB. For many people, a diagnosis of TB was often a slow death sentence.

In 1865 a French surgeon, Jean-Antoine Villemin, proved that TB was contagious, and in 1882 a German scientist, named Robert Koch discovered the bacterium that causes TB.

Although archaeological evidence strongly suggests that TB was present in the Western Hemisphere in pre-Columbian times, Native Americans of North America and South America had little trouble with TB prior to the arrival of explorers from Europe who carried the TB germ with them. Priests who explored the Great Lakes region in the 1600s and 1700s reported rare cases of glandular infection and chronic lung conditions that were probable TB in nature. It was only after a series of colonization-related events, that TB reached epidemic proportions in First Nations, Métis and Inuit people of what would later became Canada.

These events included the social and environmental changes resulting from contact with traders and later missionaries and government representatives. On the prairies, and in connection with the signing of the Treaties, Indian bands were transitioned from freely moving societies, closely connected physically, emotionally and spiritually to the land of their ancestors, to community-stationary societies (reservations). In this way contact with white settlers became more frequent and the crowding promoted airborne transmission of the TB germ. At the same time the peoples staple food source, which historically had also been a source of clothing and shelter—the buffalo were nearly driven to extinction. As a result malnutrition became common and increased the risk of progression of TB infection to TB disease.

Other events included the residential school system (a system that was for many years required by law....the 'Indian Act'), where the TB germ was readily transmitted, and which has impacted First peoples negatively in many other ways, and TB sanatoria—special rest homes where TB patients were sent before the advent of the antibiotic era, often never to return. Together, these environmental and social changes, and the relative lack of immunity that First peoples had against the TB germ, resulted in TB becoming a common disease amongst them in the late 1800s and much of the 1900s. These same social and environmental changes have had an inter-generational effect, with much suffering that goes beyond the immediate effects of the illness upon the individual and their family.

In more recent times, through the best efforts of Aboriginal people, communities, lay organizations, healthcare workers and government, TB is less common now than it once was. Unfortunately, however, this generalization is not true of all communities. In some communities, whether First Nations, Inuit or Métis, TB is persistent and often associated with repeated outbreaks. Healthcare workers, educators, students and others—especially if non-Aboriginal, must be aware of the history—the 'collective memory' of suffering associated with TB—in their efforts to eliminate this scourge and arrive at more positive outcomes. As TB has become rare in Canadian-born non-Aboriginal peoples, and less common in Aboriginal peoples, it has become more common in the foreign-born people of Canada. This relates to the fact that more and more new immigrants to Canada are coming from low-income countries where TB is widespread, and they are bringing the TB germ with them when they immigrate.

TOPIC THREE history of tuberculosis

Key Points

- Tuberculosis is an ancient disease (evidence of the disease has been found in the remains of Egyptian mummies!) but has a relatively young history in Canada, and especially in the Aboriginal peoples.

- In the year 1867 – the year of Canada's confederation – tuberculosis is the number one killer; it isn't until the year 1869 that TB is discovered to be contagious.

- 30 years later (1897) Canada opens its first Sanatorium.

- In 1944, the first effective anti-tuberculosis drug is discovered. Over the next 10 years other drugs are discovered, which together provided a cure.

- In the 1980's there is a resurgence of the disease due to the effects of the HIV virus.

- Today, TB is a global threat. While rates are generally low in Canada, the burden of infection and the possibility of disease is still great among new immigrants, in some First Nations, especially on the Prairies, and in some Inuit.

- The TB germ in Canada can be tracked through a process called "DNA Fingerprinting", which traces unique germs across history to their current place in communites across the country.

Teacher Resources

This section of the Topic gives detailed information for teachers who wish to gain a better and more thorough understanding of the Topic before relaying information to students. Included are a variety of media which should prove helpful and interesting.

Helpful Websites

A few helpful websites for Topic Three include:

Canadian Lung Association TB Timeline:
www.lung.ca/tb/tbhistory/timeline/

Canadian Lung Association TB Historical Images:
http://www.lung.ca/tb/images/

Historical Tuberculosis Control in Saskatchewan:
http://esask.uregina.ca/entry/tuberculosis_control.html

HELPFUL WEBSITES

The CBC is home to a digital archive of stories related to TB, 1943-2001:

http://archives.cbc.ca/health/disease/topics/883-5325/

IMAGE: *Paul Kane, Buffalo Hunt, June 1846* (edited)

BOOKS OF INTEREST

Grygier, P. S. (1994). *A Long Way From Home: The Tuberculosis Epidemic Among the Inuit.* Quebec City: McGill-Queen's University Press.

Wherrett, , G. J. (1977). *The Miracle of the Empty Beds: A History of Tuberculosis in Canada.* Toronto: University of Toronto Press.

MORE

MORE

TEACHER RESOURCES, CONTINUED

LIST OF APPLICABLE APPENDICES

Other Information

A History of TB (Excerpted from *The Canadian TB Standards, 6th Edition*)

North and South American human remains dating from the time of pre-European contact show evidence of mycobacterial disease, although controversy exists about whether the findings in bone and mummified tissue represent infection with *Mycobacterium bovis*, *M. tuberculosis* or both. However, epidemic TB in Canadian First Nations peoples and Inuit occurred after European contact in the 19th and 20th centuries.

Social and environmental risk factors for the epidemic spread of TB in these populations included the movement of individuals to reserves, hamlets and residential schools. In addition to crowded living conditions, which favoured transmission of infection, malnutrition both on and off reserve fostered progression of infection to disease.

The story of the TB epidemic in First Nations peoples and Inuit speaks of trans-generational loss and suffering. Families and communities were disrupted as children, parents and grandchildren were sent to sanatoria throughout southern Canada for long periods of time, sometimes never to return. Survival was often accompanied by a legacy of emotional, psychological and physical "scars". Those who work in TB control in the 21st century need to be aware of the existence of a collective memory of the suffering associated with the TB epidemic in these populations.

Over the past 50 years or so, the country-of-birth of most new immigrants to Canada has shifted from countries that had similar rates of TB as Canada, such as countries of Western Europe, Scandinavia, the United States, Australia and New Zealand, to countries of Asia and Africa, which have much higher rates of TB than Canada. New immigrants coming from countries of Asia and Africa often have the TB germ sleeping in them (i.e., they have latent TB infection). They may develop TB after they arrive in Canada. This is especially apt to occur if they have a weakened immune system.

ACTIVITY: PHOTOVOICE

Overview and Directions

This activity will help you to cover many of the themes discussed in the "History of TB" Topic and is completed in two parts:

AN INTERVIEW DONE BY STUDENTS

Help your students identify people in the community that they could interview about TB including family or community members who have had TB and health care workers like your community health nurse.

Develop a series of questions (examples provided on the next page) with your students that are deliverable in about 10-15 minutes—make sure your students write down their interviewee's responses (likely as homework).

Emphasize open-ended questions, which will help the students develop a narrative in the second half of the activity.

There is a sample Interviewer worksheet for the students to take their notes down from the interviews on page_____.

BRING THOSE INTERVIEWS TO LIFE WITH THE CONCEPT OF PHOTOVOICE

Ask your students to bring their interviews to life with the use of found pictures (magazines, internet, and newspapers) or photos that they take themselves, if able,(digital cameras, phones, disposable cameras etc.)

The images should be of positive things that help improve people's well being in the community, such as healthy foods and lifestyle activities, community support centres and safe housing conditions.

The picture should highlight themes that were present in their interviews.

Afterwards, have students make up a caption below the picture that demonstrates their understanding of the history of TB, and the effect of TB in their community. These can be handed in for grades or presented to the class.

BACKGROUND INFORMATION

Photovoice

For the purpose of this activity and our Resource Guide, 'Photovoice' is an activity where the students will find or take a picture of a specific social issue in their community, (in this case it will be tuberculosis), and bring a 'voice' (narrative) to the image.

Students are asked to represent their community or point of view by taking photographs, discussing them together, and developing a narrative to go with their photos.

MORE

ACTIVITY: PHOTOVOICE

MORE

Possible Interview Questions

If you are asking a teacher:

Did you know TB is still an issue and not just an illness of the past?
When did you first hear about TB? Was it on TV, radio or in a book?
Do you know anyone who has TB? Did you help them find help?
Has TB affected your life at all?
Are there support systems in the school if someone has TB? Who could they talk to?

Write your own _____
Write your own _____

If you are asking a student:

Have you ever heard of TB?
What did you think TB was before this class?
Have you ever met anyone who has had TB?
What do you think it would have felt like to be in a Sanatorium a long time ago?
What would you do to help prevent yourself and others from getting TB?
Who would you go to see to talk about TB in your community?

Write your own _____
Write your own _____

If you are asking a Health Care Provider:

What is it like being a Health Care Provider?
What makes you think a person has TB?
Have you ever met anyone who has had TB?
What do you do if a person has TB?
How do you medically treat someone with TB?
How do you provide emotional support to someone with TB? Are there support systems in the community?

Write your own _____
Write your own _____

MORE

MORE

ACTIVITY: PHOTOVOICE

Interview Worksheet

Student Name:

Date:

Time:

Name of Interviewee:

Occupation:

Location of Interview:

Community Name:

QUESTION ONE:

QUESTION TWO:

QUESTION THREE:

QUESTION FOUR:

QUESTION FIVE:

QUESTION SIX:

NOTE: While you are interviewing, think of all the images that come to your mind as they respond to your questions, this will help you think of what kind of picture you would like to add a caption too.

APPENDICES

How to Use The Appendices

Each Appendix has a letter name, and has been colour-coded for easy reference and cross-reference. At the top of each page is a tab, and the colour of this tab indicates which Topic the information is associated with.

BLUE

All pages with a BLUE tab at the top will relate to *Topic One: What is Tuberculosis?*

GREEN

All pages with a GREEN tab at the top will relate to *Topic Two: Inter-connectedness of TB to Other Diseases and Social Determinants*

MAGENTA

All pages with a MAGENTA tab at the top will relate to *Topic Three: History of TB*

Split Colours

If an Appendix is relevant to more than one Topic, the tab at the top of the page will be divided into the two or three related colours.

APPENDIX A

APPENDIX E

Appendix A relates to Topics 1, 2, and 3, while Appendix E relates to Topics 2 and 3 only.

Helpful Icons

Located at the tops of pages that may be used as printouts

PRINT ME and use as a handout

PRINT ME and use as a worksheet

LIST OF APPENDICES

APPENDIX A

TB FACT SHEET

What is tuberculosis?

Tuberculosis is a communicable (contagious) disease. It is caused by a bacterium called *Mycobacterium tuberculosis.*

How does TB infect a person?

Tuberculosis most commonly affects the lungs, however it can affect other parts of the body as well.

Who is at risk for tuberculosis infection or disease?

TB infection can affect anyone worldwide, however, some people are more at risk of infection due to exposure.

AT RISK FOR INFECTION (LTBI)

- People in close contact with someone who has TB disease
- People who inject drugs
- Homeless people
- People from other countries where TB is common
- People living in very crowded homes
- People in prisons

AT RISK FOR ACTIVE DISEASE

- People with medical conditions such as diabetes and certain types of cancer
- People with HIV infection or other diseases that weaken the immune system
- The very young (under 2 years), and the frail and elderly (weak immune system)

How common is tuberculosis?

Tuberculosis is very common worldwide. According to the WHO (the *World Health Organization*), overall one-third of the world's population has latent TB infection. Out of this pool of infected people, between 8 and 9 million new cases of tuberculosis occur each year in the world.

How do TB germs get in the air?

Tuberculosis germs become airborne when someone with active, pulmonary TB disease coughs, sneezes, sings, plays a wind instrument, or to a lesser extent, talks. It only requires that a few bacteria be breathed in to cause TB infection.

Will you always contract TB if you are near someone who has TB?

No, some peoples' immune system may kill the tuberculosis germ. For others, the body's immune system may not kill the germ and it will remain alive but inactive/not infectious in the body; this is known as *latent* (sleeping) *infection.*

MORE

APPENDIX A

TB FACT SHEET

MORE

How many people can active TB infect?

If a person with active pulmonary tuberculosis is left untreated, he or she can infect an average of 10 to 15 people every year.

How is tuberculosis diagnosed?

Latent TB infection is found with a tuberculin skin test, and sometimes a special blood test.

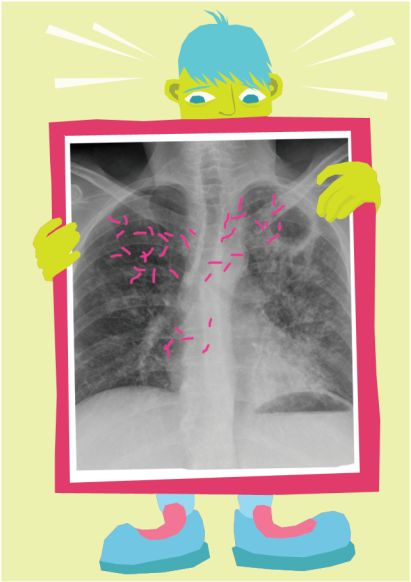
Active TB disease is diagnosed with a doctor's examination, a chest x-ray, and microbiological examination (growing the TB germ in the lab) of sputum (phlegm) or other bodily fluids.

Can latent (sleeping) TB infection become active TB disease?

Yes. If you already have latent TB infection and your immune system is weakened, you may develop active TB disease.

What are the symptoms of active TB?

- Chronic cough (lasting three weeks or more) with sputum (phlegm) that may be blood-tinged
- Fever
- Night sweats
- Weight loss



What should I do if I have these symptoms?

Visit your health care provider as soon as you can! They will be able to determine whether or not you have TB (or any other disease or illness), and give you the proper medication so that you can start to feel better!

Is someone under treatment for TB contagious?

Once a person has been taking anti-TB medication for a period of two weeks or more, they are no longer considered contagious (infectious to others), making it safe for friends and family to visit them.

Is there a cure for tuberculosis?

Yes! TB can be cured with the use of anti-TB drugs; however, for the drugs to work properly, they must be taken exactly as prescribed. Often, people begin to feel the positive effects of the drugs before they have completed the course that has been prescribed for them, and as a result they may be tempted to stop them earlier. However, the TB bacteria dies very slowly so the anti-TB drugs must be taken as recommended by your TB doctor (for periods of six months or sometimes longer) in order for all of the TB germs in your body to be killed.

APPENDIX B

Holism & Social Determinants

*What is **holism**?*

In health, holism means to be 'whole or in balance' in all four aspects or parts of ourselves; physically, mentally, spiritually and emotionally. Aboriginal peoples use the Medicine Wheel or Circle of Life to teach the interrelationship of all parts of ourselves and the cycles of life found in nature. Holism helps us to understand how tuberculosis, in its own cycle of life, relates to us and disrupts our balance when it enters our bodies.

Myths about TB:

MYTH: *TB is a disease that only dirty, poor people get.*
TRUTH: TB is acquired by breathing in the germ. Everyone has to breathe, and the air we breathe is shared. That means anyone sharing the air with someone with active TB disease can get TB themselves—even world travelers. Once someone is infected they have increased risk of disease if their immune system is compromised.

MYTH: *TB is a disease of the past.*
TRUTH: It is not as common as it once was, but TB is still around. It is one of the most common bacterial diseases world-wide. One-third of the world's population is infected with the germ, *Mycobacterium tuberculosis*. Fortunately, not everyone with infection develops TB disease.

MYTH: *A positive skin test means TB disease.*
TRUTH: A positive skin test means the person has become infected with the bacteria, and has the germ sleeping in their body (*Latent tuberculosis*, or *LTBI*). However, the skin test can sometimes be confused by other germs in the mycobacterium (TB) family—this could cause a false positive test.

For more TB MYTHS, see Appendix E, Mythbusters!

The Link Between Social Inequity and TB:

TB is often a marker for socio-economic inequality. Transmission of the germ is more likely and the chances of it progressing to disease are higher in conditions of poverty. People who experience poor nutrition, injection drug use, unsafe sexual practices that lead to sexually transmitted infections, high stress, or co-morbidities (such as diabetes) are more likely to develop TB disease if infected with the TB germ. In 1902, Sir William Osler famously said, "TB is a social disease with a medical aspect". Over 100 years later, that is still true. The most disadvantaged in society are at increased risk—not by any fault of their own, but by virtue of the fact that the conditions in which they live make transmission of the germ, and progression to TB disease if you have the germ, more likely. For example, TB can be quickly and widely spread in homeless shelters and in prisons. You may want to discuss whether the conditions in your community make TB more or less likely.

MORE INFORMATION

For additional information about risk factors associated with tuberculosis, see Appendix G: *Compromised Immunity*, PAGE ##

APPENDIX C

did you know?

LABORATORY TESTING

Laboratory Testing

When a person is sick and goes to the doctor they often have different tests done. Some of these tests are microbiological. That is, a biological sample that is viewed under a microscope. Examples include providing the doctor with a blood, urine or sputum (spit) sample. Blood, urine and sputum are all biological materials, which are sent to a lab and prepared for viewing under a microscope or tested in some other ways. When these materials are viewed under magnification, pathogens may be seen; for example, viruses and bacteria may appear. Positive identification of an active case of TB involves looking at a sputum sample (or other type of sample) under magnification to see if the bacteria are present. The sample is further tested to see if the TB germ will grow in special culture media.

DIAGNOSING TUBERCULOSIS

Making a firm diagnosis of TB involves taking a *culture*—growing bacteria from the sputum (or other sample), to see what types of bacteria grow. If the germ that grows is the TB germ, a definitive diagnosis can be made.

TUBERCULOSIS BACTERIA

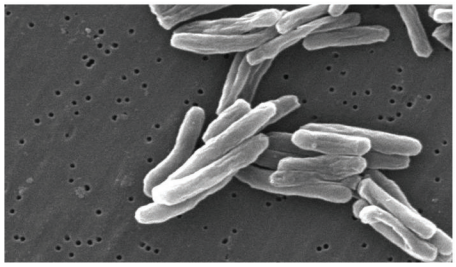


*image not to scale!

Mycobacterium tuberculosis (the germ that causes TB) is a bacterium (singular form of *bacteria*) and is rod-shaped, or tubular, in appearance. It can be treated with anti-biotics.

FLU VIRUS

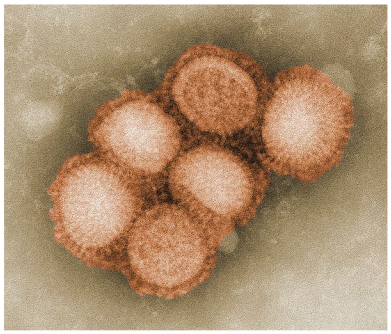


*image not to scale!

The flu, on the other hand, a viral infection, is round with scalloped or "fuzzy" edges, and is *much smaller* than TB. It cannot be treated with anti-biotics.

did you know?

WHAT ARE PATHOGENS?

DIAGNOSING TUBERCULOSIS

Making a firm diagnosis of TB also involves taking a *culture*—growing bacteria from the sputum to see what types of bacteria grow. If they are the kinds that cause TB, a definitive diagnosis can be made. But before the culture can be performed, someone must consider or think of TB and submit an appropriate specimen—usually sputum, for microbiological examination.

APPENDIX E

common TB stigmas, *debunked*

MYTHBUSTERS!

MYTH 1

You can get TB by sharing dishes and drinks, shaking hands, or touching items in public places.

NO WAY! *The TB germ is spread in the air,* when someone who has the active form of the disease coughs, sneezes, plays a wind instrument, sings, spits, or to a lesser extent, talks. Even then, most people with a healthy immune system won't contract the disease.

MYTH 2

TB is a sexually transmitted disease.

TOTALLY NOT TRUE!
TB is an infectious disease that develops after a person has breathed the germ into their lungs and is unable to contain the germ in a latent (or *sleeping*) state.

This inability to contain the germ is usually a result of a weakened immune system. The most important thing to remember is that TB is spread in the air, which means anyone can be affected!

MYTH 3

A person with TB can be completely cured without medicine.

NO WAY! There are many ways to restore your health, but you will need to include medication (anti-TB drugs) in order to kill all the TB bacteria in your body so that it doesn't reproduce and come back! Alternative and Traditional medicines or treatments can sometimes render TB inactive but there is always a risk that it will come back. While things like herbal and holistic remedies, as well as home rest, are helpful to any sick person, tuberculosis must be treated with special anti-TB drugs in order for lasting cure to be achieved.

MYTH 4

TB is a "dirty disease", and a "disease of the past".

DEFINITELY NOT TRUE!
Tuberculosis continues to affect millions of people worldwide, every year. Anyone can become infected with the TB germ if they're near someone with active TB disease. But if a person makes sure to keep their general health good, the chances of the TB germ causing TB disease are much reduced.

APPENDIX E

common TB stigmas, *debunked*

MYTHBUSTERS!

MYTH 5

It isn't possible to cure tuberculosis.

WRONG AGAIN! People who have TB can certainly be cured by visiting a healthcare worker and taking the antI-TB drugs. It is very important for a patient to continue taking *ALL* of the medication that the health-care worker prescribes. If you stop taking the medication early, the bacteria will not be completely destroyed; they will reproduce and the TB will come back!

DO NOT SIMPLY STOP TAKING TB MEDICATIONS ONCE YOU START FEELING BETTER!

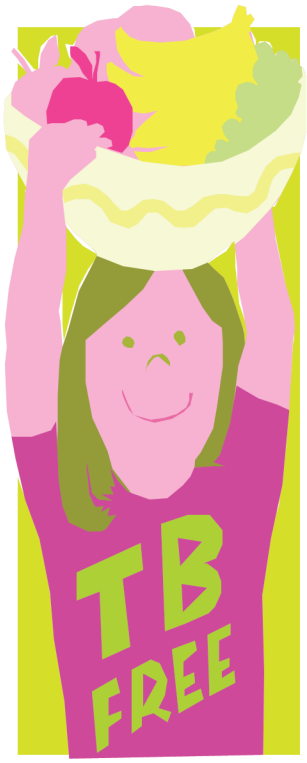
MYTH 6

All forms of TB are highly contagious.

NOT TRUE! A person with a healthy immune system may contract LTBI: *latent TB infection*. LTBI is not contagious; the person's immune system is strong enough to keep the germ contained within his or her body, and as a result, cannot pass it on to others. They also will not be experiencing any symptoms—they feel well.

It is still very important to get treatment even if you only have LTBI, because later on, usually when your immune system is weakened, the germ may awaken and cause active TB disease.

As well, people who have been under treatment for TB for two weeks or more are generally not contagious!



MYTH 7

No matter what choices I make, if I was meant to get TB, I will.

NOPE! Your risk of catching TB has way more to do with individual lifestyle choices than you may think: simple things like eating healthy foods, not smoking, and keeping your living environment clean go a long way to helping your immune system stay strong to fight off germs.

APPENDIX F

HOLISM
and the Medicine Wheel

Holism:

In health, holism means to be "whole or in balance" in all four aspects or parts of ourselves: physically, mentally, spiritually and emotionally. Many Aboriginal peoples use the Medicine Wheel or Circle of Life to teach the interrelationship of all parts of ourselves and the cycles of life found in nature. Holism helps us to understand how tuberculosis, in its own cycle of life, relates to us and disrupts the balance of health when it enters the body.

The *four domains* of holism are the:

Physical domain: Teachings address the physical aspects of self and how we meet our basic needs of food, clothing, shelter and safety in order to maintain health.

Mental Domain: Teachings address the mental aspects of self and how we need to develop clarity of mind, and the knowledge, skills and values necessary for survival of the individual and the group.

Emotional domain: Teachings address the emotional aspects of self and how we promote and maintain positive feeling.

Spiritual domain: Teachings address the spiritual aspects of self and how we nurture relationships with others (includes spirit world for many people) and express compassion for all life.

It is important for each of us to be mindful that all aspects of self are considered in order to achieve balance. In the event that one aspect is negatively affected, so other aspects of health fall out of balance. For example, when one's physical health is weakened due to malnutrition, one becomes vulnerable to diseases such as tuberculosis. A domino effect takes place whereby fatigue sets in and thinking becomes clouded. Emotional well-being can be affected in terms of not feeling positive about one's appearance when one has significant weight loss. When these aspects of self are weakened, one does not have the strength to attend to others needs, hence, the spiritual domain is imbalanced.

ACTIVITY

Poster Art

On art paper, have students draw a Medicine Wheel (a circle divided into quadrants). They may offer tobacco to their local Elder and find out what colours go into each quadrant and ask what the colours mean.

Ask the students to name their circle 'Holistic Health' and illustrate what holistic health means to them in terms of TB prevention.

Each quadrant will be labeled for an aspect of health. For example, a healthy (whole) person likes to cross-country ski (physical), a healthy person helps others by chopping wood for Elders (spiritual), a healthy person makes wise decisions by getting a check-up (mental), a healthy person supports sick people by visiting them (emotional).

The Medicine Wheel and Holism:

If appropriate for your classroom, use a Medicine Wheel to visually depict the concept of holism. Common to most First Nations is the Medicine Wheel, which varies slightly from Nation to Nation and from one territory to another. For example, The Cree of northern Saskatchewan have six sections in their Medicine Wheel to represent six seasons (freeze-up and break-up are two additional seasons) whereas Cree Nations in southern Canada have four sections. Not all Indigenous groups across Canada have as part of its core philosophy, a Medicine Wheel to conceptualize the primary teachings of their culture.

APPENDIX G

STIGMA

Tuberculosis and Stigma:

Stigma - "A mark of disgrace... as on one's reputation" (dictionary.com, accessed Dec. 14th, 2011 at 10:04 AM)

Stigma is a state of being that can make a person feel lonely, or can make them feel bad about themselves. Tuberculosis is often stigmatizing because the disease thrives in conditions of poverty; for example, in homeless shelters and over-crowded housing. TB also thrives in prison settings. Being impoverished, and/or imprisoned can make people feel like outsiders. Please discuss with your classroom the reality that TB is transmitted in the air through sneezing, coughing and in rare instances through talking. The air that we breathe is shared and so anyone is at risk for becoming infected with the TB germ. Becoming infected with the TB germ usually requires more than just being near someone who has the disease—infection usually requires spending hours in a poorly ventilated location (a closed space) with someone who has the active form of the disease. Please also discuss how to make people with TB feel cared for in their community—this can include visiting. People with TB do not have to feel alone! As an activity, you might want to develop care plans in your classroom for fictional family members who have TB that includes visiting, story-telling and sharing.

APPENDIX H

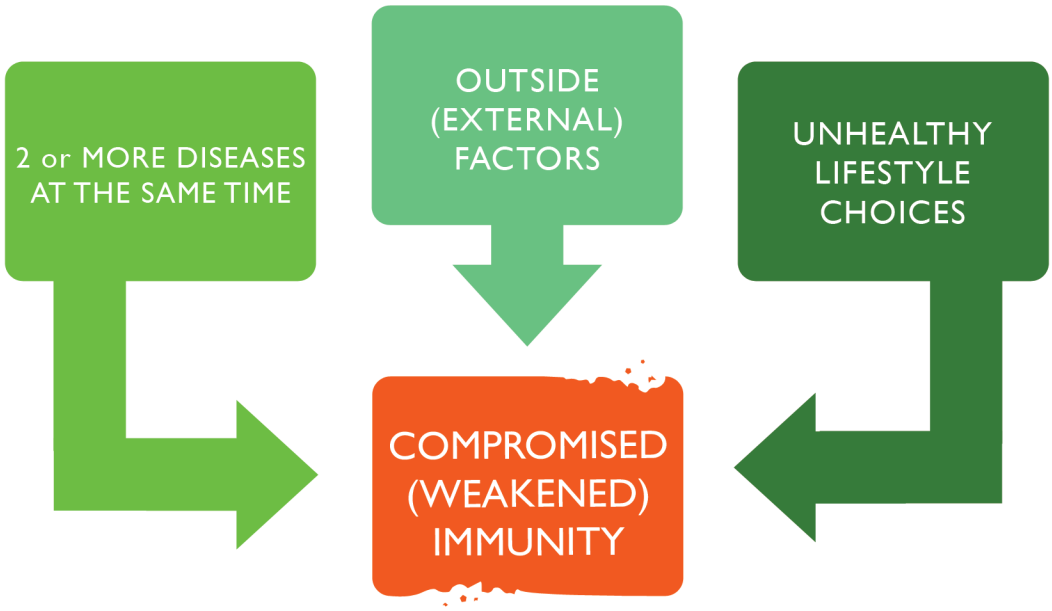
COMPROMISED *(WEAKENED)* IMMUNITY

Introduction

If a person with a strong immune system should breathe the TB germ into their lungs, the immune system can wall off the germ and put it to sleep in their body; the germ in this state will not cause any signs or symptoms of disease. A person's immune system can be weakened by a number of things, including environmental risk factors, other sicknesses, and certain risky behaviours.

The immune system is the part of the body that is responsible for keeping diseases away and for fighting off infection, but if it is weakened for some reason then it cannot perform its job well.

Below, the most common risk factors for having the sleeping germ awaken to cause disease are described:



Outside Risk Factors

The TB germ is spread through the air when it is coughed up by a patient who has TB of the lungs. Everyone must breathe, and every person shares the same air, so every person in the world could be at risk of breathing in the germ. There are times, though, that the air a person is breathing is of poor quality. This can happen indoors in areas where there is poor ventilation, like a small house or room with closed windows. The air that we breathe can be filled with smoke from cigarettes, or toxins from things in the house like mould or certain household heating methods. When the air that a person is breathing is of poor quality, this can have a negative effect on their immunity. In addition, having many people share the same air can increase the chances that the TB germ will spread from person to person if someone with active TB is coughing the germ into the air.

MORE

COMPROMISED *(WEAKENED)* IMMUNITY

MORE

Unhealthy Lifestyle Choices

Unhealthy lifestyle choices involves some things that are out of your control as well as risky behaviours, but not all risk-taking is bad for your health! Risk taking is a large part of growing up, and it is definitely a good idea to promote healthy risk-taking in your classroom. This can include encouraging your students to try new fruits and vegetables or try a new sport. On the flip side, some risky behaviours can contribute to weakening the immune system, or lead directly to diseases that increase a person's chance of getting TB infection or active TB disease. These behaviours include recreational cigarette smoking, injection drug use and unsafe sexual practices (e.g. unprotected sex that might lead to HIV infection).

Recreational smoking increases the likelihood of developing a "smoker's cough". One of the symptoms of active TB disease is also a deep cough, and so it is likely that a "smoker's cough" could be confused with the prolonged cough of active TB. If someone thinks they only have a "smoker's cough", they may delay a visit to a health-care clinic for a checkup, or altogether ignore it; if they do in fact have active TB disease, the delayed presentation makes recovery more difficult and transmission more likely. Recreational smoking can also have an impact on indoor air quality, and is often linked with other risk-taking behaviours that weaken immunity like the intake of alcohol.

Injection drug use is a form of drug use in which people inject themselves with drugs using a needle and syringe to pierce the skin. This activity can lead to the spread of blood-borne infections. A blood-borne infection is a pathogen that is present in its hosts' blood stream, and is transferred into another persons' blood stream. Blood-borne infections usually arise in injection drug users when they share needles, and can include HIV—a disease that greatly reduces the body's immune system from fighting off infection. Injection drug users are also at risk of being undernourished, or making unhealthy decisions about their dietary or sexual activities. Being undernourished makes the immune system weak—too weak to fight off TB!

Unsafe sexual practices, like having sex without a condom, can lead to the spread of sexually transmitted infections (STIs), including HIV/AIDS. If your body is fighting off one of these infections, it means your immune system is already working hard to keep that disease at bay, and so it will not do as good a job at keeping the TB germ in a sleeping state, thereby increasing your chances of getting active TB disease.

You can boost your immunity, and help protect yourself from TB by making healthy choices like eating right, avoiding drugs and alcohol and always practicing safe sex!

MORE

COMPROMISED *(WEAKENED)* IMMUNITY

MORE

Having Two or More Diseases at the Same Time

A co-morbidity is the presence of two or more diseases at the same time. When we use the term "co-morbidity" in connection with TB, we are referring to a disease that increases the risk of TB infection progressing to active disease. Two of the diseases that increase the risk of having a TB infection turn into active disease are HIV and diabetes.

HIV

Human Immunodeficiency (HIV) is the virus that causes *Acquired Immunodeficiency Syndrome* (AIDS). HIV can cause life-threatening suppression of the immune system. HIV infection is usually contracted through sexual contact or injection drug use. The virus is spread from one person to another during unsafe sex, while sharing contaminated needles, and occasionally in breast milk between mother and child, and during the birthing process between infected mothers to their newborn babies (perinatal transmission). In high income countries, the ability to screen blood products for HIV has eliminated the chance that the blood would be spread by blood transfusion.

HIV is a very powerful risk factor for contracting TB. The HIV virus can depress the immune system and allow sleeping TB germs to wake up, and begin to cause sickness.

Diabetes Mellitus

Diabetes Mellitus: is a metabolic disease that occurs when a person has high blood sugar, either because their body does not produce enough insulin (a hormone produced by the pancreas that facilitates the uptake of sugar [glucose] by cells) or because cells do not respond to the insulin that is being produced. There are three different types of diabetes:

Type 1 diabetes is caused by the body's inability to produce insulin. People who suffer from type 1 diabetes are required to have insulin injections. Type 1 diabetes symptoms can appear suddenly and might include: increased thirst and hunger, excessive urination, dramatic weight loss and overwhelming tiredness.

Type 2 diabetes is caused by insulin resistance, in which cells fail to use insulin properly, sometimes combined with absolute insulin deficiency. Type 2 diabetes is often known as 'late onset' diabetes, as it occurs more commonly in older people. Type 2 diabetes often develops in people who have been overweight for many years. Complications can occur with type 2 diabetes, because people are often unaware of mild symptoms which can quickly become life-threatening. Type 2 diabetes is managed through diet and exercise, and does not usually require insulin injections. Type 2 diabetes is very prevalent among Canada's First Nations with rates three to five times higher than among other Canadians (Health Canada).

Gestational diabetes mellitus is the least common type of diabetes. This diabetes occurs as a temporary intolerance to sugar (glucose)in pregnant women; it will usually disappear after the delivery of the child. However, a proportion of women who suffer from gestational diabetes may develop Type 2 diabetes in the future. Gestational diabetes can have implications for the newborn as well, such as birth defects, increased risk of developing obesity and impaired sugar (glucose) intolerance and/or diabetes in later life.

Diabetes is not as strong a risk factor as HIV, but is much more common than HIV.

FOOD SECURITY AND INEQUITY
INFORMATION AND ACTIVITY

Grocery Store Pricing Game

Use the template provided on the next page. Students will research varying prices for the foods listed between other Canadian cities and their own home town.

Research food prices using the internet, using store flyers or by calling grocery stores in the listed cities. Students might also go out into their own community to find prices from their local grocer.

If students do not have access to internet or other research methods the teacher can do some research before class to provide the food prices (or estimates) for the cities listed in the activity.

Open the discussion to the class or have the students do a take home essay regarding inequities around food security that have come out of this activity.

A possible extension of this activity is to ask the students about different ways they can advocate or make changes in their community to help lessen the inequities related to food security.

BACKGROUND INFORMATION *(for the teacher)*

Inequity is an unfair circumstance or difference.

Food security is when all people at all times have access to enough safe, nutritious food to maintain a healthy and active life.

The pillars of food security:

Food availability: having enough food available on a regular basis.
Food access: being able to get healthy foods.
Food use: having knowledge of basic nutrition and food care, as well as clean water and sanitation (getting rid of waste)
—Defined by the World Health Organization (WHO)

HOW FOOD SECURITY AND INEQUITY RELATE TO A PERSON'S HEALTH.

Having a secure source of nutritional and readily available food is essential for maintaining good health. Not being able to access fresh produce, meats, dairy and other essential food items can lead to many preventable illnesses and the slow decline in the overall health and well-being of a community.

HOW THERE CAN BE INEQUITABLE DISTRIBUTION OF FOOD LOCALLY, PROVINCIALLY, NATIONALLY AND INTERNATIONALLY.

There are many countries that produce a lot of natural food resources but have a starving population because of the uneven distribution of food. Having an uneven distribution of food (excess in some communities and shortages in others) can lead to health problems. Excess food in some countries (or even within a community) has lead to high obesity rates, diabetes and heart conditions while food shortages in other countries has lead to malnutrition and starvation, one of the single greatest underlying causes of death worldwide, especially among children. Improper nutrition also has a negative impact on the body's immune system, thereby increasing the risk of a latent TB infection progressing to active TB disesase (Refer to APPENDIX G, Compromised Immunity).

Useful resources: *http://www.who.int/* *http://www.northernstores.ca/*

MORE

ACTIVITY

MORE

STEP TWO

Discuss any inequities (unfair differences) around food security that may have come up while you were comparing the prices of food items between your community and these Canadian cities. Discuss any inequities within a community that you might have seen.

STEP THREE

If there are any inequities, why do you think they exist?

STEP FOUR

What could be done to fix the inequities in these communities?

APPENDIX I

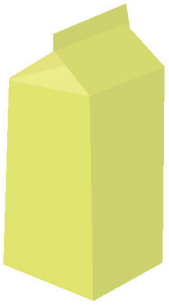
ACTIVITY

STEP ONE

Compare the prices of the foods listed below between the different cities and your home town.

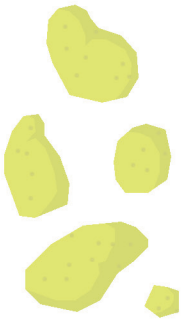
MORE

Vancouver, BC:	$
Edmonton, AB:	$
Saskatoon, SK:	$
Black Lake, SK:	$
Iqaluit, NT:	$
Your community:	$



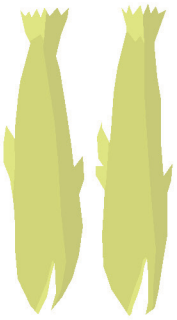
MILK

Vancouver, BC:	$
Edmonton, AB:	$
Saskatoon, SK:	$
Black Lake, SK:	$
Iqaluit, NT:	$
Your community:	$



POTATOES

Vancouver, BC:	$
Edmonton, AB:	$
Saskatoon, SK:	$
Black Lake, SK:	$
Iqaluit, NT:	$
Your community:	$

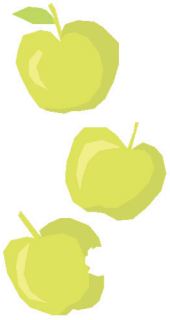


FISH

Vancouver, BC:	$
Edmonton, AB:	$
Saskatoon, SK:	$
Black Lake, SK:	$
Iqaluit, NT:	$
Your community:	$

BROCCOLI

Vancouver, BC:	$
Edmonton, AB:	$
Saskatoon, SK:	$
Black Lake, SK:	$
Iqaluit, NT:	$
Your community:	$

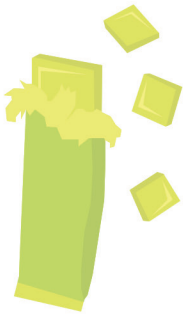


APPLES

Vancouver, BC:	$
Edmonton, AB:	$
Saskatoon, SK:	$
Black Lake, SK:	$
Iqaluit, NT:	$
Your community:	$

POTATO CHIPS

Vancouver, BC:	$
Edmonton, AB:	$
Saskatoon, SK:	$
Black Lake, SK:	$
Iqaluit, NT:	$
Your community:	$



CHOCOLATE BAR

Vancouver, BC:	$
Edmonton, AB:	$
Saskatoon, SK:	$
Black Lake, SK:	$
Iqaluit, NT:	$
Your community:	$

1 LITRE OF COKE

Vancouver, BC:	$
Edmonton, AB:	$
Saskatoon, SK:	$
Black Lake, SK:	$
Iqaluit, NT:	$
Your community:	$

MORE

APPENDIX J

TB TIMELINE

PAGE 1: 17TH CENTURY to 1867

17th Century

Tuberculosis was known by many names, such as *The Consumption* and *The White Plague*. While the disease has existed for many thousands of years, it was particularly prevalent in Europe during the 17th century, and would remain as such for the next hundred years.

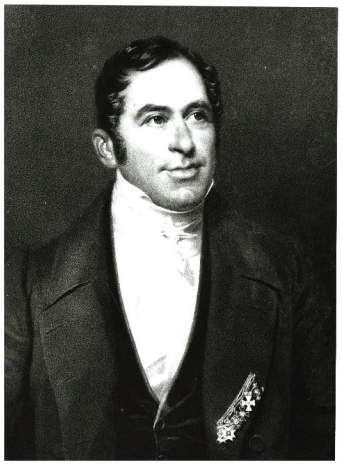
18th & 19th Century

At the turn of the century, tuberculosis was the cause of one out of every 4.2 deaths in London, England. The Industrial Revolution was in full force, and with it came poor living conditions in crowded cities – conditions perfect for TB to take hold of Europe's population.

1820s

Doctors realized that despite the many different ways that a person may present with TB, it is in fact a "unified disease", or "one disease" – that is, TB on its own causes all the symptoms and signs a person has, rather than several different diseases together.

1839



J.L. Schönlein gives the disease its medical name, "tuberculosis"

1854

Hermann Brehmer, a scientist who himself had TB, had a theory that tuberculosis was a curable disease which only needed a "healthier climate" in order to beat it. He relocated to the Himalayan Mountains, believing that being in higher elevations would help a person get over the disease. Miraculously, his TB was rendered inactive, and his findings were the basis for further development of sanatoria (the plural form of sanatorium!).

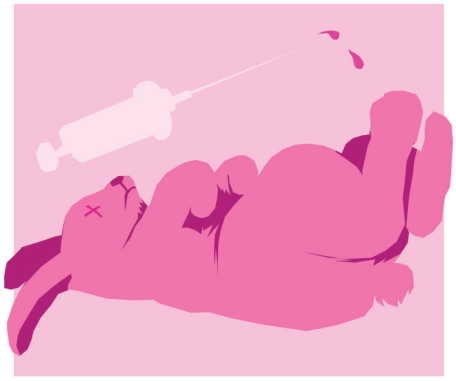
1842

Dr. John Croghan opens the first tuberculosis recovery program inside Mammoth Cave in Kentucky, USA. He thought the constant temperature inside the cave as well as the "purity of the cave air" would help cure patients of TB – ultimately, however, the experiment was a complete failure.

1867

Canada's Confederation. TB is the number one cause of death in Canada at the time.

1869



Jean A. Villemin discovers tuberculosis is contagious after injecting TB samples, harvested from people who had died from tuberculosis, into lab rabbits.

1882

On March 24 of this year, German scientist Robert Koch finally discovers the bacterium responsible for TB: *Mycobacterium tuberculosis*. This discovery proved that tuberculosis is a disease caused by bacteria, and not an inherited disease.

1885

First sanatorium opens in the US at Saranac Lake, New York.

1891

13,430 Aboriginal children in Canada were in residential schools.

IMAGES

TOP: William James Topley, Library and Archives Canada, accession number 1955-070 NPC, item p.11, C-015037

BOTTOM: J.F. Moran, Library and Archives Canada, accession number 1973-357 NPC, item 1922-86, PA-102575

1897

First sanatorium opens in Canada, at Gravenhurst, Ontario.

1900

The health of First Nations and Métis began to experience worse health outcomes due to being moved to Reserves where conditions of poverty, overcrowded housing and malnutrition existed, and due to the decline of the fur trade.

1904

Christmas Seals, a series of postage stamps sold as a fundraiser for TB research and programs, starts in Denmark. Canada and the US would later adopt them (1907/08) in their own TB fundraising efforts.

1905

A Canadian petition to the federal government sparks plans for a sanatorium located in each province across the country, to help combat the deadly spread of tuberculosis.

1906

The BCG vaccine (discovered by Albert Calmette and Camille Guérin, the acronym combines the two scientists' names) is discovered. Though it was proved to have some success against tuberculosis, it wasn't used to vaccinate humans until 1921, in France.

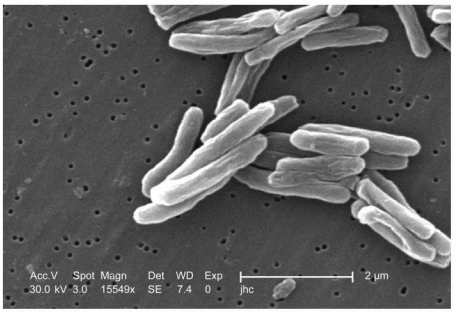


IMAGE: *Mycobacterium tuberculosis*

1907

A movement prohibiting spitting in public began in the US, in hopes of curbing the disease's spread.

1908

Charles Mantoux uses research done by Robert Koch years earlier to develop the Mantoux Tuberculin Skin Test, a good way of diagnosing (finding) latent TB infection in a person.

1909

Death rate of TB in residential schools in Canada was 8000/100,000, which was greater than the birth rate at the time.

1914

The Department of Indian Affairs appoints a "deputy minister", though the responsibility for health of First Nations was not clear; the responsibility was not accepted wholly by federal or provincial governments.

1916

While sanatoria were supposed to be clean, restful facilities where TB patients could get fresh air and have a healthful lifestyle to aid in their recovery, the Industrial Revolution era sanatoria were nothing of the like. In Europe, sanatoria were overcrowded with poor, working-class people, and over half of the people who entered them did not come out alive.

1931

The TB death rate among Aboriginals in Saskatchewan was 517 per 100,000, compared with 27 per 100,000 among the general population: *19 times the rate.*

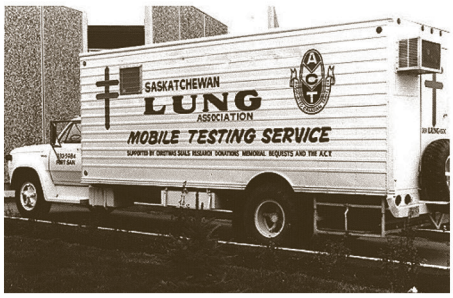
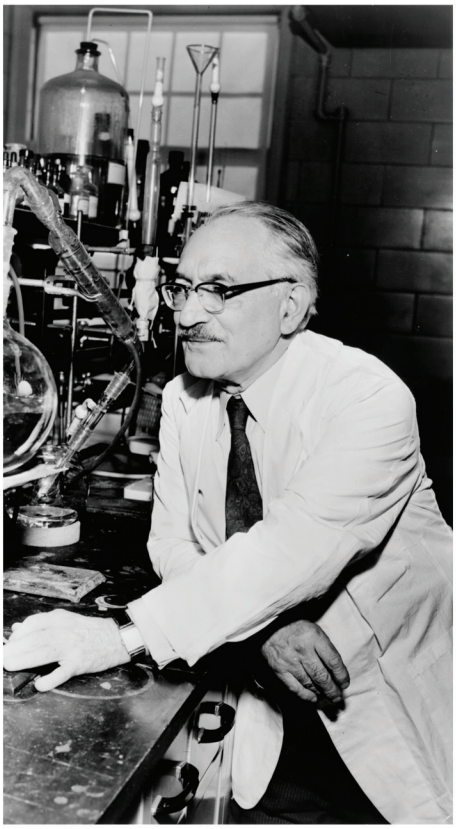


IMAGE: Canadian Lung Association *(www.lung.ca)*

1944



The first successful antibiotic against TB is discovered by Selman A. Waksman and his colleagues. This antibiotic, and ones that came after it, markedly reduced the prevalence of tuberculosis world-wide.

1945

Indian medical services became part of the Department of National Health and Welfare. New services were set up to address discrepancies in the health care of Aboriginals, and increased services for TB diagnosis and treatment (including access to Sanatoria for those with the disease) were put in place.

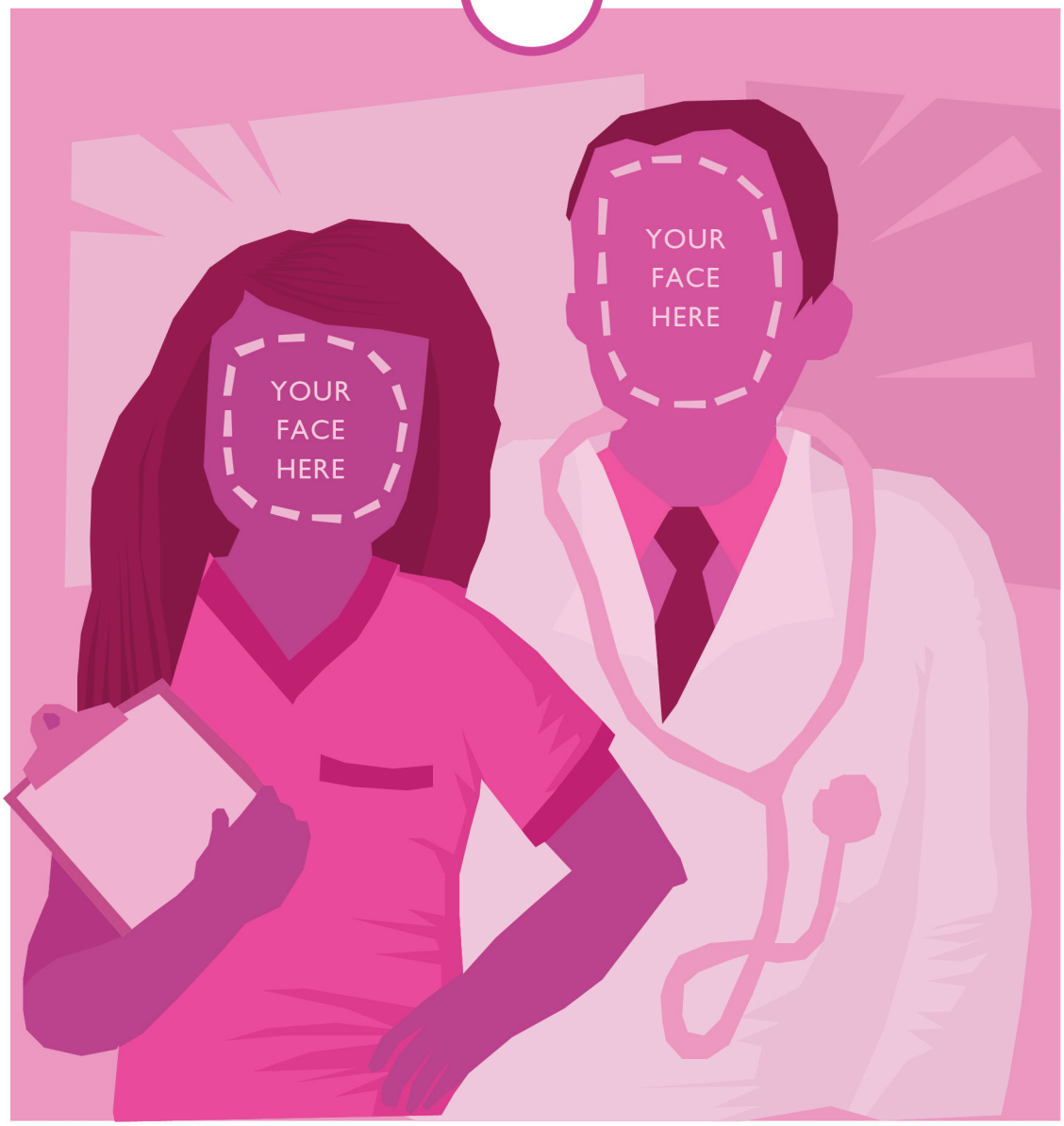
1980s

A resurgence of TB occurs, due to the rise in HIV/AIDS cases.

TODAY

TB remains a global public health issue, despite the fact that it is a curable disease. Between 8 or 9 (or more) million new cases of TB are reported every year.

FUTURE



Get involved to help the fight against TB in your community!

APPENDIX K

did you know?

SANATORIA

Sanatorium (Sanatoria) History

In the year 1854, Hermann Brehmer, a scientist who had TB himself, had a theory that TB was a curable disease that needed a "healthier climate" to beat it. He relocated to the Himalayan Mountains, believing that being in higher elevations would help people rid themselves of the disease. Miraculously, his TB was rendered inactive and his findings were the basis for further development of sanatoria (the plural form of sanatorium!). In fact, Brehmer opened the first sanatorium in Poland in 1863. Afterward, many Sanatoria opened across Europe and especially in the Swiss Alps.

SANATORIUM, DEFINED

Sanatoria were places of rest for patients suffering from TB. The founding principles of Sanatoria were that rest, good nutrition, high altitude and sunlight would help people regain the strength necessary to fight the disease.

By the year 1938, there were 61 Sanatoria in Canada with 9000 beds, which rose to 19,000 beds by 1953. During this time, many TB patients living in the north were relocated from their homes to Sanatoria in the southern parts of the provinces. Many people never returned; several died, and many could not communicate the whereabouts of their homes and families because English was not their first language.

In the second half of the 20th century, Sanatoria were beginning to close, be repurposed or be demolished worldwide. The end of the Sanatoria Era was due to the discovery of anti-TB drugs which were demonstrated to be able to rapidly render patients non-infectious, and if taken for the prescribed period of time, cured of the disease.

FOR MORE INFORMATION:

For more detailed information about the Sanatorium Era, check out these helpful and informative websites:

http://archives.cbc.ca/health/disease/topics/883-5325/
http://www.lung.ca/tb/tbhistory/sanatoriums/

IMAGE: Gowen Sutton Co. Ltd (Publisher) . Provincial Tubercular Sanitarium, Saskatoon, Sask. Vancouver: Published by the Gowen Sutton Co. Ltd., Vancouver, B.C, [after 1925].

APPENDIX L

MORE ACTIVITIES

Example Activities

Here are a few examples of activities that will teach any of the concepts of the Resource Guide, and an explanation of how they might be incorporated into a variety of lesson plans and subjects.

Script Writing

Why not have your students write a script involving TB as a subject? Students could play the roles of doctors, health care workers, patients with TB, or maybe even just themselves, taking turns pretending they have tuberculosis and speaking to their friends about it. This would be an excellent activity for a Language Arts class, a Drama class, or a Social Studies class.

Poster Making

Have students create posters to hang in the classroom or around the school to demonstrate their new knowledge on TB. Almost any class could use this activity, depending on the aspect of tuberculosis awareness you used. For example, in Science classes, students could focus on the biology of the disease, while in Math students would include TB statistics and calculate probabilities.

INTERACTIVE POSTER MAKING

For a cool activity your students might enjoy in classes such as Computing Sciences, check out *Glogster*. It's a website where students can make interactive posters!

www.glogster.com

MORE

MORE ACTIVITIES

Using Technology

Look to technological innovations as teaching tools if available. Some software or resources you might use include: digital cameras, Photoshop, iMovie, etc. Students are likely to retain more of the information you provide to them if they are learning how to use an interesting new technology at the same time. For example, you could have the students use digital cameras to produce movies of skits about TB that they write themselves, and then have a "movie day" where everyone shows off their videos to the class and eats popcorn!

Comic Strips

Have your class write comic strips or comic books about what they learned about tuberculosis. This can be a fun and interactive way for students to retain the information you have provided to them. By putting it into a more youth-friendly format with stories and characters they make up themselves, the subject will naturally be of more interest to them. You can even photocopy all the comics the students make up and staple them into a bigger comic "book", for each student to take home and potentially share with their friends and family. A Language Arts class would be a good fit for this activity, but Art class would be another clear choice. You could even tailor the subject so that a Social Studies, Math, or Science class could use the activity seamlessly.

APPENDIX L

EXAMPLE

IMAGE:
Collin Montgrand,
Grade Eight

Check out this drawing by Collin Montgrand! This is an excellent example of what students can do to create posters that illustrate their newfound knowledge of TB!

SYMPTOMS of TB disease:

COUGH (3 weeks or longer) & FEVER

ALONG WITH

- WEIGHT LOSS
- NIGHT SWEATS
- FEELING TIRED
- CHEST PAIN
- COUGHING UP BLOOD AND/OR SPUTUM
- PERSISTANT, UNEXPLAINED LUMP(S) IN THE NECK

If you have these symptoms, visit your health care provider right away!

Early treatment helps stop the spread of TB!

SUMMARY

Summary to the Resource Guide

In Canada, TB is predominantly found in the foreign-born (immigrant) population, and the Aboriginal peoples. This guide is intended to provide knowledge about the TB germ and its spread in order to prevent disease. In particular, this guide is intended for use in Aboriginal classrooms, but the information could be used by any high-school-aged student to further their knowledge about disease in general, TB in particular, and the social determinants of health. The effort to erradicate TB, as spurred by the advent of antibiotic therapy in the 1940's and 1950's, saw a rapid decline in disease rates that has since lost momentum and effectiveness in the First Nations of the Prairies and the Inuit of the Central Arctic. The re-emergence of TB as a serious public health threat in recent years has little to do with the biomedical challenges of treatment and much more to do with our failure to understand TB in the context of social disparities, socio-cultural influences, environmental factors, HIV co-infection, and the inevitable interplay of these variables on the public conscience and political will. This guide provides the resources to explore, in the classroom, and among successive cohorts of First Nations, and Métis youth, the public health challenge and social inequities that TB represents, its connection to other communicable diseases, housing, indoor air quality, recreational smoking, and nutrition. Moreover, the information provided herein aims to de-stigmatize tuberculosis within Aboriginal culture by recounting the history of the disease, and promoting the idea that positive changes in one's lifestyle fosters good health. Finally it undertakes to promote public health career choices to Aboriginal youth, and foster an appreciation of and respect for Aboriginal identity and the Aboriginal experience of TB among non-Aboriginal youth.

Age is an important determinant of the infectiousness of TB; those under 15 years of age are less likely to spread TB. Healthy adolescents and adults in the age group 15-24 years tend to minimize their symptoms and delay trips to the health clinic to the point of becoming active transmitters of TB. Thus, the target population of this education-based intervention is grades 8-12 students. The foundation for developing this resource guide was a *Knowledge, Attitudes and Practices Baseline Needs Assessment* (KAP-BNA) survey administered to students in three high-incidence communities in the Prairie Provinces. The survey was, for the most part, restricted to grade 9 and 10 students, as we had forseen that they would be old enough to have formed an opinion about the disease. As anticipated, students in this age group who had heard about TB did indeed have well-entrenched opinions about the disease, but their knowledge was quite superficial, especially with respect to transmission and risk factors. Overall we found that 50% of our respondents had no knowledge of TB; the remaining 50% had only minimal knowledge of TB.

The team that put this resource guide together brings in-depth knowledge of lung health, TB, Aboriginal health and education across the Prairies and in the North. Together with national TB stakeholders, and in line with recommendations from the "Think Tank on the Future of Public Health in Canada", we aim to strengthen TB elimination strategies and empower generational networks of Aboriginal youth to address inequalities in health outcomes.

GLOSSARY

Words to Know

AIDS	*(Acquired Immune Deficiency Syndrome)* A communicable disease caused by the HIV virus, that results in a severely weakened immune system.
Air	The oxygen you breathe that keeps you alive! It is invisible.
Antibiotics	"A medicine" that kills harmful germs.
Bacteria	Commonly called *"germs"*. Some are helpful, some can cause infection or disease.
Breathe	Moving air in and out of the lungs.
Chest	The part of the body protected by the ribs and sternum; where your heart and lungs are!
Communicable	AKA "contagious", or "infectious"!!
Compromised	Weakened.
Cough	Sometimes caused by a tickle, a cough is a forcible exhalation of air from the lungs that comes with a sound or series of sounds.
Crowded Housing	Two or more people sharing a room in a house; when the number of persons sharing a room is excessive and likely to lead to ill health.
Doctor	A professional person who can help to heal you and make you well.
Fatigue	Feeling weak or tired for an extended period of time.
Fever	When the temperature of your body is higher than normal.
Germ	A teeny tiny living thing that causes infection or disease, AKA bacteria.
Health	When all the elements of well being are in balance – physical, spiritual, emotional and mental.
Immune System	The part of the body that does battle against germs and protects against illness.
Infection	When a harmful germ lives in or on your body.

GLOSSARY

Words to Know

Infectious	Having the ability to communicate infection.
Interconnectedness	Two or more things that are connected or linked to one another.
Lungs	The organ inside your chest that is responsible for taking up oxygen (inhalation) and getting rid of carbon dioxide (exhalation). This process is known as breathing!
Mantoux Test (*or* Tuberculin Skin Test)	Fluid injected under the skin of the arm to test for the presence of tuberculosis infection. Reactivity to this fluid is measured two to three days later by a trained health care worker.
Nurse	A professional person trained to care for sick or injured people, and who works either independently or under the supervision of a doctor.
Pathogen	A germ (for example, a bacterium or virus) that causes disease.
Phlegm	An excess amount of thick mucus produced in the respiratory system
Poverty	Having little to no money or possessions.
Respiratory System	A system of organs that help you breathe.
Sick	Being unwell; having one of the elements of health out of balance (physical, spiritual, emotional and mental)
Sleeping TB	AKA LTBI (latent TB infection) occurs when a person has breathed in the TB germ at some point in their lives, but has a strong enough immune system to keep it sleeping inside the body. In such a state, the germ does is not causing active disease, nor can it be passed on to others.
Social	Being involved in groups or communities.
Sputum	Phlegm that is spit or coughed up from the lungs.
Tuberculosis	(TB) Is a bacterial infection caused by a germ called *Mycobacterium tuberculosis*. The bacteria usual attack the lungs, but they can also damage other parts of the body. TB spreads through the air when a person with infectious TB of the lung coughs, sneezes or talks.
X-ray	A photograph of your bones or insides taken with a special machine.

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FEEDBACK

The Tuberculosis Education Project invites your reflections to this resource guide. Please complete and return this feedback form to us in one of the following ways:

EMAIL: tbperu.uofa@gmail.com
FAX: 1-780-407-1429
MAIL: 8334A Aberhart Centre
11402 University Ave
Edmonton, AB, Canada
T6G 2J3

1. What is your position in your community?
- parent
- teacher, resource teacher
- guidance counsellor, school administrator, or school board trustee
- teacher-librarian ,school board member
- TB worker, nurse
- other *(please indicate)*

2. What was your purpose for looking at or using this resource guide?

2A) Which format(s) of the resource guide did you use?
- print
- online
- both

2B) Which format(s) of the resource guide do you prefer?
- print
- online
- both

3. How does this resource guide address the needs of your learning community or organization? *Please explain.*

4. Please respond to each of the following statements by circling the applicable number.

(1= Strongly Agree, 2= Agree, 3= Disagree, 4= Strongly Disagree)

The resource guide content is:

A) Appropriate for its intended purpose

1 2 3 4

B. Suitable for your use

1 2 3 4

C. Clear and well organized

1 2 3 4

D. Visually appealing

1 2 3 4

E. Informative

1 2 3 4

5. Please explain which aspects you found to be:

A) Most useful:

B) Least useful:

6. Additional Comments:

7. Optional:

Name:

School or Organization:

Phone: Fax:

Thank you for taking the time to provide this valuable feedback!