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Childhood Tuberculosis Education Tools

for Children and their Families

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TB ALLIANCE

www.tballiance.org

Acknowledgments

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I. Executive Summary: Childhood TB Toolkit

BACKGROUND AND PURPOSE

Although the TB burden is high in both children and adults, much of the attention on TB in the past has been focused on adult TB. However, ending the childhood TB epidemic has gained more recent attention (e.g. Road map for Childhood TB). Many people and organizations around the world are devoting their efforts to better understanding childhood TB—differences between adult and childhood TB, risk factors, prevention methods, diagnosing childhood TB, and finding better treatments designed specifically for children.

A comprehensive search was performed to understand materials about childhood tuberculosis that are in use, in addition to finding materials designed to instruct children and adolescents about tuberculosis. While there are several resources available for health workers to diagnose and manage childhood TB, very few materials have been developed to educate children and their families directly about TB. Educating children and their families will allow for more of a community effort to help fight TB. A grassroots approach to engage children in learning about TB and childhood TB will result in increased case detection and treatment through symptom recognition and contact tracing. Several key messages reinforced throughout the toolkit will allow children to understand the impact of TB on families and communities, the importance of contact tracing and treatment adherence, risk factors and prevention methods, differences between childhood TB and adult TB, and general awareness of tuberculosis and how it affects our community.

Thorough research about interactive materials and activities appropriate for children and adolescents was performed. A wide breadth of materials were developed in hopes of providing several means to help educate children about tuberculosis.

COMPONENTS

The toolkit is composed of several components to help facilitators teach students in different and interactive ways. The toolkit is comprised of:

- **Video:** A young child describes key concepts of how tuberculosis affects children and adults in a 6 minute personal drawing video.
- **Activity book:** An activity book was designed for children to engage in learning more about tuberculosis through interactive activities that can be played individually or with other family members.
- **PowerPoint presentation:** A PowerPoint presentation was created to complement the video by expanding on images and concepts described in the video.
- **Toolkit:** A comprehensive toolkit was developed to help aid instructors and facilitators teach children about tuberculosis through workshop activities and a discussion guide.
- **Questionnaires analysis template:** Sample pre- and post-workshop questionnaires are provided in the toolkit. The analysis template is an excel document that allows instructors and facilitators to analyze the effectiveness of the workshop by inputting the results of the pre- and post-workshop questionnaires.
- **Handout:** A one page handout was also developed to highlight key facts about childhood tuberculosis, including transmission, prevention methods, and common symptoms.

I. Executive Summary: Childhood TB Toolkit *(continued)*

PILOT WORKSHOP

A pilot workshop was performed with CAB members in Delft, South Africa. Thirty students participated in the pilot workshop, ranging from ages 13 to 15. The facilitators used many of the training materials, including the video, the toolkit, and the handouts. Feedback on the materials used were very positive, and the school was enthusiastic about performing another workshop to educate children about tuberculosis.

FUTURE DIRECTIONS

A broader scope of implementation of the materials should be considered. With the completion of the materials, a strategy to expand the reach will need to be developed. This may include, but is not limited to, engaging partners in widespread dissemination and implementation of the materials developed. The materials have the potential to impact many communities and engage children and their families in the fight to end tuberculosis.



II. Toolkit Overview and Purpose

INTRODUCTION

The burden of childhood TB, and the number of cases in low resource settings is unacceptably high. In 2013, the WHO estimated that up to 80,000 children without HIV infection died from TB and over half a million new pediatric TB cases were diagnosed; there are no official estimates for HIV-infected children who have a much greater risk of TB disease and death. Many of these childhood TB cases and deaths could be prevented with earlier detection, improved contact tracing and reporting, and better tools to diagnose, treat and prevent TB in all affected populations. Although there is increasing awareness and activities around childhood TB at the global as well as country level, many gaps and challenges still need to be addressed. Many efforts to educate and engage the community in pediatric TB typically target health providers (nurses, doctors, etc.) and are less able to raise awareness among affected children and their families. A grassroots strategy to educate those directly affected by pediatric TB and their close contacts will promote more effective engagement with key populations needed to combat pediatric TB.

BACKGROUND

Globally, it is estimated that over 550,000 children suffer from TB each year and many children die unnecessarily each year from this fully curable disease. The actual burden of TB is likely higher than this because there are challenges associated with diagnosing children, and the number of childhood cases are likely underreported. Childhood TB is prevalent wherever there are high rates of adult TB. 20 countries in the world carry greater than 80% of the global TB burden, and additional countries are struggling to combat extremely high incidence rates of TB.

Although the TB burden is high in both children and adults, much of the attention on TB in the past has been focused on adult TB. However, ending the childhood TB epidemic has gained more recent attention (e.g. Roadmap for Childhood TB). Many people and organizations around the world are devoting their efforts to better understanding childhood TB—differences between adult and childhood TB, risk factors, prevention methods, diagnosing childhood TB, and finding better treatments designed specifically for children.

Many of the deaths relating to childhood TB can be prevented through knowledge of childhood TB resulting in better prevention and earlier diagnosis. Understanding the risks for infection and disease can help prevent transmission of TB to children, earlier diagnosis, and earlier treatment. Most children who develop TB disease will develop pulmonary TB. However, children are susceptible to developing more serious forms of TB, such as meningitis, which increases the childhood morbidity and mortality rates. Knowledge of the risk factors, prevention methods, diagnosis through contact tracing, and adherence to treatment is critically important to helping combat childhood TB.

A world free of TB starts with a community free of TB. Together, we can help to prevent the needless suffering of children resulting from tuberculosis.

II. Toolkit Overview and Purpose *(continued)*

CHALLENGES

Although childhood TB has been neglected in the past, ending the TB epidemic in children has now gained more attention worldwide in the last decade. There are still many challenges associated with childhood TB. Since children can have non-specific symptoms when they have TB disease, a diagnosis of TB can be missed or overlooked. Children often develop a form of TB called extra-pulmonary TB, which is when the bacteria spread from the lungs to other parts of the body. Some types of extra-pulmonary TB can be difficult to treat. An understanding of how children get TB, how to recognize TB in children, and knowing when to take a child to a clinic can result in earlier diagnosis leading to earlier treatment.

Once diagnosed, treatment for children can also be challenging. Currently, most formulations have been designed for adult TB patients. Pills must often be crushed for appropriate pediatric dosages, often leading to non-adherence to the full treatment. Patients also often begin to feel better even though the treatment may not be complete, which can make them want to stop taking the medications for the full course of treatment, increasing their risk for developing drug-resistant TB. Researchers are continuously working on new, effective formulations and dosages that are specifically designed for children. Furthermore, researchers are developing shorter treatments that have fewer side effects.

Adherence to treatment for children can be another challenge that can result in devastating consequences if treatment is missed, irregular, or stopped early. Children or their guardians often do not complete treatment, but adherence to the full course of treatment is crucial for curing and preventing the spread of TB and developing more complicated forms of TB. Helping a child remember to take medication for the full course and providing support throughout the treatment can significantly improve the effectiveness of the treatment.

Community knowledge and support for those affected by TB can help reduce stigma associated with TB. Challenges in childhood TB can be overcome through community efforts.

PURPOSE / GOALS

While there are several resources available for health workers to diagnose and manage childhood TB, very few materials have been developed to educate children and their families directly about TB. Educating children and their families will allow for more of a community effort to help fight TB. A grassroots approach to engage children in learning about TB and childhood TB will result in increased case detection and treatment through symptom recognition and contact tracing. Several key messages reinforced throughout the toolkit will allow children to understand the impact of TB on families and communities, the importance of contact tracing and treatment adherence, risk factors and prevention methods, differences between childhood TB and adult TB, and general awareness of tuberculosis and how it affects our community. This toolkit is designed to provide instructors with a variety of teaching methods—a video, PowerPoint presentation, in-class activities, and a take-home activity book. The materials have been developed for children and adolescents aged between 7 and 18 years, although many of them are still appropriate for older children and adults. Many of the materials can be used without any additional resources, and can be complemented with a video and PowerPoint presentation, if there are resources available.

II. Toolkit Overview and Purpose *(continued)*

What is the Childhood Tuberculosis Education Tools for Children and Their Families?

This Toolkit is designed to help educate children and their families about childhood TB in an interactive manner. In particular, this toolkit provides basic information about the following topics:

- Childhood TB vs. Adult TB
- Transmission and Exposure
- Types of TB
- Risk Factors
- Prevention Methods
- Contact Tracing
- Diagnosis
- Treatment
- Research

The toolkit has several interactive activities that can be adapted based on the age range of the target audience. The activities are arranged by age range and provide detailed instructions and materials needed for each activity.

Who should use this toolkit?

The toolkit can be used by any individuals or groups involved in outreach and advocacy activities for children and their families. Everyone who plans to use the toolkit to train or educate others should have a thorough background understanding of childhood TB.

How is this toolkit used?

The toolkit has a variety of different activities. The intent is to allow users to choose the activities that are most appropriate for their target audience, setting, and time constraints. Some activities are individual activities, whereas others are group based, which allows for any number of participants.

Knowledge level

The toolkit has been designed for children with little or no background knowledge of childhood TB. It uses lay language but introduces important terms about TB. The material was created for anyone from 7–18 years old, although many adults could also benefit from the information.

Length of workshop

The length of the workshop is dependent on availability. The time required for each activity is provided and activities can be selected based on time constraints. Note that the time required is estimated, and likely can be adapted based on your needs. Suggested agendas are also included in this toolkit for different lengths of workshops and different age ranges.

Can trainers adapt sessions?

Yes. While each session has been written with specific instructions, trainers should feel free to adapt sessions as needed. Trainers may alter the timing of sessions depending, or adapt the content, as needed.

Trainers should also consider adapting sessions based on the cultural context of trainees. Sessions have been developed with generic content, and where possible, trainers may choose to include culturally-relevant examples, metaphors, or stories as a way to make lessons more relevant to trainees.

II. Toolkit Overview and Purpose *(continued)*

Trainer's checklist

- Determine day, target audience (age range, number of participants), location, and time available
- Get necessary approval to perform the workshop
- Based on the age range and number of participants, decide on an agenda. See “Suggested Curriculum Overview” and “Suggested Workshop Agendas” for ideas
- Read through the leader instructions in the In-Class Activities section and in the PowerPoint Discussion Guide. Gather any resources, materials, and prizes described in the instructions. Make copies of any handouts to distribute to the students.

Toolkit Components

- Video
- Pre- and post-workshop questionnaire
- PowerPoint presentation/slides (with associated discussion guide)
- Curriculum overview: important information to know
- Suggested workshop agendas
 - There are several activities that can be accommodated based on timing needs and based on age of the target audience. The suggested workshop agendas will put together several different agendas based on different times and different audiences.
- In class activities: fully developed activity guide with teacher instructions
- Resources: additional resources that can be used to supplement learning materials
- Take-home activity book

III. Suggested Curriculum Overview

AGE RANGE: 7-11

• Passing the Ball.....	38
• Sequencing Events.....	49
• Two Lies and a Truth.....	53
• How Many of You.....	60
• My First Experiment.....	61

AGE RANGE: 11-14

• Passing the Ball.....	38
• Guessing Game.....	41
• Group Questions.....	46
• Sequencing Events.....	49
• Skit—Interactive Performance.....	51
• Two Lies and a Truth.....	53
• Role Play Scenarios.....	55
• How Many of You.....	60
• My First Experiment.....	61
• Campaign Work.....	64

AGE RANGE: 14-18

• Guessing Game.....	41
• Group Questions.....	46
• Skit—Interactive Performance.....	51
• Role Play Scenarios.....	55
• How Many of You.....	60
• Campaign Work.....	64

IV. Suggested Workshop Agendas

LENGTH OF TRAINING: 1 HOUR

AGES: 7-11	
10:00-10:05	Introduction: introduce yourself and purpose of the workshop, give pre-workshop questionnaire
10:05-10:15	Show video
10:15-10:25	PowerPoint presentation
10:25-10:55	ONE of the following activities: <ul style="list-style-type: none"> • <i>Passing the Ball Game</i> • <i>Sequencing events</i> • <i>Two lies and a truth</i>
10:55-11:00	Conclusion: post-workshop questionnaire, ask if there are any questions and provide resources for enhanced learning (including the activity booklet and handout)

AGES: 11-14	
10:00-10:05	Introduction: introduce yourself and purpose of the workshop, give pre-workshop questionnaire
10:05-10:15	Show video
10:15-10:25	PowerPoint presentation
10:25-10:55	ONE of the following activities: <ul style="list-style-type: none"> • <i>Passing the Ball Game</i> • <i>Guessing Game</i> • <i>Group questions</i> • <i>Sequencing events</i> • <i>Two lies and a truth</i>
10:55-11:00	Conclusion: post-workshop questionnaire, ask if there are any questions and provide resources for enhanced learning (including the activity booklet and handout)

AGES: 14-18	
10:00-10:05	Introduction: introduce yourself and purpose of the workshop, give pre-workshop questionnaire
10:05-10:15	Show video
10:15-10:25	PowerPoint presentation
10:25-10:55	ONE of the following activities: <ul style="list-style-type: none"> • <i>Guessing Game</i> • <i>Group questions</i>
10:55-11:00	Conclusion: post-workshop questionnaire, ask if there are any questions and provide resources for enhanced learning (including the activity booklet and handout)

IV. Suggested Workshop Agendas (continued)

LENGTH OF TRAINING: 2 HOURS

AGES: 7-11			
10:00-10:05	Introduction: introduce yourself and purpose of the workshop, give pre-workshop questionnaire		
10:05-10:15	Show video		
10:15-10:25	PowerPoint presentation		
10:25-11:55	ONE of the following activities: <ul style="list-style-type: none"> • <i>Passing the Ball</i> • <i>Sequencing Events</i> • <i>Two Lies and a Truth</i> 	AND	BOTH of the following activities: <ul style="list-style-type: none"> • <i>How Many of You</i> • <i>My First Experiment</i>
11:55-12:00	Conclusion: post-workshop questionnaire, ask if there are any questions and provide resources for enhanced learning (including the activity booklet and handout)		

AGES: 11-14					
10:00-10:05	Introduction: introduce yourself and purpose of the workshop, give pre-workshop questionnaire				
10:05-10:15	Show video				
10:15-10:25	PowerPoint presentation				
10:25-11:55	ONE of the following activities: <ul style="list-style-type: none"> • <i>Passing the Ball</i> • <i>Group Questions</i> • <i>Sequencing Events</i> • <i>Two Lies and a Truth</i> 	AND	ONE of the following activities: <ul style="list-style-type: none"> • <i>How Many of You</i> • <i>Guessing Game</i> 	AND	ONE of the following activities: <ul style="list-style-type: none"> • <i>Role Play Scenarios</i> • <i>My First Experiment</i> • <i>Campaign Work</i>
11:55-12:00	Conclusion: post-workshop questionnaire, ask if there are any questions and provide resources for enhanced learning (including the activity booklet and handout)				

AGES: 14-18			
10:00-10:05	Introduction: introduce yourself and purpose of the workshop, give pre-workshop questionnaire		
10:05-10:15	Show video		
10:15-10:25	PowerPoint presentation		
10:25-11:55	ONE of the following activities: <ul style="list-style-type: none"> • <i>Skit-Interactive Performance</i> 	AND	ONE of the following activities: <ul style="list-style-type: none"> • <i>How Many of You</i> • <i>Campaign Work</i> • <i>Guessing Game</i> • <i>Group Questions</i>
11:55-12:00	Conclusion: post-workshop questionnaire, ask if there are any questions and provide resources for enhanced learning (including the activity booklet and handout)		

Pre-Workshop Questionnaire

Please answer the questions below to the best of your ability.

1. Tuberculosis can affect:
 - a. Children
 - b. Adults
 - c. Only cows
 - d. Both children and adults

2. You can get TB from TB bacteria found in _____ :
 - a. Air
 - b. Water
 - c. Food
 - d. All of the above

3. Name two things that put someone at a higher risk for getting TB:
 - a. _____
 - b. _____

4. Circle the symptom that is **NOT** common in adults who have tuberculosis:
 - a. Cough for more than two weeks
 - b. Night sweats
 - c. Weight loss
 - d. Loss of appetite
 - e. Weight gain

Circle true or false for the following statements:

5. Tuberculosis can only be found in your lungs.
True False

6. Keeping windows and doors closed can help you prevent TB.
True False

7. If you think you may have tuberculosis, you should go to a doctor to get tested.
True False

8. Tuberculosis is curable if you take your treatment regularly until completion.
True False

9. If you start feeling better or have side effects from the medicine, you should stop taking your TB treatment.
True False

10. What are **two** questions you have about tuberculosis?

Post-Workshop Questionnaire

Please answer the questions below to the best of your ability.

1. Tuberculosis can affect:
 - a. Children
 - b. Adults
 - c. Only cows
 - d. Both children and adults

2. You can get TB from TB bacteria found in _____ :
 - a. Air
 - b. Water
 - c. Food
 - d. All of the above

3. Name two things that put someone at a higher risk for getting TB:
 - a. _____
 - b. _____

4. Circle the symptom that is **NOT** common in adults who have tuberculosis:
 - a. Cough for more than two weeks
 - b. Night sweats
 - c. Weight loss
 - d. Loss of appetite
 - e. Weight gain

Circle true or false for the following statements:

5. Tuberculosis can only be found in your lungs.
True False

6. Keeping windows and doors closed can help you prevent TB.
True False

7. If you think you may have tuberculosis, you should go to a doctor to get tested.
True False

8. Tuberculosis is curable if you take your treatment regularly until completion.
True False

9. If you start feeling better or have side effects from the medicine, you should stop taking your TB treatment.
True False

10. What are **two** things you learned about tuberculosis?

Workshop Questionnaire Answer Key

Please answer the questions below to the best of your ability.

1. Tuberculosis can affect:
 - a. Children
 - b. Adults
 - c. Only cows
 - d. Both children and adults**

2. You can get TB from TB bacteria found in _____ :
 - a. Air**
 - b. Water
 - c. Food
 - d. All of the above

3. Name two things that put someone at a higher risk for getting TB:
There are many factors including: exposure to someone with TB for long periods of time, poor ventilation, smoking, not eating well, etc.

4. Circle the symptom that is **NOT** common in adults who have tuberculosis:
 - a. Cough for more than two weeks
 - b. Night sweats
 - c. Weight loss
 - d. Loss of appetite
 - e. Weight gain**

Circle true or false for the following statements:

5. Tuberculosis can only be found in your lungs.
True **False**

6. Keeping windows and doors closed can help you prevent TB.
True **False**

7. If you think you may have tuberculosis, you should go to a doctor to get tested.
True False

8. Tuberculosis is curable if you take your treatment regularly until completion.
True False

9. If you start feeling better or have side effects from the medicine, you should stop taking your TB treatment.
True **False**

10. What are **two** questions you have about tuberculosis?
Open-ended


VI. PowerPoint Discussion Guide

This section provides talking points for discussion about childhood TB. The talking points correspond to the slides provided, but can also be used without a presentation. Feel free to adapt the talking points to fit your audience. Also note that commonly asked questions corresponding to each of the topics can be found in the next section: Commonly Asked Questions.

SLIDE 2: KNOWLEDGE IS POWER

Knowledge is Power

- **Knowing about tuberculosis can help you save lives!**
- **Earlier recognition of TB can lead to quicker treatment**
- **TB is curable if treatment is taken properly**



TB ALLIANCE Childhood TB Overview 2

Talking Points

- The presentation is designed to inform students about childhood tuberculosis, and what we can do to help prevent and treat TB
- Knowledge is power. Getting rid of TB needs to be a community effort, and all of us can help eliminate TB together. The first step is knowing the basics about TB
- Knowing about TB can help save lives:
 - Knowing what risk factors and prevention techniques can help you prevent yourself and others from getting TB
 - Understanding what to do if you suspect you or someone close to you may have TB will help with earlier diagnosis, and earlier treatment
- Emphasize that TB is curable, you just have to get diagnosed and follow the full treatment plan

SLIDE 3: WHAT IS TB?

What is TB?

- TB is one of the world's oldest illnesses
- TB affects millions of people all around the world, including in our community
- TB is easily transmitted through the air
- It is caused by bacteria
- TB bacteria usually attack the lungs, but can attack any part of the body such as the spine, brain and kidneys
- TB diagnosis in children can be different than TB in adults
- TB and HIV are often linked so it is important to know your status for both illnesses

TB is curable if treatment is taken properly

Color	Estimated new TB cases (all forms) per 100,000 population per year
Lightest Green	0-9.9
Light Green	10-19
Medium-Light Green	20-49
Medium Green	50-124
Medium-Dark Green	125-299
Dark Green	300-499
Darkest Green	≥500
White	No data
Grey	Not applicable

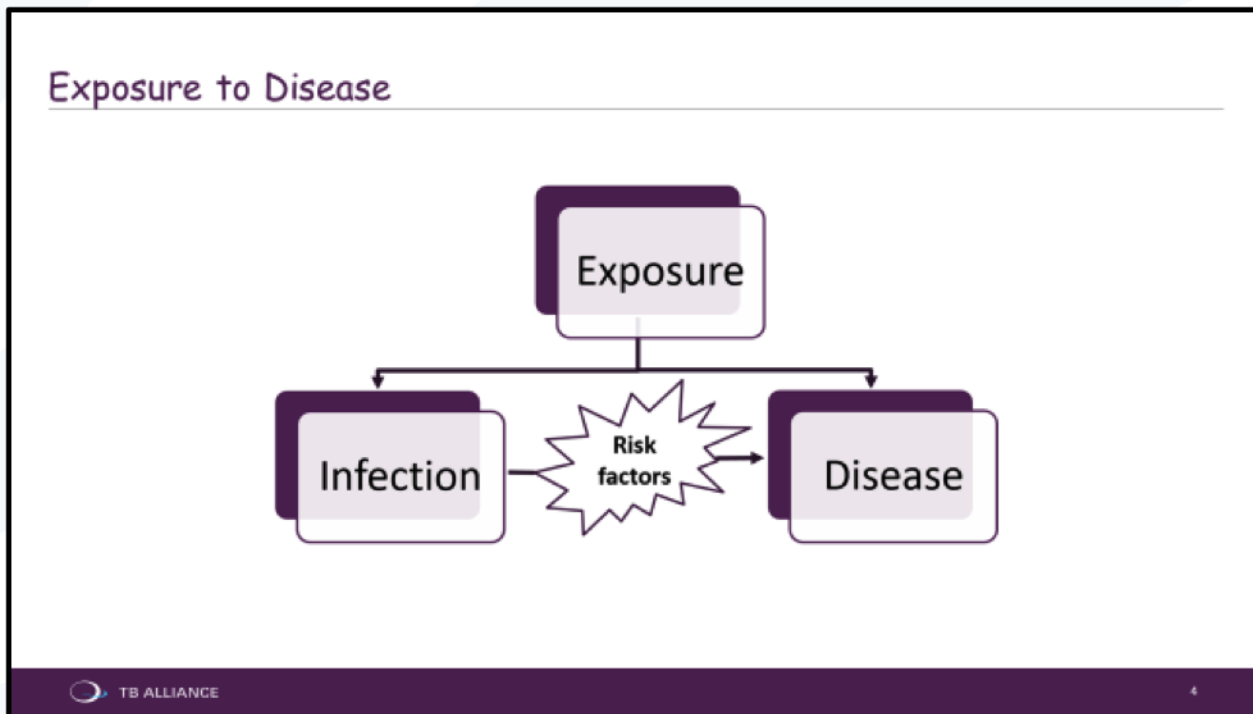
8

TB ALLIANCE

Talking Points

- TB is one of the world's oldest illnesses and affects people all over the world (point to image)
 - Mention that the darker green countries have a higher burden of TB
 - Point to the country you are presenting in, mention that there is a high burden so we must work together to get rid of TB in our community
- Why is TB such a big problem in our community?
 - TB is very infectious, which means it is spread very easily from one person to another person
- TB is caused by a bacterium called Mycobacterium tuberculosis.
 - Explain what bacteria is: Bacteria is a really tiny organism that you can't see. Sometimes bacteria can be good for you, but sometimes bacteria can be very bad for you, like TB bacteria, and can make you sick.
 - When someone who has TB coughs or sneezes, the bacteria go into the air and someone nearby can breathe in the bacteria
- TB bacteria usually go into your lungs, but they can spread to any part of your body, like your brain, your bones or your kidneys
- One thing to keep in mind is that TB in children, like you, can be very different than TB in adults. Mention that there are a lot of reasons for this, and you will talk about this later.
- Emphasize that there is treatment available for TB that will cure them as long as they take their treatment properly and finish the entire treatment.

SLIDE 4: EXPOSURE TO DISEASE



Talking Points



- We know a lot about TB, including how you get exposed to TB, how you can get infected with TB bacteria, and how you can get TB disease.
- Being exposed to the bacteria does not necessarily make you sick, and there are certain risk factors that make you more susceptible for getting infected or having TB disease.
- TB infection refers to when the bacteria are “sleeping” in you, and do not make you sick. But they can “wake up” and make you have TB disease, which does make you sick.

VI. PowerPoint Discussion Guide (continued)

SLIDE 5: EXPOSURE

Exposure

Transmission: TB is easily spread through the air



- Airborne transmission: spread very easily through the air and can infect lots of people
- TB bacteria typically infect your lungs

TB ALLIANCE 5


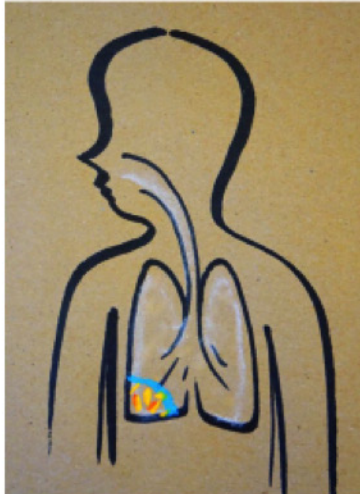
Talking Points

- When someone who has active TB coughs (talks, sneezes, etc), bacteria in tiny droplets are dispersed into the air. Someone else who is a close contact (for example someone in your family) can breathe in these droplets with TB bacteria and become infected.
- This form of transmission is called airborne transmission. TB bacteria are very easily spread through the air, but only through the air. That's why it is very important to cover your mouth when you cough so that you don't spread TB to others if you have it.
- TB bacteria are not spread on surfaces such as cups or spoons. TB bacteria become inactive as soon as they touch a surface.
- When you breathe in the bacteria, they first go into your lungs (point to lungs in image on right)

SLIDE 6: INFECTION

Infection
TB infection: Inactive form

- TB bacteria do not always make you sick
- Bacteria can be walled off and can stay in the lungs "sleeping" for a very long time → **TB infection**
- Cannot transmit TB to others
- Do not have any symptoms or feel sick



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TB ALLIANCE

Talking Points

- Having TB bacteria in your body does not always make you sick, but it does mean you are infected.
- Your body will try to fight the TB bacteria and keep you healthy
- Sometimes, your immune system can create a barrier around the TB bacteria so they can't grow anymore (point to image). These bacteria can "sleep" inside of you, or remain inactive, for a very long time. This form of TB is called Latent TB
- When the TB bacteria are inactive, they do not grow and you cannot transmit the bacteria to other people. You also won't experience any symptoms!
- But, these inactive bacteria can "wake up" and become active at some point during your life. In children, this often happens within a year after having been exposed to TB. Active TB does make you sick, and you can transmit TB bacteria to others.

SLIDE 7: RISK FACTORS

Risk Factors
Certain factors put us more at risk for getting TB



ENVIRONMENTAL FACTORS:


- Staying in closed areas with little air flow

AGE:

- Young children
- Elderly

OTHER ILLNESSES:

- HIV
- Diabetes
- Malnutrition




TB ALLIANCE 7

Talking Points

- There are some environmental factors that also put you more at risk for getting infected with TB bacteria. Staying in closed areas that have very little air flow puts you more at risk because the bacteria stays in the air around you. Staying in closed crowded areas also puts you more at risk.
- There are certain factors that put us at more risk for getting TB disease after having been infected.
- Age affects your body's ability to fight the bacteria. When you are really young (less than five years old), then your immune system is still developing so your body may not be able to fight the bacteria as well. This makes you more at risk for getting TB. The elderly are also more at risk for getting TB.
- People with other illnesses, such as HIV or diabetes, are at a much higher risk for getting TB because their bodies are already fighting another illness and the immune system is weakened. Malnutrition also increases the risk for TB.


SLIDE 8: WE CAN HELP PREVENT TB!

We can help prevent TB!



ENVIRONMENTAL FACTORS

- Keep doors and windows open to allow for air flow
- Avoid crowded areas for long amounts of time



PREVENT THE SPREAD

- Cover your cough
- Adhere to your full treatment
- Get tested often for early detection

PREVENTATIVE THERAPIES

- BCG vaccine- most young children have received this vaccine. It helps protect against some severe forms of TB.
- Medication- your doctor can give you medication (such as isoniazid) if you are at a higher risk for getting TB.

TB ALLIANCE 8

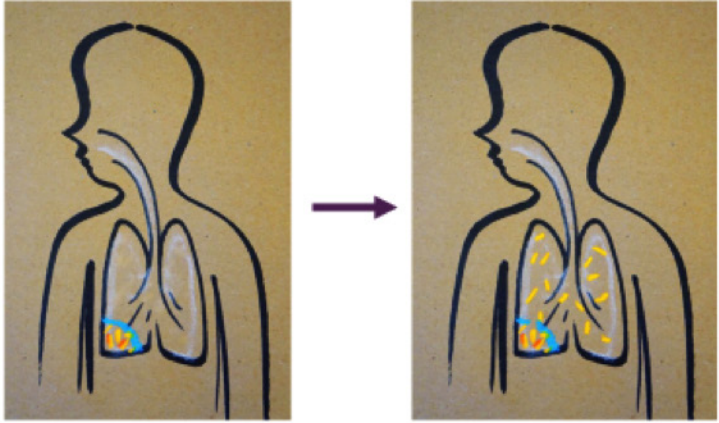

Talking Points

- The good news is that there are lots of things we can do to help prevent us from getting TB!
- As mentioned previously, being in closed areas together with someone who has TB, with little air flow for long amounts of time, can put you and others more at risk. But if you keep doors and windows open then you can allow air to flow better. You can also try to avoid really crowded areas for long amounts of times, and this will help you and others reduce your risk.
- If you do have TB, then there are some things that everyone can do to try to prevent spreading TB bacteria to other people. If you cough into your elbow, the bacteria will not go into the air so other people cannot breathe them in. Also, making sure you stick to your full treatment will make sure you get better, but also inactivate the bacteria in you so that you cannot spread them to others. Encouraging people close to you to get tested for TB can also help prevent TB because then the doctors and health care workers can detect TB early and give them treatment earlier.
- Healthcare workers can also give you some preventative therapies. Most of you have received the BCG vaccine when you were just born. This vaccine can help protect very young children against developing some severe types of TB, but it doesn't protect you from all type contracting the disease when you grow older. There are also different medications that a doctor can give you if the doctor thinks that you may be infected or at higher risk for getting TB. For example, if someone in your family has TB (mother, father, siblings, etc), a doctor may give you preventive therapy, such as a drug called isoniazid, that can help prevent you from also getting TB disease.
- Since TB and HIV are often related, if someone is HIV positive, a health care worker may give him or her preventive therapy to help prevent him or her from getting TB disease

SLIDE 9: TB DISEASE: ACTIVE TB AND COMMON SYMPTOMS

TB Disease
TB disease and common symptoms

- With TB disease, the bacteria “wake up” and grow in your lungs
- May start to feel sick. Common symptoms are:
 - Adults- coughing, fever, night sweats, loss of appetite, weight loss
 - Children- may have different symptoms, if any at all
- TB is curable, if treatment is taken properly!



TB Infection

TB Disease

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TB ALLIANCE

Talking Points

- Sometimes you can still get active TB, despite efforts to prevent it
- In active TB disease, the bacteria “wake up” and break out of the wall your body built around it. The bacteria start to grow and spread in your lungs, which can cause you to feel sick (point to image on right).
- Adults and adolescents often have symptoms such as: coughing that lasts for more than two weeks that may produce sputum, fever, night sweats. Sometimes they don’t feel like eating and they lose a lot of weight. They might also cough up blood.
- Children also have TB most commonly in the lungs and they will also have cough and other unspecific symptom. Weight loss is also very common in young children with TB together with a general reduction in activity.
- The challenge for diagnosis in young children is that cough and weight loss are also commonly caused by other infections in young children.
- Remember that even if you have active TB, it is still curable if you take your treatment properly!

SLIDE 10: TB DISEASE: EXTRA-PULMONARY TB

TB Disease
Extra-pulmonary TB (EPTB)

- Sometimes, the bacteria can infect other parts of your body besides the lungs. This is called **extra-pulmonary TB**.
- **Treatment is also available for EPTB, and it can cure you if you take it properly.**

Pulmonary TB Extra-pulmonary TB

TB ALLIANCE 10

Talking Points

- The bacteria can sometimes even break outside of your lungs and infect any other parts of your body, like your lymph nodes, brain, spine, bones, or kidneys (point to image on right).
- This type of TB is more common in children than in adults, and is called extra-pulmonary TB.
- The most common type of EPTB in children is in lymph nodes in the neck.
- Diagnosis for extra-pulmonary TB is more difficult as it may require specialized tests.
- But even this form of TB can be cured as long as you take your treatment properly.

SLIDE 11: TB DISEASE: DIAGNOSIS

TB Disease: Diagnosis

- There are many ways to diagnose TB, but you must go to the clinic for early diagnosis
- Encourage others to get tested if you think they have the symptoms of TB or are at risk
- Adhering to treatment can help reduce the spread of TB
- TB diagnosis for children may be different than adults

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TB ALLIANCE

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Talking Points

- Remember that in adults, there are common symptoms that can indicate you have TB disease.
- But children may show unspecific symptoms. So how do we know whether you have TB or not? If anyone close to you has TB, or you are having any symptoms (like coughing, losing your appetite, fatigue, or weight loss), the first step is always to go to a clinic so that a healthcare worker or doctor can diagnose you.
 - The biggest hint that a child might have T is if he or she has been in contact with someone with TB.
- Children most often develop active TB within a year following exposure, which helps to make a diagnosis.
- There are several ways to diagnose TB, but you must go to a clinic to get diagnosed.
- Diagnosing younger children and versus older children, adolescents, and adults can be different. Older children, adolescents, and adults can cough up a substance called sputum. Sputum is a combination of mucus and saliva that is coughed up from the lungs. A health care worker can take a sample of this sputum and look at the bacteria under a microscope and do other tests in the laboratory. If they see TB bacteria, then they know the person has TB. Older children also can produce sputum. However, young children often do not produce sputum, and it is more complicated for a nurse or doctor to collect a sample from these children to look for bacteria under a microscope.
- Also, children have fewer TB bacteria in them. Remember that a child's immune system is still growing, so children need less bacteria to actually make them sick.
- Adults often also get diagnosed based on the symptoms that they are showing. But remember that children often do not have the same symptoms, or really any at all, so doctors cannot diagnose based on these symptoms.
- So how do children actually get diagnosed then? Contact tracing and recognizing a combination of common TB symptoms are really important ways that children often get diagnosed.

SLIDE 12: CONTACT TRACING

Contact Tracing

Individuals and families also have a responsibility to encourage close contacts to get screened for TB

Exposure

Infection → **Risk Relay** → **Disease**

TB ALLIANCE 12


Talking Points

- Contact tracing is a really important way to diagnose people early so they can get treatment earlier.
- It is also a way to identify all those that are healthy but at risk for TB and need preventive treatment. These are especially children under 5 and HIV-positive people.
- Recall that TB bacteria are transmitted very easily from one person to another. Because of this, it is really important for someone who has TB disease to think about everyone they come in contact with often, especially in their home.
- For example, you see your family and neighbors every day, so they are at a higher risk for getting TB. Some people that someone with TB disease may see often at school or at a work place may also be at higher risk.
- It is really important to take all of these people that someone with TB disease see often to a clinic to get tested for TB. That way, if they are infected with TB, they can get quicker treatment.
- This process of screening the people close to you for TB is called contact tracing.
 - Sometimes, contacts are asked to come to the clinic to get screened, sometimes a healthcare worker visits your home and screens everybody and then sends those with symptoms and those eligible for preventive therapy to a clinic.
- It is an individual, a family, a doctor, and a community's responsibility to contact trace so that we can all work together to get rid of TB.
- Contact tracing works for both children and adults. Often, a child gets TB from a parent that may not have gotten diagnosed. If a child is diagnosed with TB, it is very important the family and other close contacts get tested for TB.

SLIDE 13: TB DISEASE: TREATMENT

TB Disease: Treatment

- **There are medications that will treat TB- TB is curable, if you take your treatment properly!**
- **Children are not just smaller adults**
 - Formulations are currently designed for adults, so we often have to crush pills for children
- **Adherence to treatment is crucial**
 - There are common side effects, or you may start feeling better, but finishing treatment is crucial
 - Treatment is many months long, treatment completion is important because TB bacteria can remain in you and make you sick again
 - Helps prevent spread of TB



*http://www.stoptb.org/assets/documents/resources/publications/acsm/stbp_brochure_low_rez.pdf

TB ALLIANCE 13


Talking Points

- TB is curable if you take your treatment properly!
- Currently, the medicines that are used in most places have been designed for adult TB. But as we have learned, adult TB can be different from childhood TB. The medicines still work for children, but often times we have to crush pills so that they are getting a more appropriate dose. They are often also too big for small children to swallow.
- The treatment may be long but you must finish your treatment
- There are common side effects, such as nausea, fever, or stomach ache, but even with these side effects you should continue your treatment. These side effects are much less common in children compared to adults. If you are worried about your side effects, tell a health care worker. One drug makes your urine and tears turn orange, but this is nothing harmful and will disappear when you finish your treatment.
- You may also start to feel better, a sign that the medicine is working—but you still must finish your treatment.
- Why is it so important to finish your treatment? Researchers have spent many years determining what treatment options there are. They have tested the drugs many times and have determined what the appropriate length should be.
 - Finishing your entire treatment is so important because if you do not, some of the TB bacteria can remain in you and make you sick again.
 - Sometimes you can even develop a form of TB where the TB bacteria does not respond to the medication, so you need different medications. This is called multi-drug resistant TB.

SLIDE 14: MDR-TB

MDR-TB

- **Multi-drug resistant TB: A form of TB where the TB bacteria rejects the medication**
- **Still curable, but:**
 - Harder to treat, will require more pills (higher pill burden), longer treatment



The illustration shows a man in a blue shirt and dark pants standing in a pharmacy. He is looking at a large, overflowing pile of yellow pills on the floor. In the background, there is a shelf with several small containers, some of which have red 'X' marks on them, indicating that the medication is not working. The man appears to be in a state of frustration or concern.

TB ALLIANCE

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Talking Points

- MDR-TB is a form of TB where the TB bacteria in you rejects the medication.
- This form is still curable, but it is often harder to treat because you need a different set of medications. It will require more medicine and a much longer treatment. But remember that this form of TB is still curable, you just have to follow your full treatment.
- This form of TB is not as common, but it can happen. There are many different causes for MDR-TB, including:
 - If you do not finish your full treatment, sometimes the TB bacteria can change and will no longer respond to the medication (although this is much more common in adolescents and adults). The medications you were taking previously may not work anymore, and the bacteria may have changed to be multi-drug resistant.
 - Certain strains of the bacteria are also resistant to the usual medications. TB bacteria are very complicated, and change often.
 - Someone who has MDR-TB will also transmit MDR-TB to his or her contacts. This means preventive treatment is more complicated and those that develop TB disease also have to be treated for MDR-TB.
- Again, MDR-TB is still curable. Treatment is much longer and requires different medications, but you can be cured if you take your full treatment.

SLIDE 15: RESEARCH

Research

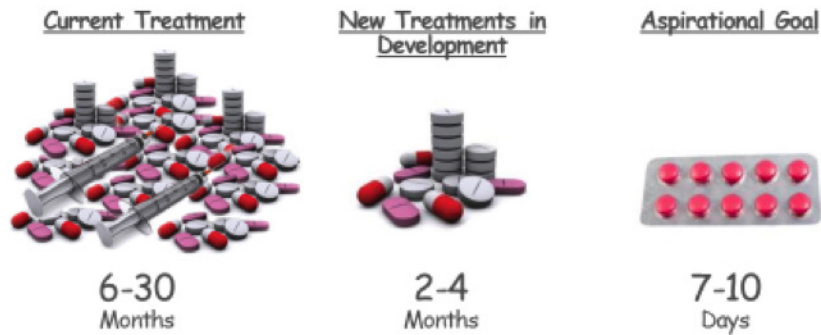
Child-appropriate TB treatment is urgently needed

- Scientists are continuously trying to find ways to prevent TB, better ways to diagnose, and more effective treatment
- TB Alliance is one of many organizations that works on trying to find better more effective treatment. For example:
 - Reduce treatment length
 - Make medications easier to take
 - Find more appropriate medication dosages for children
 - Decrease side effects from medication
- Research involves many years of discovering new medication and testing them through a process called clinical trials



SLIDE 16: TB ALLIANCE VISION

TB Alliance Vision



Success will require novel drug combinations

SLIDE 17: WHAT CAN WE DO?

What can we do?

If you have TB:


- Finish your entire treatment
- Help prevent the spread by covering your cough, keeping windows and doors open, and avoiding crowded areas for long amounts of time
- Encourage your close contacts to get screened for TB

If you know someone else who has TB:

- Encourage them to finish their full treatment
- Support them as they continue treatment

Everyone:

- Prevent the spread of TB
- Raise awareness about TB!
- Get tested for TB frequently if you suspect you may have TB



TB ALLIANCE 17

Talking Points

- There are lots of things we can do as an individual and community to help get rid of TB
- If you have TB, the best thing that you can do is finish your full treatment. Finishing your full treatment will not only make you better, but it will help prevent the spread of TB bacteria.
 - You can also help prevent the spread by coughing into your elbow (remember that TB bacteria can only be transmitted through the air), by keeping windows and doors open to allow for air flow, and avoiding crowded areas for long amounts of time.
 - Make sure that your family members get tested for TB (even if they do not have any symptoms). This will help them get diagnosed quicker if they have TB, so that they can be given the appropriate treatment quicker.
- If you know someone else who has TB, you can help a lot just by supporting them. People can sometimes forget to take their pills every day, and you can help them by reminding them to take their pills often. Giving them support and continuing to be their friend will help them feel that they are not alone.
- Even if you do not know anyone with TB, TB is still a big problem in our community. There are things that everyone can do to help get rid of TB. We can help prevent the spread of TB by practicing all of those methods discussed earlier: keeping windows and doors open, avoiding crowded areas for long amounts of time, keeping our bodies healthy, getting enough sunlight, etc.
- Again, TB is spread very easily. We can all play a role by making sure we get tested for TB often if you suspect you may have TB or have some of the symptoms of TB.
- One of the most important things everyone can do is raise awareness about TB. Knowledge is power; the more you know about TB, the more we can all work together to help get rid of TB.
- TB is a problem all over the world, and the only way to get rid of it is to all help each other and work together.
- Telling your friends and family about what you have learned will make them more aware of what to do if they suspect TB, how to prevent TB, and the importance of finishing treatment.
- There are so many other ways you can get involved. If students are interested, provide them with more resources and ways they can get involved.

SLIDE 18: COMMUNITY ENGAGEMENT

Community Engagement

- A community free of TB starts with a family free of TB
- Work together to fight TB, raise awareness about childhood TB



World Health Organization

VII. Commonly Asked Questions

Note: this section is organized to correspond to the content presented in the PowerPoint Discussion Guide.

SLIDE 1: KNOWLEDGE IS POWER

We already learned about TB, why do we need to learn about it again?

Tuberculosis can present differently based on your age. Diagnosis and treatment of childhood TB can be different from adult TB and it is very important to understand the differences so we can help protect children and adults from TB.

SLIDE 2: WHAT IS TB?

If TB is curable, why is it still such a big problem?

TB bacteria are transmitted very easily from one person to another. Detection of TB, particularly in children, can be more challenging. It is crucial for people to go to the clinic if they suspect they have TB so they make sure they can get diagnosed and treated quickly and will not transmit TB bacteria to others. Someone with active tuberculosis can potentially infect 10–15 people, on average, if they are not diagnosed and treated quickly.

Why is there a higher burden of TB in some areas?

TB is transmitted very easily from one person to another. The more people are infected with TB, the more people are at risk of TB at any time in the future. It is therefore important to prevent infection by diagnosing every case with TB early, to prevent infection turning into disease by giving preventive treatment, especially to those at highest risk, and to prevent severe disease by diagnosing and treating TB early.

SLIDE 3: EXPOSURE TO DISEASE

What is the difference between TB infection and TB disease?

This will be discussed in next slides, but infection refers to when you have TB bacteria in you but it doesn't make you sick because the bacteria are not actively growing and multiplying. TB disease refers to when the TB bacteria are actively growing and spreading in your body, so it makes you sick and you can transmit the TB bacteria to others through air.

SLIDE 4: EXPOSURE

Is tuberculosis hereditary?

No. It is an airborne disease, which means it spreads through the air. Anyone can get TB.

Is TB a 'curse'?

No. TB is caused by a bacterium called Mycobacterium tuberculosis. It is spread from person to person. Anyone can get TB.

If it is spread so easily, should I avoid everyone who has TB?

NO. You may not know who else has TB so it would be very difficult to avoid everyone who has TB. There are also preventive methods to help you protect yourself from getting TB disease. Furthermore, if someone with TB disease is regularly taking his or her treatment, the bacteria cannot be transmitted to others.

If TB bacteria are spread so easily, does everyone around someone with TB also get TB? If someone with TB coughs, will I automatically get TB if I am near them?

No, not everyone gets infected. There are certain factors that put people at more risk of getting infected and other factors increase the risk for people to develop TB disease. A lot of it depends on your body and immune system, and the length of your exposure to the TB bacteria.

VII. Commonly Asked Questions *(continued)*

Can I get TB if I shake hands with someone else who has TB?

No. TB bacteria are inactivated as soon as they touch a surface. TB bacteria can only spread through the air.

Is there anything I can do to prevent others from getting TB if I have TB?

Yes, there are a lot of prevention techniques that will be discussed later. Two of the biggest things you can do are cover your cough by coughing into your elbow, and making sure you finish your entire treatment. When you have just been diagnosed, you might avoid crowded places such as buses, not go to school for about two weeks, and make sure the windows in your home are open and you sleep in your own bed. The treatment helps inactivate the bacteria in you so you cannot transmit the bacteria to anyone else after about two weeks of treatment.

SLIDE 5: INFECTION

If you don't feel sick, how do you know that you have TB?

There are many risk factors that make you more likely to getting TB. If you think you are at higher risk for getting TB, it is always best to go to a clinic.

If I don't feel sick and cannot transmit TB bacteria to others, then should I be worried about TB infection?

You should not be worried, but it is still very important to go to the clinic and speak to a healthcare worker. Even if you don't feel sick and cannot transmit TB then, the bacteria can "wake up" and you can start to feel sick then. You might also be offered preventive treatment.

What makes the bacteria "wake up"?

Your body (immune system) will try to fight the bacteria. If your immune system becomes weak, then it may not be able to fight the bacteria anymore so the walls around the bacteria break down. Your immune system can become weak if you don't eat and sleep well, or if you have another illness such as HIV.

What is the likelihood that the bacteria will wake up?

For those who are infected with TB but do not have an active disease, approximately 10% will get active TB disease at some point in their life if they are not treated for the TB infection. That means that 1 out of 10 untreated people infected with TB will get an active TB disease.

SLIDE 6: RISK FACTORS

Does having tuberculosis also mean that I have HIV?

No. TB and HIV are different diseases that are often linked in areas where there is a high burden of both diseases. HIV increases a person's risk for TB. It is important for everyone to know his or her HIV status, so you should also get tested to make sure you know your HIV status. HIV can be treated.

Why is there so much talk about an HIV/TB co-infection?

HIV infection weakens the immune system. Those who have HIV infection are more at risk of getting active TB disease if they are exposed to TB bacteria because their bodies are less able to fight against it. TB and HIV are transmitted very differently. TB is airborne and anyone who is exposed could get it. HIV is transmitted through bodily fluids and requires physical contact with an infected person to transmit the infection. TB and HIV also have different preventive techniques. It is important to always know your HIV status, especially as it can put you more at risk for other illnesses. Also, it helps health care workers to make a diagnosis of TB if they know if the child/adolescent is HIV infected or not.

VII. Commonly Asked Questions *(continued)*

SLIDE 7: WE CAN HELP PREVENT TB!

What types of TB does the BCG vaccine prevent against?

Sometimes, the TB bacteria can break out of the lungs and spread to other parts of the body. This is called extra-pulmonary TB and will be talked about later. The BCG vaccine can protect young children against severe forms of TB in very young children, who may die from them if not vaccinated. However, it does not protect very well against pulmonary TB. Also, the BCG vaccine is less effective as you get older.

What types of medication can I be given for preventive therapy?

The most common type of preventive therapy is called IPT, or isoniazid preventive therapy. This medication, isoniazid, is taken for nine months and can help prevent you from getting TB while you are taking the medication. IPT is often given to people who have a family member with active TB to try to prevent them from also getting TB. It is most often recommended for children that are younger than five or for any family member that is HIV positive. If you have questions, or want more information about IPT you can talk to someone at your local health clinic.

SLIDE 8: TB DISEASE: ACTIVE TB AND COMMON SYMPTOMS

What's the point in trying to prevent TB if I can still get it?

The prevention methods can you put you at much less risk for getting TB. Even though you can still get active TB, you are at much less risk.

SLIDE 9: TB DISEASE: EXTRA-PULMONARY TB

What are common symptoms of EPTB?

Type of EPTB	Common Symptoms	Notes
Pleural	Pleuritic chest pain, fever	• Up to 20% of cases where HIV is common
Lymph nodes (lymphadenitis)	Swollen lymph nodes	• Most common, 30% of EPTB • Peak age from children to 30–40 years old
Bones and joints	Spine, hip, or knee deformation	• Can affect all ages, but typically age of 65+ years and school aged children • Typically affects spine, followed by hip then knee
Disseminated (miliary)	Wide range of symptoms	• TB bacteria enters bloodstream and carried to all parts of body • May have no localizing signs, may present with anemia or low platelet count • Delay in diagnosis is key factor in mortality of miliary TB
Kidney	Blood in urine	
Meningitis	Headache, confusion, seizures	• Infants and young children at particular risk • Associated with 20% fatality and long-term disability common in survivors

Can you transmit EPTB to others?

No, but about half of EPTB cases also have pulmonary TB. If you have pulmonary TB, you can transmit pulmonary TB to others.

Is EPTB more dangerous than pulmonary TB?

It depends on which organs are affected. For example, lymphadenitis is not dangerous, but if one has meningitis then it can be life threatening. TB of the spine may require orthopedic surgery.

VII. Commonly Asked Questions *(continued)*

SLIDE 10: TB DISEASE: DIAGNOSIS

Why don't we have a better way to diagnose children yet?

Young children often have less bacteria in them because their bodies are still growing so it takes less bacteria to make them sick. They also often do not produce sputum when they cough so it is difficult to get tested. Many researchers are trying to develop tests that examine blood, urine, or stool but this is difficult and so far there is no good test available.

SLIDE 11: CONTACT TRACING

If I or someone in my family has TB, do we need to take everyone we have ever come in contact with in to the clinic?

No. You should take the people that you see more often and/or live with in to the clinic because they are at much higher risk for getting TB. Sometimes a healthcare worker will come to your home to screen your close contacts.

Is it my fault that my child/parent has TB?

No. It is not your fault that others may get TB. TB is an infectious disease that can be transmitted through the air. But if they do get TB, you can help them get diagnosed earlier by making sure they get tested. There might also be people at risk amongst your contacts that require preventive therapy.

Should I just isolate myself so that I don't infect anyone else?

NO. Getting rid of TB is a community effort. It is not your fault if others get infected, but there are ways that you can help prevent others from getting TB. Coughing into your elbow is a great way to reduce the risk. Making sure you finish your entire treatment will also reduce the risk, because at some point during the treatment, the bacteria in you will be inactive so you cannot transmit the bacteria to others. Keeping windows and doors open to increase ventilation are other ways to help prevent the spread of TB.

SLIDE 12: TB DISEASE: TREATMENT

Why is the current treatment so long?

The TB bacteria are very complicated. Some of the bacteria grow very slowly, and are much harder to get rid of. Current treatments consist of several different drugs that target lots of the bacteria, but it does take a while to get rid of all of them. We also want to make sure that we get rid of all of the bacteria in you so that the bacteria do not start growing again.

Why should I continue to take my medicine if the side effects make me feel worse than I did before?

We know that sometimes there are side effects of the medication. The side effects are usually only temporary. Also, children have much less side effects than adults. If you stop taking your medicine, the TB bacteria in you can start growing again and make you feel much worse. You will have to take longer treatment, more pills, and potentially different medications. Researchers are working on new medicines that do not have as many side effects, but it may be many years before these medicines are approved for use.

I have been taking my medicine, but I feel better now even though my treatment is not complete. Doesn't that mean that all of the bacteria is gone?

No. TB bacteria grow slowly. Just because you feel better does not mean that the bacteria have been totally removed from you. Some of the bacteria may have been eliminated, but you haven't gotten rid of all of the bacteria yet. You must finish your treatment to make sure that you get rid of ALL of the bacteria, otherwise you may start feeling sick again.

VII. Commonly Asked Questions *(continued)*

Can I still go to work/school while I am on treatment?

Yes. There is a certain point after which you cannot transmit TB to others. This should be the case after about two weeks. The TB bacteria in you has been inactivated, so transmission is not possible. During this time, you can continue with your daily activities as long as you still follow your treatment. However, you must finish your treatment because if you don't, the inactive bacteria can become active again and make you sick again.

Will treatment cost a lot of money?

No, in most places, treatment for TB is free of charge if you go to a public facility.

SLIDE 13: MDR-TB

How do I know if I have MDR-TB?

Multi-drug resistant TB (MDR-TB) is a form of tuberculosis where the bacteria does not respond to at least two most important drugs: isoniazid and rifampicin; the bacteria is resistant to these drugs. Sometimes, a healthcare worker can detect drug resistance by performing laboratory tests. Sometimes a health care worker may think a person has MDR-TB because he/she was in contact with someone with MDR-TB, especially in young children where the healthcare worker cannot perform a lab test.

How many people have MDR-TB? Is it a big issue in our community?

In 2013, approximately 480,000 people developed MDR-TB in the world. Higher incidence rates of MDR-TB have been reported in some countries of Eastern Europe, China, and South Africa.

What are the risk factors for MDR-TB?

If anyone does not take their TB medicine regularly and properly, then they can develop drug resistance. Sometimes, they can also develop drug resistance if you develop TB disease again after they have already taken TB medicine. There are certain strains of TB bacteria that are more likely to result in drug resistance. You can also contract drug resistant disease from someone who is sick with MDR-TB and is not properly treated.

Is there anything I can do to prevent MDR-TB?

One of the best ways you can prevent MDR-TB is by taking your TB medications regularly and exactly how your doctor tells you to. It is always best to practice the other prevention methods described previously: cover your cough if you have TB, stay in open and well ventilated areas, avoid crowded spaces for long amounts of time, and stay healthy.

Is MDR-TB still infectious?

Yes, MDR-TB is still infectious. However, you can help prevent the spread of TB by covering your cough and finishing your treatment properly.

What happens if the bacteria changes so that it no longer responds to the treatment for MDR-TB?

MDR-TB can become XDR-TB (extensively drug resistant TB), which requires longer treatment and different medications.

What is different with MDR-TB treatment and DS-TB treatment?

The treatment medications are different for drug sensitive TB (DS-TB) and MDR-TB. Drug sensitive treatments involve a combination of what are known as the first-line drugs: isoniazid, rifampicin, pyrazinamide, and ethambutol.

PASSING THE BALL

Subject:	General knowledge interactive test
Age Range:	7–14
Lesson Time:	15–25 minutes
Goals and Objectives:	<ul style="list-style-type: none"> • Test individual students knowledge about different topics within pediatric TB in an interactive game • Encourage class participation
Materials:	<ul style="list-style-type: none"> • Ball, or other object that is easy to pass around quickly • Question Bank handout • Small prizes or awards

LESSON PLAN

Time Needed	Topic	Instructions
5 minutes	Intro to game	<p>Describe the rules of the game to the class:</p> <ul style="list-style-type: none"> • Have everybody stand up. • You will pass the ball to someone and ask them a question. They have to answer the question correctly: <ul style="list-style-type: none"> – If they answer correctly, give them a prize, tell them they can sit down, and tell them to throw the ball to the next person. Ask the next person a new question. – If they don't answer correctly, tell them to throw the ball to someone else in the room and ask them the same question (remain standing). Continue to throw the ball to a new person until the question gets answered correctly (up to three tries). After three tries, if no one has answered the question correctly go over the correct answer. Ask the question again later to ensure they remember. • Students have to pass the ball to someone who is still standing (to ensure all kids get a chance at answering a question). • You can repeat questions throughout the game if students are having difficulty answering them. • Note that you can ask the questions in a random order, or only pick certain categories of questions based on your audience and time constraints. The key questions at the top of the question sheet should definitely be asked.
10–20 minutes	Play game	Play game.
5 minutes	Wrap up	Ask students for feedback on the game and if they have any questions about any of the material.

Notes:	<ol style="list-style-type: none"> 1. Ensure each child still gets a prize at the end, even if they don't answer a question correctly. 2. Be sure to record which questions students were struggling with so we know what material to cover more thoroughly.
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PASSING THE BALL

Question Bank

KEY QUESTIONS ABOUT TUBERCULOSIS

Q: Name two common symptoms of TB.

A: Persistent cough, fever, fatigue, loss of appetite, rashes (if extra-pulmonary), weight loss

Q: Name two ways that you can help prevent the spread of TB.

A: Better ventilation, stay in open spaces, contact tracing, cough into arm, keep windows open

Q: How is TB transmitted?

A: Through the air. When someone with active TB coughs, sneezes, talks, or sings, bacteria is spread into the air that you breathe in.

Q: Imagine you have TB. What is it called when you screen your close contacts to see if anyone close to you has TB?

A: Contact tracing

Q: True or false: If you start feeling better, you do not need to continue your treatment.

A: False

Q: What is one question you still have about TB?

A: Open ended

TB BASICS

Q: What organism causes TB?

A: Bacteria, or Mycobacterium Tuberculosis

Q: What are the two stages of TB?

A: Latent (Inactive) and Active

Q: What stage of TB do you have when you do not show any symptoms and you cannot transmit TB to others?

A: Latent

Q: What organ does TB most commonly infect?

A: Lungs

Q: Name the two general types of TB (based on where in your body TB can infect).

A: Pulmonary and Extra-pulmonary TB

TRANSMISSION

Q: Can TB be spread by giving someone a hug or sharing a spoon? Why or why not?

A: No. The bacteria is only infectious when it is airborne.

PASSING THE BALL

Question Bank (continued)

RISK FACTORS

Q: Why are younger children more at risk of getting TB?

A: Their immune systems are not fully developed so it is more difficult to fight off the bacteria

Q: Name two environmental factors that can make you more at risk of getting TB.

A: Poor ventilation, closed spaces, absence of sunlight

PREVENTION METHODS

Q: If you have TB, what can you do to help prevent the spread of TB?

A: Adhere to full treatment, cough into arm

DIAGNOSIS/CONTACT TRACING

Q: Why is contact tracing important?

A: Contact tracing is important to help diagnose others who have had exposure to the bacteria, and thus help prevent the spread of TB and get quicker treatment to those who need it.

TREATMENT

Q: Why is it so important to finish your treatment?

A: Treatment regimens have been studied very thoroughly. You must complete your entire treatment because otherwise the bacteria can still live and grow within you, and make you feel sick again.

Q: What could happen if you do not finish your full treatment?

A: You could get multi-drug resistant TB, so the medicine that worked on you previously does not work anymore. The treatment plan is much longer than the first time.

Q: What is multi-drug resistant TB?

A: It is a form of TB where the medicine the doctor gives you stops working against the TB bacteria. TB is still curable though, you just need a different treatment.

Q: Can only people who do not finish their treatment get MDR-TB?

A: No.

RESEARCH

Q: What is research?

A: Research is studying a topic, such as TB, to understand it better. Research is how we know about transmission, risk factors, diagnosis, and treatment.

Q: What is one way that organizations like the TB Alliance are trying to come up with new treatments?

A: They are researching more effective medicines that provide quicker treatment, better tasting treatment, and more appropriate dosages for children

CONCLUSION

Q: What are two things you can do to help raise awareness about TB?

A: Open ended but can include: share this information with your parents and siblings, contact a local community advisory board to find out more about ways to help, encourage others to help with prevention methods.

GUESSING GAME

Subject:	General knowledge interactive test
Age Range:	11–18
Lesson Time:	20–30 minutes
Goals and Objectives:	<ul style="list-style-type: none"> • Allow students to critically think about the meaning of key words and be able to explain it • Encourage class participation through an interactive activity • Reinforce key words
Materials:	<ul style="list-style-type: none"> • Guessing game cards • Guessing game discussion guide

LESSON PLAN

Time Needed	Topic	Instructions
3 minutes	Introduction to game	<p>Break the students into groups of 6. Describe that every other person in the group is a team (making two teams of 3 for each group).*</p> <p>Describe the rules:</p> <ul style="list-style-type: none"> • You will hand a set of cards to each group (face down) • On the back of each card, there is a word at the top of the card, and five words underneath • One person flips the card, without showing the words to anyone else • The goal is to describe the word at the top without saying any of the five words below it (or the word you are describing). The student keeps describing the word to his/her team until they guess it. <ul style="list-style-type: none"> – If the student says any of the five words below, he/she passes the card to the other team and the other team starts describing the word. – Note: no acting or hand gestures are allowed, only speaking. • When a team correctly guesses the word, then pause the game to discuss the word, using the guessing game discussion guide as a resource. • The remaining cards get passed to the next team. One person on the next team tries to get his/her team to guess the word at the top. • You continue to pass the cards/describe the words until all of the cards are gone <p>Ask if anyone has any questions about the rules</p>
20–25 minutes	Play game	Play game. Supervise to make sure the students understand the rules.
2 minutes	Conclusion	Ask for feedback on the game. Gauge interest and amount of material learned through the game. If time permits, ask each team to make their own, new guessing game card. (Come up with key term and five words they are not allowed to say when describing the key term).

*Note:	Feel free to adjust the group sizes based on your class size, groups of 6 are just a suggestion.
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GUESSING GAME



<p>Contact Tracing</p> <p>Contact Tracing Screen Diagnose Prevent</p>	<p>Bacteria</p> <p>Cause Infect Lungs Grow Mycobacterium TB</p>	<p>Cough</p> <p>Symptom Persistent Cover Transmission Spread</p>
<p>Latent</p> <p>Inactive Bacteria Symptom Sleeping Infection</p>	<p>Lungs</p> <p>Infection Body Bacteria Pulmonary Breathe</p>	<p>Extra-Pulmonary</p> <p>Pulmonary Lungs Swelling Rashes Miliary</p>
<p>Symptoms</p> <p>Cough Sputum Appetite Weight Night sweats</p>	<p>Risk Factors</p> <p>Children Elderly Poor ventilation Crowd Illnesses</p>	<p>Tuberculosis</p> <p>Airborne Cough Disease Infection Bacteria</p>
<p>Treatment</p> <p>Pills Cure Months Medicine Combination</p>	<p>Research</p> <p>Study Doctor Scientists Medicine Treatment</p>	<p>Active TB</p> <p>Disease Symptoms Transmission Treatment Bacteria</p>

GUESSING GAME



Prevention	Cure	Doctor
Ventilation BCG Healthy Cover cough Finish treatment	Treatment Adherence Medicine Doctor Months	Diagnose Treatment Cure Clinic Tuberculosis
Transmission		
Airborne Cough Bacteria Droplet Sneeze		

GUESSING GAME

Discussion Guide

WORD	TALKING POINTS
Active TB	<ul style="list-style-type: none"> • Active TB, or TB disease, is when the bacteria “wakes up” and spreads in your body. • You can transmit active TB to others, and you often have symptoms/signs of TB • Active TB can be treated if you take your medicine properly
Bacteria	<ul style="list-style-type: none"> • TB is caused by a very small organism called bacteria • Scientists refer to TB bacteria as Mycobacterium Tuberculosis • Bacteria can be spread from someone infected with TB to someone else • The bacteria typically infect your lungs, but can grow and spread to other parts of your body
Contact Tracing	<ul style="list-style-type: none"> • Contact tracing is one of the best ways to help prevent the spread of TB • If you have TB, you should encourage everyone you see often to the doctor to get tested for TB. This screening method can allow for quicker diagnosis and treatment
Cough	<ul style="list-style-type: none"> • A common symptom for someone who has TB • When you cough, droplets are released into the air. If you have TB, these droplets have bacteria in them that can be transmitted to others, which may make them get TB too • One of the best ways to prevent the spread of TB is to cover your mouth when you cough
Cure	<ul style="list-style-type: none"> • TB is curable if you adhere to your treatment plan • The doctor will prescribe you a set of medicines to take, and it may take several months to finish
Doctor	<ul style="list-style-type: none"> • If you are experiencing any common symptoms of TB, or are vulnerable to TB, you should to go the doctor or clinic to get tested • If the doctor diagnoses you with TB, he/she will give you treatment that will cure you
Extra-pulmonary	<ul style="list-style-type: none"> • TB bacteria typically infects your lungs, which is called pulmonary TB. Sometimes, the bacteria can break outside of your lungs and infect other parts of your body, like your kidneys, bones, or brain. This is called extra-pulmonary TB • It can also be called miliary, or disseminated TB • Some common symptoms are swelling and rashes
Latent	<ul style="list-style-type: none"> • Inactive, or “sleeping” form of TB, where you do not have any symptoms and you cannot transmit the bacteria to anyone else • Also referred to as infection. Active TB is sometimes referred to as TB disease. • Latent TB can become active, but you can take treatment to help lower your risk
Lungs	<ul style="list-style-type: none"> • If you breathe in TB bacteria, the bacteria travels through your airways into your lungs, which is in your chest • When the bacteria infect your lungs and start to grow and spread, this is called pulmonary TB
Prevention	<p>There are many ways we can help prevent TB:</p> <ul style="list-style-type: none"> • Open doors and windows to help ventilate the room better • Stay healthy: eat a balanced diet, get enough rest, exercise • The BCG vaccine is given to most babies when they are born, and can help prevent certain types of TB. But it does not prevent all types of TB, and is ineffective as you get older • If you have TB, you can help prevent the spread by covering your cough and completing your treatment

GUESSING GAME

Discussion Guide *(continued)*

WORD	TALKING POINTS
Research	<ul style="list-style-type: none"> • Many scientists all over the world are trying to find more effective treatments that take less time to cure, have less side effects, and taste better • Finding new medicines takes many years
Risk Factors	<ul style="list-style-type: none"> • There are many factors that can put you more at risk for getting TB • It is harder for young kids, the elderly and people with other illnesses to fight disease, so they are more at risk of getting “active” TB if they come in contact with the bacteria • There are some environmental factors that can also put you at risk. Staying in closed, crowded spaces for long amounts of time can increase your risk. Poor ventilation may also put you at risk.
Symptoms	<ul style="list-style-type: none"> • Common symptoms in adults include: persistent coughing with sputum for more than two weeks, loss of appetite, weight loss, night sweats • Children often do not have the same symptoms as adults, if any at all • If you have these symptoms, you should go to a clinic to get tested for TB
Transmission	<ul style="list-style-type: none"> • TB can be spread when someone with TB coughs, sneezes, or talks • Droplets with the TB bacteria are released in the air that we breathe in • If we breathe in the TB bacteria, it can infect us and make us sick
Treatment	<ul style="list-style-type: none"> • If you take your treatment properly, TB is curable • Treatment takes many months and requires a combination of different pills • You must finish your treatment, even if you start feeling better
Tuberculosis	<ul style="list-style-type: none"> • TB is an airborne disease that has affected many people around the world • TB bacteria can be spread when someone with TB coughs, sneezes, or talks • Common symptoms in adults include persistent coughing for more than two weeks, night sweats, loss of appetite, and weight loss • TB is curable if you take your treatment properly

GROUP QUESTIONS

Subject:	General knowledge interactive test
Age Range:	11–18
Lesson Time:	20–30 minutes
Goals and Objectives:	<ul style="list-style-type: none"> • Encourage students to discuss answers to questions through collaboration • Reinforce answers to key questions
Materials:	<ul style="list-style-type: none"> • Question bank

LESSON PLAN

Time Needed	Topic	Instructions
5 minutes	Introduction to game	<p>Split students into groups of approximately 6:</p> <ul style="list-style-type: none"> • Tell students to form their group and have each group stand in a straight line <p>Describe the rules of the game:</p> <ul style="list-style-type: none"> • You will ask a question to everyone • Whichever team raises their hand first can answer the question, but only the person in the front of the line can answer. The team can work together, but only the front person can provide the final answer. • If the team gets the answer correct, then they get a point. The person at the front moves to the back of the line (for all teams) and you move on to the next question. If the team does not get the correct answer, the other teams have a chance to answer the question. Again, the first team who raises their hand can answer the question. • If none of the teams get a question right, then go over the question as a team. Repeat this question in a later round. • When all the questions run out, whichever team has the most points wins a prize <p>Be sure to give all teams a prize for participating, even if they do not win.</p>
15–20 minutes	Play game	Play game.
5 minutes	Feedback and conclusion	Ask student for feedback on the game and if they have any questions about any of the material.

Notes:	<ul style="list-style-type: none"> • Ensure each child still gets a prize at the end, even if they don't answer a question correctly. • Be sure to record which questions students were struggling with so we know what material to cover more thoroughly. • The format of the game can be adapted based on the audience and time constraints. For example, a variation of this game is to have all the students stand in a circle and ask questions to everyone in the circle.
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GROUP QUESTIONS

Question Bank

KEY QUESTIONS ABOUT TUBERCULOSIS

Q: Name two common symptoms of TB.

A: Persistent cough, fever, fatigue, loss of appetite, rashes (if extra-pulmonary), weight loss

Q: Name two ways that you can help prevent the spread of TB.

A: Better ventilation, stay in open spaces, contact tracing, cough into arm, keep windows open

Q: How is TB transmitted?

A: Through the air. When someone with active TB coughs, sneezes, talks, or sings, bacteria is spread into the air that you breathe in.

Q: Imagine you have TB. What is it called when you screen your close contacts to see if anyone close to you has TB?

A: Contact tracing

Q: True or false: If you start feeling better, you do not need to continue your treatment.

A: False

Q: What is one question you still have about TB?

A: Open ended

TB BASICS

Q: What organism causes TB?

A: Bacteria, or Mycobacterium Tuberculosis

Q: What are the two stages of TB?

A: Latent (Inactive) and Active

Q: What stage of TB do you have when you do not show any symptoms and you cannot transmit TB to others?

A: Latent

Q: What organ does TB most commonly infect?

A: Lungs

Q: Name the two general types of TB (based on where in your body TB can infect).

A: Pulmonary and Extra-pulmonary TB

TRANSMISSION

Q: Can TB be spread by giving someone a hug or sharing a spoon? Why or why not?

A: No. The bacteria is only infectious when it is airborne.

GROUP QUESTIONS

Question Bank (continued)

RISK FACTORS

Q: Why are younger children more at risk of getting TB?

A: *Their immune systems are not fully developed so it is more difficult to fight off the bacteria.*

Q: Name two environmental factors that can make you more at risk of getting TB.

A: *Poor ventilation, closed spaces, absence of sunlight*

PREVENTION METHODS

Q: If you have TB, what can you do to help prevent the spread of TB?

A: *Adhere to full treatment, cough into arm*

DIAGNOSIS/CONTACT TRACING

Q: Why is contact tracing important?

A: *Contact tracing is important to help diagnose others who have had exposure to the bacteria, and thus help prevent the spread of TB and get quicker treatment to those who need it.*

TREATMENT

Q: Why is it so important to finish your treatment?

A: *Treatment regimens have been studied very thoroughly. You must complete your entire treatment because otherwise the bacteria can still live and grow within you, and make you feel sick again.*

Q: What could happen if you do not finish your full treatment?

A: *You could get multi-drug resistant TB, so the medicine that worked on you previously does not work anymore. The treatment plan is much longer than the first time.*

Q: What is multi-drug resistant TB?

A: *It is a form of TB where the medicine the doctor gives you stops working against the TB bacteria. TB is still curable though, you just need a different treatment.*

Q: Can only people who do not finish their treatment get MDR-TB?

A: *No.*

RESEARCH

Q: What is research?

A: *Research is studying a topic, such as TB, to understand it better. Research is how we know about transmission, risk factors, diagnosis, and treatment.*

Q: What is one way that organizations like the TB Alliance are trying to come up with new treatments?

A: *They are researching more effective medicines that provide quicker treatment, better tasting treatment, and more appropriate dosages for children*

CONCLUSION

Q: What are two things you can do to help raise awareness about TB?

A: *Open ended but can include: share this information with your parents and siblings, contact a local community advisory board to find out more about ways to help, encourage others to help with prevention methods.*

SEQUENCING EVENTS

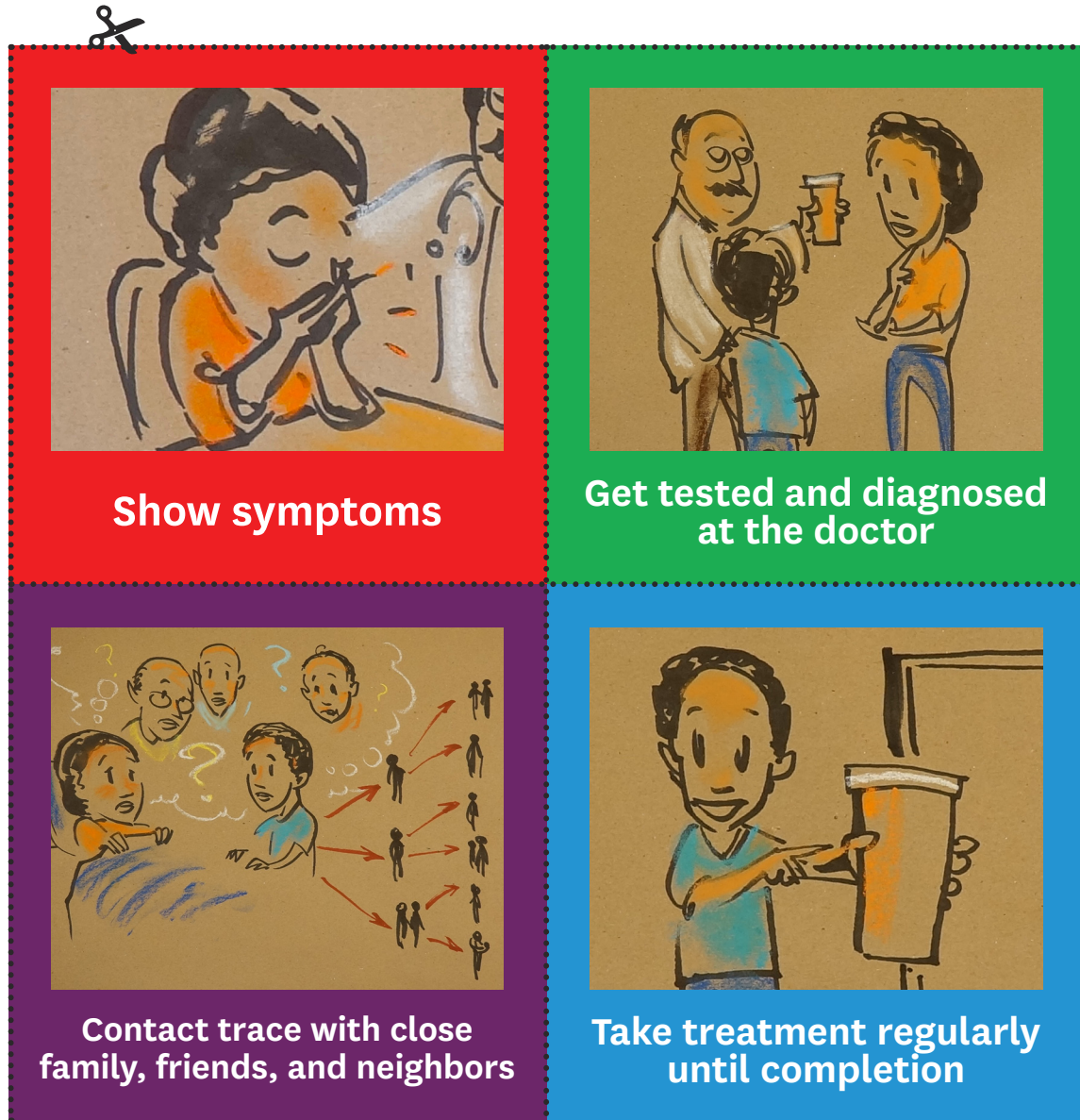
Subject:	General activity
Age Range:	8–14
Lesson Time:	20 minutes
Goals and Objectives:	Allow students to critically think about what to do if they suspect they may have TB
Materials:	Narrative strips
Preparation:	<ul style="list-style-type: none"> Decide whether this should be a group or individual activity Cut the narrative page along the dotted lines. Create packets of the cut strips, placing the strips in a random order (such that the narrative is not in the correct sequence).

LESSON PLAN

Time Needed	Topic	Instructions
5 minutes	Introduction	<p>Break students up into groups of 6 or have the students perform the activity individually.</p> <p>Explain the purpose of the activity:</p> <ul style="list-style-type: none"> The story the students heard earlier is placed on strips of paper, and not in order (see preparation). Give each student or group a packet of strips. The students have to come up with the correct order for the narrative.
10 minutes	Activity	<p>Give students time to sequence the narrative</p>
5 minutes	Conclusion	<p>Call on a group or individual to say what order they put the story in</p> <p>Confirm that the narrative is correct</p> <p>Recall key messages about what to do if you suspect you or someone close to you has TB:</p> <ul style="list-style-type: none"> Go to the doctor to get tested Contact trace to find out who else you may have come in contact with, encourage them to go get tested as well If you do have TB, take treatment as prescribed until the full treatment is completed

SEQUENCING EVENTS

Narrative Strips



Show symptoms

Get tested and diagnosed at the doctor

Contact trace with close family, friends, and neighbors

Take treatment regularly until completion

Correct sequence:

1. Show symptoms
2. Get tested and diagnosed at the doctor
3. Contact trace with close family, friends, and neighbors
4. Take treatment regularly until completion

Note:

Some of these panels may be interchangeable (an individual can contact trace before they go to the doctor). The purpose of this activity is to engage students in thinking about the steps that they should take if they suspect TB. If they have logical reasoning for their sequence, it may be different from this sequence but still may be acceptable.

SKIT-INTERACTIVE PERFORMANCE

Subject:	Interactive Performance
Age Range:	11–18
Lesson Time:	1 hour – 1 hour 30 minutes
Goals and Objectives:	<ul style="list-style-type: none"> • Allow students to critically think about a particular topic of childhood TB • Encourage class participation
Materials:	<ul style="list-style-type: none"> • Paper, pens, markers • Props (optional) • Key facts sheet

LESSON PLAN

Time Needed	Topic	Instructions
5 minutes	Introduction	<p>Split class into 5–8 groups and assign each group to one of the following categories:</p> <ul style="list-style-type: none"> • Introduction (optional, if class is large) • Symptoms/Stages of TB • Transmission/Types of TB • Risk factors/Prevention • Contact tracing • Treatment • Research (optional, if class is large) • Conclusion (optional, if class is large) <p>Once the groups are formed, tell each group to write down a few key main facts for their topic. For example, the transmission group should write down that TB is an airborne disease, meaning that it can be transmitted when someone who has active TB coughs, sneezes or talks.</p>
10 minutes	Key Facts	<ul style="list-style-type: none"> • Give students time to discuss amongst themselves what the key facts are for their topic • While they are discussing, go around to each group to make sure they are highlighting the correct facts (see key facts sheet in materials section) • At the end of the 10 minutes, have each group present what their key facts are
20–30 minutes	Skit prep	<ul style="list-style-type: none"> • Explain the next part of the activity: using the key facts, the students have to come up with a 2 minute performance that uses the key facts. They could act out their key facts (for example for symptoms they could pretend to cough), they could draw pictures, they could pretend they are teachers, etc. • Give students 20 minutes to come up with their skit (adjust time if necessary based on needs)
15 minutes	Presentations	Have each group present their topic
5 minutes	Conclusion	Review the main facts for each topic again

Note:	Ensure there are at least 3 students in each group. If there are not enough students, combine transmission and contact tracing, take out research. If there are a lot of students, include a group that can do introduction and conclusion.
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SKIT-INTERACTIVE PERFORMANCE

Key Facts:

Introduction *(optional, if class is large)*

Symptoms/Stages of TB

- In adults, common symptoms are: persistent coughing for more than 2 weeks, coughing up sputum, night sweats, loss of appetite, fever, weight loss
- In children, symptoms may present very differently, if at all. Some children do not have any symptoms
- Two stages of TB: latent vs active
 - Latent: bacteria is “sleeping”. Someone with latent TB cannot transmit TB to others, and do not show any symptoms. This is an inactive form that can become active.
 - Active: you can transmit TB to others, and may show symptoms.

Transmission/Types of TB

- Airborne disease: bacteria is spread when someone with active TB coughs or sneezes
- You cannot get TB from giving someone a hug or sharing a spoon
- Types of TB:
 - Pulmonary: bacteria infects lungs
 - Extra-pulmonary: bacteria can affect other parts of your body, like bones, kidneys, and other organs

Risk factors/Prevention

- Risk factors:
 - People with weakened immune systems are more at risk: children, elderly, people with other illnesses
 - Spending lots of time inside with poor ventilation
- Prevention:
 - Stay in open areas, or keep the windows/doors open to allow air flow
 - Avoid really crowded areas
 - If you do have TB:
 - Cover your mouth when you cough
 - Contact trace to help get your close contacts tested
 - Keep yourself healthy: eat and sleep well

Contact tracing

- Contact tracing means encouraging people who come in contact with someone who has active TB to get screened for TB
- Look at close contacts in many different settings: at school, at home, neighbors, religious events, work, etc

Treatment/MDR-TB

- TB is curable if you take your treatment properly!
- You can get multi-drug resistant TB if you don't finish your full treatment
 - Longer treatment, more medications, different medications
- Treatment can take a while, but even if you start feeling better or have side effects, you must finish your full treatment

Research *(optional, if class is large)*

- We know about TB because scientists all over the world are researching TB
- Many different organizations are working to find more effective treatments that take a shorter amount of time, taste better, and have less side effects

Conclusion *(optional, if class is large)*

TWO LIES AND A TRUTH

Subject:	Interactive quiz
Age Range:	8–14
Lesson Time:	30 minutes
Goals and Objectives:	Encourages students to think about what are facts and what are myths
Materials:	<ul style="list-style-type: none"> • Two Lies and a Truth Statement Sheet • Pens/pencils • Paper • Prizes (optional)
Preparation	<ul style="list-style-type: none"> • Read through the instructions and statement sheet • Collect paper, pens, and prizes (optional)

LESSON PLAN

Time Needed	Topic	Instructions
5 minutes	Introduction	<p>Split class into groups of 3–6 (depending on class size: if < 15, groups of 3; if > 30, groups of 6)</p> <p>Explain rules to the groups:</p> <ul style="list-style-type: none"> • You will say three statements. Two of the statements will be false, and one of them will be true. Note that in the statements, the bold statement is true and the other two are false. • Each group must decide which statement is true. They will write down which one is true on the paper. • Have each group hold up their paper and take note of the groups that got it correct. • Go over the correct answer, discuss why the other answers are false, then move on to the next set of three statements. • Continue until the statements are done. The group with the most correct answers gets a prize.
15–20 minutes	Play game	<p>Play game. Read two lies and a truth in the order listed. Keep track of teams that have the most correct answers.</p>
5 minutes	Conclusion	<p>Ask students for feedback on the game and if they have any questions about any of the material.</p>

Notes:	<ol style="list-style-type: none"> 1. Ensure each child still gets a prize at the end, even if they don't win. 2. Be sure to record which questions students were struggling with so we know what material to cover more thoroughly.
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TWO LIES AND A TRUTH

Statement Sheet

INTRODUCTION

1. TB does not affect children (False)
- 2. TB is caused by a bacteria (True)**
3. TB is only a problem in *(insert name of location you are in)* (False)

SYMPTOMS

- 1. Symptoms for adults and children are not necessarily the same (True)**
2. If you do not show any symptoms, you definitely do not have TB (False)
3. Common symptoms are weight gain, hair loss, and high blood pressure (False)

TRANSMISSION

1. You can get TB by sharing a spoon with someone else who has TB (False)
- 2. TB is an airborne disease, which means it is spread through the air (True)**
3. TB is a waterborne disease, which means you can get it by drinking water with the bacteria (False)

LATENT TB VS ACTIVE TB

1. In latent TB, you can transmit TB to others when you cough or sneeze (False)
2. You will always show symptoms for active TB (False)
- 3. Latent TB can become active TB (True)**

PULMONARY/EXTRA-PULMONARY

- 1. TB can spread to other parts of your body, like your brain, kidneys, and bones (True)**
2. TB only infects the lungs and cannot spread to other parts of your body (False)
3. Extra-pulmonary TB does not need to be treated, it will cure itself (False)

RISK FACTORS

- 1. Crowded and closed spaces put us more at risk for getting TB (True)**
2. Young children and the elderly are not at risk for getting TB (False)
3. Keeping the windows open puts us more at risk for getting TB (False)

PREVENTION

1. There is nothing we can do to prevent TB (False)
- 2. Covering your mouth when you cough can help us prevent the spread of TB (True)**
3. Staying inside with the windows closed will help us prevent the spread of TB (False)

CONTACT TRACING

1. It is only my doctor's responsibility to contact trace (False)
- 2. Contact tracing means screening people who have come in close contact with someone with active TB (True)**
3. Contact tracing means finding all surfaces someone with TB has touched, and then cleaning them (False)

TREATMENT

1. If I feel better, I do not have to finish my treatment (False)
2. Multi-drug resistant TB is only a genetic disease (False)
- 3. TB is curable when treatment is taken properly (True)**

ROLE PLAY SCENARIO

Subject:	Test learning in interactive activity
Age Range:	9–18
Lesson Time:	45 minutes
Goals and Objectives:	<ul style="list-style-type: none"> • Test student’s understanding of material by having them role play • Encourage class participation
Materials:	<ul style="list-style-type: none"> • Scenarios • Props (optional)
Preparation	<ul style="list-style-type: none"> • Gather any props • Read through the scenarios and adapt based on class size, key messages, and resources

LESSON PLAN

Time Needed	Topic	Instructions
5 minutes	Introduction	<p>Split classroom into groups of approximately 6 people, based on the scenarios.</p> <p>Give each of the groups a scenario (see materials). The scenarios will have some or all of the following members:</p> <ul style="list-style-type: none"> • Parent(s) • Doctor • Kid(s) • Neighbor(s) <p>Describe the rules to the groups:</p> <ul style="list-style-type: none"> • Each scenario will present a different situation to the group. Each person in the group will role play one of the characters in the scenario. The group will collectively come up with a role play skit (two minutes) that describes the scenario. Several questions will be provided along with the scenario that the groups must answer during their skit.
20 minutes	Skit prep	<p>Give students time to read their scenario and come up with a role play skit. Walk around and make sure the students have the correct answers to the questions.</p>
15 minutes	Presentations	<p>Allow the students to present their scenarios. Discuss correct tactics and answers to questions after each skit.</p>
5 minutes	Conclusion	<p>Ask students for feedback on the game and if they have any questions about any of the material.</p>

ROLE PLAY SCENARIO

Scenarios

SCENARIO 1:

Key message: Symptoms

Roles needed (4-5):

- Mother
- 6 year old child
- 10 year old child
- Grandmother
- Doctor

Background: A 10 year old child starts having a cough for more than two weeks. His mother has also been coughing, and has been feeling more tired recently. The 6 year old child is not coughing, but has a rash on his/her leg. The grandmother lives with the family as well, and is very frail. The mother takes her two children to a doctor to ask about their symptoms, and talk about the grandmother's risk factors.

➤ **Create a conversation between the doctor and the family about the symptoms, answering the following questions:**

1. What are some of the common symptoms that are in the family? What disease could this be?
 2. What is a possible reason the 6 year old have a rash on his/her leg?
 3. Are the symptoms between children and adults always the same?
-

SCENARIO 2:

Key message: Contact tracing

Roles needed (4-5):

- 7 year old boy
- Doctor
- Father
- Worker at shop
- Mother (optional)

Background: A father walks into the shop that he works at with his friend. The shop is very small and they keep the door to the shop closed. The father starts to develop a cough that lasts for more than two weeks and has night sweats. When he goes home, he is very tired and does not have an appetite. The father lives with his wife and 7 year old boy. None of his family feels sick.

➤ **Create a skit that includes the father going to a clinic and speaking with the doctor. Be sure to describe the importance of contact tracing, answering the following questions:**

1. What are some of the common symptoms that the father has? What disease could this be?
2. What should the father do?
3. Who else could have TB in this scenario, and what should you do if you suspect they may have TB?
4. What is the importance of contact tracing?

ROLE PLAY SCENARIO

Scenarios *(continued)*

SCENARIO 3:

Key message: Transmission, Types of TB

Roles needed (3–6):

- 2–5 Students
- Teacher

Background: A teacher is teaching her students about childhood tuberculosis. One student asks how you can get tuberculosis. Another student asks what parts of the body TB can affect.

➤ **Create a lesson plan for the teacher to help the students learn about how you can get TB, and where it can affect. Be sure to answer the following questions in your lesson:**

1. What other questions could the students ask about the types of TB?
 2. What would the teacher's response be to the student's questions?
-

SCENARIO 4:

Key message: Risk factors

Roles needed (5–6):

- 15 year old boy
- Mother
- Doctor
- 3 year old girl (optional)
- Father
- Grandmother

Background: A mother was diagnosed with tuberculosis recently. She went to the doctor, who talked to her about risk factors for TB. The mother explained that she lives with her 70 year old mother, her husband, her three year old daughter, and her 15 year old son. The mother is nervous that she may pass on TB to her family. The grandmother does not understand why she is at risk for getting TB. They live in a small home that has two windows, although they are closed most of the time.

➤ **Create a discussion between the mother and the doctor, and the mother and her family about risk factors for TB. Be sure to highlight the risk factors in this scenario, in addition to answering the following questions:**

1. What could the doctor have told the mother about risk factors? Who in the mother's family is more at risk for getting TB?
2. How can the family reduce their risk of getting TB?

ROLE PLAY SCENARIO

Scenarios *(continued)*

SCENARIO 5:

Key message: Stigma reduction

Roles needed (3–6):

- Teacher
- 12 year old child
- Child’s friends

Background: A 12 year old girl was diagnosed with tuberculosis. She has been taking her treatment regularly for several months, and is continuing to go to school. Some of the children are scared they will get tuberculosis from her, and make fun of her for being sick.

> Create a scene where the girl’s friends and teacher explain that we should all work together to help support the girl throughout her treatment. Be sure to answer the following questions:

1. Why won’t the other children get tuberculosis from the 12 year old girl?
 2. Why is it so important to help others during treatment?
-

SCENARIO 6:

Key message: Prevention methods

Roles needed (4):

- Mother
- Mother’s friend
- 15 year old child
- 8 year old child

Background: A mother was diagnosed with tuberculosis and has been taking treatment regularly for two months. She stays at home most of the day to help take care of her eight year old child. She also has a 15 year old child. Their home is small, and has two windows and a door that are typically kept closed.

> Create a scene where the mother is talking to her friend about ways that she is trying to help prevent her children from getting TB. Be sure to include prevention methods that the children can also practice. Be sure to also answer the following questions:

1. What can the mother do to help prevent the spread of TB?
2. What should the mother do if she suspects one of her children may have TB?

ROLE PLAY SCENARIO

Scenarios *(continued)*

SCENARIO 7:

Key message: Treatment

Roles needed (4):

- Grandchild
- Grandmother
- Father
- Doctor

Background: A grandmother was feeling sick so she went to the doctor. The doctor diagnosed her with TB and told her to take her treatment properly. The grandmother says she will, and goes home. Sometimes, the grandmother forgets to take her pills.

> Create a scene where the grandmother speaks to the doctor about her treatment. Then, after the grandmother goes home, create a scene where the father and grandchild help the grandmother remember to take her pills. Be sure to answer the following questions:

1. What could the grandchild do to help make sure her grandmother takes her pills every day?
2. What could the father warn his mother about if she does not take her treatment properly?

HOW MANY OF YOU

Subject:	Reducing stigma
Age Range:	8–18
Lesson Time:	10 minutes
Goals and Objectives:	Reduce stigma by showing students that they are not alone in the fight against TB
Materials:	Question list

LESSON PLAN

Time Needed	Topic	Instructions
2 minutes	Introduction	<p>Describe the rules:</p> <ul style="list-style-type: none"> • The instructor will ask a question. If the question applies to the student, the student raises his/her hand. • Use the questions provided, and in the order provided. Feel free to add questions based on your audience. • Tell the students that if they are uncomfortable raising their hands for a question then they do not have to. • For each question, describe that everyone has had experiences with tuberculosis, and it is a community effort to help fight TB. After each question, ask if any students want to discuss their experiences
8 minutes	Ask questions	Ask questions, wrap up

How Many of You Questions:

1. How many of you like soccer?
2. How many of you like mangoes?
3. How many of you are girls?
4. How many of you have been sick before?
5. How many of you come in contact with someone frequently who has TB?
6. How many of you have gotten tested for TB before?
7. How many of you think it is fair if someone who has TB isn't allowed to come to school, even if they are on treatment?

MY FIRST EXPERIMENT

Subject:	Research
Age Range:	8–14
Lesson Time:	25 minutes
Goals and Objectives:	<ul style="list-style-type: none"> • Introduce the concept of the scientific process and research to students • Introduce research that is currently being done on TB and new medications
Materials:	<ul style="list-style-type: none"> • My First Experiment worksheet • Two types of candy (or other material such as pens, stickers, different sized stones, etc)
Preparation:	<ul style="list-style-type: none"> • Ensure you have enough candy (or other material) for each student • Print out copies of the worksheet for each student

LESSON PLAN

Time Needed	Topic	Instructions
5 minutes	Introduction	<ul style="list-style-type: none"> • Introduce the topic of research (see worksheet for talking points) • Hand out worksheet • Explain rules of the game: <ul style="list-style-type: none"> – The students will partake in a mini research experiment that involves candy! – Everyone will leave the classroom and the instructor will set up two piles of candy (two different types) on a desk. – One by one, the students will come in and pick a piece of candy from either pile. – The instructor will record how many pieces of each type of candy were picked, and replenish piles as needed to make sure the piles are even. This ensures that the students are not influenced by what candy the other students pick.
5 minutes	Hypothesis writing	<ul style="list-style-type: none"> • Before the students leave, explain the concept of a question and hypothesis: a hypothesis is a statement about what you think will happen, and why. For this experiment, the students will pick which candy they think will be more popular, and give a reason why. • Have the students write down their hypothesis on the worksheet • Call on a few volunteers to share their hypotheses
5 minutes	Experiment	<ul style="list-style-type: none"> • After the students finish writing their hypotheses, tell them to leave the classroom • Put out two piles of candy (different flavors) • One by one, have the students come in and pick a piece of candy that they want (and can keep) • Record how many pieces of each type of candy were picked • If one of the candy piles runs noticeably low, replenish the pile so that the students are not biased • When everyone is back in the room, tally the number of pieces that were picked for each type of candy
5 minutes	Results and discussion	<ul style="list-style-type: none"> • Now that you have the results tallied, share the numbers with the students • Create a simple bar graph on the board (students can do this on their worksheet) that shows how many pieces of each type of candy were picked • Discuss the results with the class—whether one candy was favored or whether they were equal. Discuss possibilities for why this may be the case
5 minutes	Conclusion, TB research	<ul style="list-style-type: none"> • Now that you have discussed the results, focus your attention back to TB and TB research (see teacher worksheet) • Discuss how TB research is more complicated, but everyone still uses the same scientific process (see teacher worksheet) • Discuss what is currently being researched with respect to TB (see teacher worksheet)

Note:	Candy does not have to be used for this experiment. Anything can be substituted—different color pens, stickers, etc.
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MY FIRST EXPERIMENT

My First Experiment Worksheet

INTRODUCTION TO RESEARCH

- Everything you have learned about TB is possible because scientists all over the world are performing research on TB
- What is research? Research is studying a particular topic so that we can learn more about the topic. There is still a lot we do not know about tuberculosis, but researchers are continuously studying tuberculosis so that we can find medicines that work faster and taste better.
- To research a topic, scientists often use a process called the scientific method. This involves coming up with questions you want answered, performing experiments, and looking at the results.
- Research takes a lot of hard work and a lot of time.
- Today you will follow the scientific method by performing a small experiment with candy.

QUESTION

The question is the first step in the scientific method. You must have a question that you want answered, and your experiment should be designed to answer the question.

Our question:

Which of the two types of candy will more students prefer?

HYPOTHESIS

A hypothesis is an educated guess about what you think the answer to your question is, and why.

Our hypothesis:

I think that _____ will be _____ preferred in comparison to the other candy
(type of candy) (less, more, equally)

because _____

MATERIALS AND METHODS

The materials are all of the materials needed for the experiment. The methods section details how you will perform the experiment.

Our Materials:

Two types of candy: _____ and _____

Our Methods:

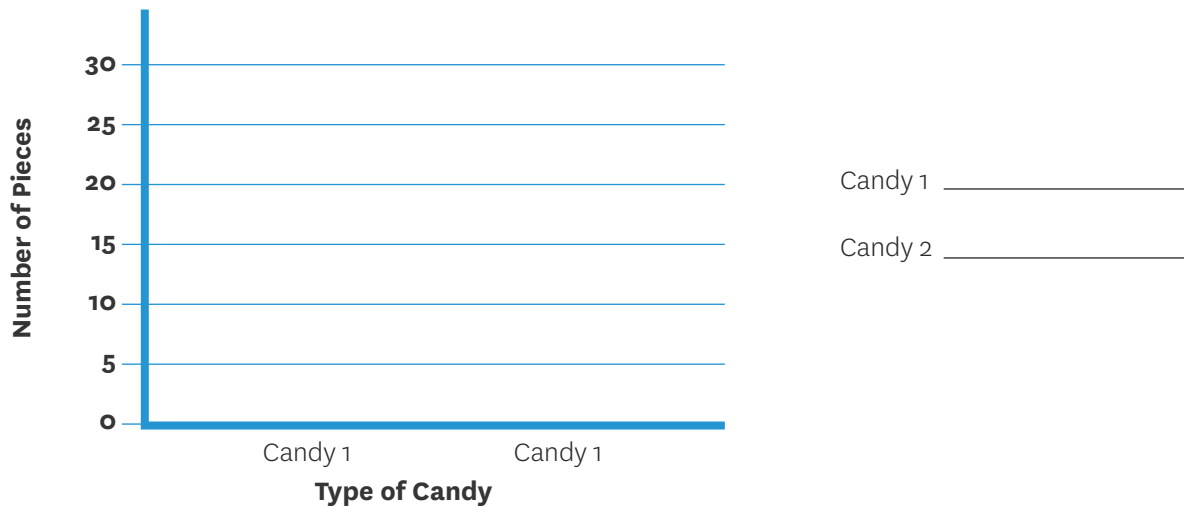
1. All students will step outside of the classroom.
2. The instructor will put a pile of each type of candy on the desk.
3. One by one, the students will come in and pick a piece of candy. The instructor will record how many pieces of each type of candy were picked, and replenish the piles as needed.

MY FIRST EXPERIMENT

My First Experiment Worksheet *(continued)*

RESULTS

After you perform the experiment in the materials and methods section, the results show what you found from the experiment. In this experiment, the results are how many pieces of each type of candy were picked. You can display the results in many different formats, including a bar graph as shown below.



DISCUSSION

The discussion gives specific reasons for why you got the results that you did. In this experiment, you will describe why a certain candy was picked over the other, or why they were equally picked.

Candy _____ was _____ preferred in comparison to the other type of candy.
(type of candy) (less, more, equally)

The reason for this is _____

CONCLUSION/TB RESEARCH

- Today we performed just a small and quick experiment. Finding new medicines for tuberculosis does not happen this quickly.
- Similar to our experiment where there were two piles, tuberculosis experiments always compare two treatments: the new treatment and the old treatment.
- Tuberculosis is curable with current medications. However, researchers are trying to find new medications that cure TB quicker, decrease the side effects of the medication, and make them taste better.
- Researchers are also trying to find medications that are more appropriate for children. The drugs that we have right now must be crushed for kids. We are trying to come up with better medicines for children so we do not have to crush the pills anymore.
- Finding new medications is a very difficult and long task. We have to make sure that the medicines work and that they are safe. All new medicines have to go through a process called clinical trials, which could take more than 15 years to finish!

CAMPAIGN WORK

Subject:	Stigma reduction, community engagement
Age Range:	11–18
Lesson Time:	35 minutes
Goals and Objectives:	<ul style="list-style-type: none"> • Students should recognize what issues are occurring in their community—stigma, not enough education about TB, misinformation • Students should come up with ideas to combat some of these issues, and come up with specific examples of what they could do
Preparation:	<ul style="list-style-type: none"> • Find local organizations or individuals who can help the students pursue any ideas that come out of this session

LESSON PLAN

Time Needed	Topic	Instructions
10 minutes	Group discussion	<ul style="list-style-type: none"> • As a group, discuss some of the issues about TB (particularly childhood TB) that may be occurring in your community. • To facilitate discussion, you can bring up certain points such as: <ul style="list-style-type: none"> – Stigma: people do not want to be around others who have TB – Fear: many people may be scared about having TB, and not sure what to do about it – Misinformation: some people may be misinformed about TB. For example, they may think that sharing a spoon with someone can transmit TB. – Not enough education: many people may not know a lot about TB, particularly childhood TB – Resources: some may not understand what to do or where to go if they do suspect TB, or if they want to help
15 minutes	Campaign work	<ul style="list-style-type: none"> • Split the class into groups of approximately 6. Once the students are in their groups, explain the next task: <ul style="list-style-type: none"> – As a group, the students will discuss ways they can try to combat some of the issues that are occurring in the community. They should come up with specific examples about what they can do as an individual, school, or community to help eliminate TB. • If the students are having trouble coming up with ideas, suggest some of the following that they can build on: <ul style="list-style-type: none"> – Share what they have learned with their families and friends – Write letters to officials to encourage more education about TB – Join or start a support group to help those who have TB – Try to organize speakers to come talk about childhood TB (speakers can include doctors, community health workers, ministry of health officials, current or previous patients, etc) – Host small events at a local clinic, or religious services, or school events, etc, to talk about childhood TB – Create posters that you can hang up in homes, schools, churches, etc
10 minutes	Discussion	<ul style="list-style-type: none"> • At the end of the 15 minutes, bring the class together again. Go around to each group and have them talk about what ideas they had • Write down ideas that the students have, and give information about local resources that the students can use to pursue their ideas.

IX. Glossary

Airborne transmission: TB bacteria are transmitted through the air. When someone with active TB coughs, sneezes, or talks, the bacteria can be sent into the air that we all breathe in.

BCG: Bacillus Calmette-Guerin is a vaccine against tuberculosis. Most infants are given this vaccine when they are young (ideally shortly after they are born). It is important to note that the BCG vaccine does not protect you against all types of TB, but it can help prevent against development of very severe and life threatening forms of TB, like TB meningitis. It is also only effective for young children.

Chest x-ray: A way to diagnose active TB disease in the lungs. An image, also known as a chest radiograph, shows the inside of the chest. A doctor can look at this image to see whether TB bacteria have damaged the lungs.*

Contact Tracing: Identification and diagnosis of those who may have come in contact with someone who has active TB. Contact tracing is one of the best ways to diagnose TB in adults and children, and can help prevent the spread of TB by identifying people at risk of contracting TB.

Close Contacts: Close contacts are those who frequently see someone who has active TB disease.

Culture: A test to see whether there are TB bacteria in sputum or other body fluids. This test can take 2 to 4 weeks in most laboratories.*

Diagnosis: Ways to determine if someone has TB disease.

Disseminated TB: See miliary TB.

Directly observed therapy (DOT): A way to ensure patients are adhering to their treatment. A healthcare worker provides the treatment to a patient and watches them swallow the pills.

Drug-resistant TB: TB disease caused by bacteria called Mycobacterium tuberculosis that are resistant to at least one first-line anti-tuberculosis drug (isoniazid or rifampin).

Ethambutol (EMB): A first-line drug for treating all forms of TB.

Exposure: The condition of being subjected to something (e.g., an infectious agent) that could have an effect. A person exposed to TB bacteria does not necessarily become infected. Much of the work in TB contact tracing is dedicated to learning who was exposed and, of these, who became infected.*

Extensively drug-resistant TB (XDR-TB): XDR-TB is a severe form of TB where the TB bacteria does not respond to most of the treatment available for TB.

Extra-pulmonary TB: TB disease that occurs in places other than the lungs, such as the lymph nodes, the pleura, the brain, the kidneys, or the bones; most types of extra-pulmonary TB are not infectious.* Children are more susceptible to extra-pulmonary TB than adults.

First-line drug: Treatment given to patients that have no known resistance. For tuberculosis treatment, the first line drugs can include: isoniazid (INH), rifampin (RIF), ethambutol (EMB), and pyrazinamide (PZA).

IX. Glossary (continued)

Immune system: A system in our bodies that helps fight against disease.

Immunocompromised and immunosuppressed: Conditions in which at least part of the immune system is functioning at less than normal capacity. Some immunocompromised conditions, such as HIV, increase the likelihood that M. tuberculosis infection will progress to TB disease.

Isoniazid (INH): A first-line agent for treatment of all forms of TB. The drug that is most often used for preventive therapy and also used to treat TB disease

Isoniazid preventive therapy (IPT): Isoniazid can be used for 6–9 months to help prevent against tuberculosis. This is often given to close contacts of someone who has active TB disease to help prevent development of TB disease in the contact person.

Latent TB (Infection, LTBI): Latent TB infection is when the tuberculosis bacteria has gone into the body, but the immune system in our your body is able to prevent you from feeling sick. Latent TB, or infection, can turn into active TB disease at any point. Isoniazid is often given to help decrease the chance of infection progressing to disease.

Miliary TB: A type of extra-pulmonary TB where the bacteria has spread through the blood and lymphatic system.

Multiple drug resistant TB (MDR-TB): TB disease caused by Mycobacterium tuberculosis organisms that are resistant to more than one anti-TB drug. Usually MDR-TB is defined as resistant to at least isoniazid and rifampin. It is more difficult to treat than drug-susceptible TB.

Mycobacterium tuberculosis: A type of bacteria that causes tuberculosis.

Prevention methods: There are many ways to prevent TB. These can include, but are not limited to, keeping windows and doors open to allow air to flow, avoiding crowded areas for long amounts of time, and staying healthy. If you have TB, covering your cough and finishing your treatment are the best methods to prevent the spread to others.

Pulmonary TB: Active TB disease that occurs in the lungs, usually producing a cough that lasts 3 weeks or longer. Most active TB disease is pulmonary.*

QuantiFERON TB Gold Test: A diagnostic method, a blood test to measure the patient's immune reactivity to M. tuberculosis.

Relapse: Recurrence of tuberculosis after treatment is completed.

Research: In relation to tuberculosis treatment, research is performing studies to find new treatments that are more effective, have shorter in length, have fewer side effects, and work against both drug-sensitive and drug-resistant patients.

Resistant Bacteria: Bacteria that can no longer be killed by an antibiotic at the concentration that is normally administered.*

Rifampicin (rifampin, RIF): A first-line agent for treatment of all forms of TB disease.*

IX. Glossary (continued)

Risk factors: There are several factors that can put you more at risk for getting TB. These factors include, but are not limited to: young children, the elderly, people with other illnesses, immunocompromised individuals (PLHIV), poor ventilation (closed windows and doors), and closed crowded areas for long amounts of time.

Smear microscopy: A laboratory technique for preparing a specimen so bacteria can be visualized microscopically.*

Sputum: Mucus containing secretions coughed up from within the lungs. Tests of sputum (e.g., smear and culture) can confirm pulmonary TB disease. Sputum is different from saliva or nasal secretions.*

Streptomycin: An anti-tuberculosis medication in the form of injection, the first medicine to treat against tuberculosis.

TB Alliance: A non-profit product partnership development organization working to find new treatments for tuberculosis that are more effective, have shorter treatment lengths, have fewer side effects, and work against both drug-sensitive and drug-resistant patients.

TB Disease: With TB Disease, the TB bacteria are growing. Most experience symptoms such as coughing and night sweats from active TB disease, and you can transmit the disease to others.

Transmission: The passing of a disease from one person to another. For tuberculosis, transmission is airborne, meaning that tuberculosis bacteria is passed through the air from someone who has active TB to another person.

Tuberculin Skin Test (TST, Mantoux): A diagnostic skin test performed by injecting PPD tuberculin solution into the forearm. Induration indicates infection or disease.

Tuberculosis (TB): A disease caused by the bacteria, *Mycobacterium tuberculosis*. In the latent stage, it is non-infectious and presents no symptoms. The symptoms of pulmonary TB disease include coughing, pain in the chest when breathing or coughing, and coughing up sputum or blood. The general symptoms of TB disease (pulmonary or extra-pulmonary) include weight loss, fatigue, malaise, fever, and night sweats. The symptoms of extra-pulmonary TB disease depend on the part of the body that is affected by the disease.*

* "Tuberculosis Glossary." National Tuberculosis Curriculum Consortium. 27 Apr. 2010. Web. 20 Oct. 2015. <https://ntcc.ucsd.edu/NTCC_glossary.pdf>.

X. Resources

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“Childhood TB Training Toolkit.” Towards Zero Deaths. WHO, 2014. Web. 20 Oct. 2015.
<http://www.who.int/tb/challenges/Child_TB_Training_toolkit_web.pdf?ua=1>

Roadmap for Childhood TB

Marais, Ben J, and Stephen M Graham. “Childhood Tuberculosis: A Roadmap towards Zero Deaths.” Journal of Paediatrics and Child Health J Paediatr Child Health (2014). Web. 20 Oct. 2015.
<http://apps.who.int/iris/bitstream/10665/89506/1/9789241506137_eng.pdf>

Framework for Integrating Childhood TB into Community based Health Care

Detjen A, Gnanashanmugam D, Talens A. A Framework for Integrating Childhood Tuberculosis into Community-based Child Health Care. October 2013. Washington, D.C: CORE Group.
<http://www.coregroup.org/storage/documents/Resources/Tools/Framework_for_Integrating_TB_Final.pdf>

TB Care1: Childhood TB

“Tools & Publications.” TB CARE I. Web. 20 Oct. 2015.
<<http://www.tbcare1.org/publications/>>

TB Educational Resources Pack (for teachers of students age 11-14)

Smith, Lewis. “TB Educational Resource Pack.” The Truth About TB. Brent. Web. 20 Oct. 2015.
<<http://www.thetruthabouttb.org/wp-content/uploads/2014/10/TB-Educational-Resource-FINAL-lowres.pdf>>

Out of the Dark: Meeting the needs of children with TB

“Out of the Dark: Meeting the Needs of Children With TB.” Out of the Dark: Meeting the Needs of Children With TB. Medecins Sans Frontiers, 2012. Web. 20 Oct. 2015.
<<http://www.msfaccess.org/content/out-dark-meeting-needs-of-children-with-TB>>

No more crying, no more dying, towards zero TB deaths in children

“NO MORE CRYING, NO MORE DYING. Towards Zero TB Deaths in Children.” Tuberculosis (TB). WHO, 2012. Web. 20 Oct. 2015.
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“Childhood TB for Healthcare Workers.” The Union. The Union. Web. 20 Oct. 2015.
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