

epidemic**tb**

IN THE GLOBAL COMMUNITY

PROPOSING SOLUTIONS, SAVING LIVES:
A GLOBAL TB CONFERENCE

EPIDEMIC: TB IN THE GLOBAL COMMUNITY, SOCIAL STUDIES UNIT



Education Development Center, Inc.



Education Development Center, Inc.

© Education Development Center, Inc. 2010. All rights reserved.

Downloading or photocopying for noncommercial educational use is acceptable. This work may not be reproduced or otherwise disseminated for any other purpose without the express written consent of EDC.

Please contact EDC's associate general counsel to inquire about gaining EDC's written consent.

Contact

Education Development Center, Inc.
55 Chapel Street, Newton, MA 02458-1060, USA
Phone: 617.969.7100 · Fax: 617.969.5979 · TTY: 617.964.5448
www.edc.org

Acknowledgments

Development and distribution for EPIDEMIC: TB in the Global Community has been made possible, in part, through grants from the Lilly MDR-TB Partnership and the Pulitzer Center on Crisis Reporting.

The developers wish to thank Lee B. Reichman, MD, MPH, FACP, FCCP, Professor of Medicine; Professor of Preventive Medicine & Community Health and Executive Director, New Jersey Medical School, Global Tuberculosis Institute for his contributions to the project.

Photographs and multimedia content has been provided by David Rockkind



Contents

Unit Overview	1
Unit Project Description	2
Learning Objectives	2
Unit Placement	2
Table of Lessons	4
Advance Preparation	4
Lesson 1: Introduction to Tuberculosis as a Global Disease	5
Lesson 2: How Can We Fight TB?	17
Lesson 3: The Global TB Conference	23
Resources	27
Standards	30
Bibliography	33

Unit Overview

Tuberculosis (TB) is an infectious disease that affects almost one-third of the world's population and kills nearly 2 million people each year. But why does TB—a treatable disease—kill so many people? What can and should the global community do to improve the diagnosis, treatment, and prevention of TB, to limit its spread, and to improve the lives of people afflicted with this disease? In this unit, students prepare for and participate in a mock conference where they develop a strategy for fighting TB worldwide.

Students focus on how TB affects communities in three specific countries: South Africa, Moldova, and India. By analyzing photographs and stories about people afflicted with TB, students gain a personal understanding of the effects of TB on individuals, families, and communities. They learn about how TB is spread, its symptoms and treatments, and prevention strategies. In addition, students learn about the emergence of MDR-TB (multi-drug resistant tuberculosis), a strain of TB that is particularly difficult and costly to treat.

Students explore how specific social, economic, and political issues in each case country complicate or exacerbate the TB problem. They analyze and evaluate strategies for addressing TB in the three case countries, and collaborate to develop a proposal for a global strategy for fighting TB.

Unit Length

3 50-minute sessions

Unit Project Description

Students work in teams, which are assigned one of three case countries: South Africa, Moldova, or India. Each team uses the photographs, anecdotes, and country information on the Epidemic TB Website to become experts on the effect of TB on communities in that country. Teams identify the issues specific to their country—such as economic conditions, access to health care, and access to education and training—that affect the way that TB is transmitted, treated, and perceived. Each team reviews a set of proposals for fighting TB, such as focusing on developing a new vaccine, improving diagnostic tools, developing more cost-effective treatments, or improving education programs on TB, and chooses the approach that would most benefit its case country. Students then complete a “jigsaw” to form global conference teams, with at least one representative from each original case country team, who presents arguments for his or her team’s chosen approach. Global conference team members collaborate to develop a proposal for a global strategy for fighting TB, drawing on the expertise of each case country representative.

Learning Objectives

Students will:

- Describe the physical, social, and economic effects of TB on individuals, families, and communities
- Understand basic information about TB, including primary causes of infection, symptoms and effects of the disease, and treatment and prevention strategies
- Identify specific social, political, or economic issues that exacerbate or complicate the TB problem in specific communities in one of three case countries: South Africa, Moldova, and India.
- Analyze, compare, and evaluate different strategies for addressing TB in one of the three case countries
- Collaborate with classmates to develop a proposal for fighting TB worldwide

Unit Placement

This unit is designed to be taught in a high school social studies course. It might fit well in the following courses of study:

- **Modern World History:** If you are teaching about globalization, this unit can help students learn about the effect of globalization on health. Use this unit to teach how globalization can both contribute to the rapid spread and promote the effective treatment of infectious diseases, such as TB.

- **International Relations:** This unit could be used to teach about ways that the international community can fight global issues. In addition, if you are teaching specifically about one of the case countries, this unit can be used to teach about specific issues in that country. For example, if you are studying political instability in the former Soviet Union, this unit can help you focus on how the burden of disease can exacerbate political instability.
- **Economics:** You can use this unit to teach about the relationship between economic hardship and disease prevention and treatment.
- **History:** You can use this unit to help students compare the spread of TB to that of other infectious diseases, both past and present, such as the cholera outbreaks of the 1800s and the 2010 cholera outbreak in Haiti. Have students examine how infectious diseases are transmitted and how human understanding of disease transmission has changed epidemics over time.

Student Prerequisites

It is assumed that students have a general familiarity with health care in the United States, particularly with respect to vaccinations (i.e., students were vaccinated against diseases as children and then had to prove they'd received those vaccinations in order to enter public school). This will help them compare access to health care in the United States with that in parts of the developing world.

Students should know how to conduct research and write persuasively.

Ideas for Adapting or Extending the Unit

In Session 3, invite guests to (or have a team of students) act as philanthropists who are going to fund one global TB proposal. Have each global conference team give a persuasive presentation on why their proposal should be funded. Have the philanthropists choose one proposal to fund.

As an extension to the unit, you can have students write a formal grant proposal, seeking funding for the implementation of their chosen strategy for fighting TB.

If you want students to explore TB in countries other than the three case countries, you may want to add teams representing other countries. If you do that, you'll need to do research ahead of time to find resources on TB in those countries.

Table of Lessons

Lesson 1: Introduction to Tuberculosis as a Global Disease

Students are introduced to the unit, the Epidemic TB Website, and the facts and faces of TB. Students are assigned to case country teams and begin researching the issues specific to TB in their case country.

Lesson 2: How Can We Fight TB?

Case country teams evaluate different proposals for fighting TB globally. They choose one proposal that they think will most benefit their case country, and prepare to present their decision at the global conference.

Lesson 3: The Global TB Conference

Students work in new global conference teams, each with at least one representative from each case country. Representatives share the decisions they made for their case country, and collaborate to come up with a global plan for fighting TB that would benefit all three case countries.

Advance Preparation

- Before Lesson 1, preview the Introduction to the TB section of the Epidemic TB Website, particularly the sub-section *Where Is TB?* In addition, preview the country introductions on the website and familiarize yourself with the social and economic issues in each case country.
- Before Lesson 1, prepare three pieces of chart paper, labeled “What I Know About TB,” “What I Think I Know About TB,” and “What I Want to Learn About TB.”
- Optional: Before Lesson 1, choose one photograph from the website that reflects a broader social, economic, or political issue, which you will use to model an analysis for the class. For example, a photograph of overcrowded living conditions might show how population density and/or widespread poverty makes it easier for TB to be transmitted. A photograph of an HIV patient also being treated for TB might show how the prevalence of HIV exacerbates the TB problem. A photograph of dilapidated hospitals might show that the country’s economic decline makes it more difficult for patients to receive quality treatment for TB.

Lesson 1: Introduction to Tuberculosis as a Global Disease

Students are introduced to the unit, the Epidemic TB website, and the facts and faces of TB. Students are assigned to case country teams and begin researching the issues specific to TB in their case country.

Materials Needed

- Three pieces of chart paper, labeled “What I Know About TB,” “What I Think I Know About TB,” and “What I Want to Learn About TB”
- Pens
- Optional: Sticky notes
- Computers with access to the Internet (at least one computer for every two to three students)
- **Handout 1: Unit Project Description**
- **Assessment Checklist: Global TB Conference Project**
- **Handout 2: Country Analysis**
- Chart paper
- **Handout 3: Journal Assignments**

Instructions

1. Introduce the unit by discussing how disease affects individuals and communities.

Ask students to think about whether someone they know was ever affected by a disease. Ask students:

- How was the afflicted person's life affected by the disease?
Possible answers: Debilitating physical symptoms, such as pain and fatigue; emotional issues, such as anger, or fear of long-term implications; financial issues, such as time and money spent on hospital visits or treatment, and having to take time off from work; social-emotional issues, such as the social stigma associated with particular diseases, or feeling alienated by others who are afraid of catching an infectious disease

Note: Talking about friends or family members who are afflicted by disease can be difficult and make some students feel uncomfortable. Make sure that students understand that they do not need to share personal stories if they do not feel comfortable doing so. If having such a personal discussion to begin the unit makes you uncomfortable as well, skip this introduction and start with the discussion of TB in step 2.

- Who else was affected by this person’s illness? How?

***Possible answers:** Family members who share the emotional and/or economic burden of the disease by helping to take care of the afflicted person, or taking time off from their own work to take the person to get treatment; if it’s an infectious disease, such as the swine flu, community members could experience fear of catching it*

- Imagine that the majority of that person’s community or town had the same disease. What effect might this have on life in the community?

Tell students that in this unit, they are going to explore the effects of one disease—tuberculosis, or TB—on individuals and communities in different parts of the world. While TB might not be a disease that students have personal experience with, explain that it affects millions of people around the world and kills nearly 2 million people each year. In some areas, large numbers of people within the same community are afflicted. Encourage students to keep the personal stories of the effects of other diseases in mind throughout the unit to help them imagine the effect that TB might have on people and communities. Tell students that throughout the unit, they will consider the role and the responsibility that the global community has in fighting the disease.

2. Have students identify what they know, what they think they know, and what they want to learn about TB.

Post the labeled chart paper. Have students individually write responses on one or more of the posted sheets (or give them sticky notes to write and post their responses).

Teacher’s Note: What Students Might Know, Think They Know, and Want to Learn About TB

Students’ responses might include some of the following:

- **What I Know About TB:** It’s a disease, it can be deadly, it affects the lungs
- **What I Think I Know About TB:** It does occur in the United States, but it’s more common in the developing world; it is treatable if caught early; HIV can make it worse; some strains of it are more dangerous than others
- **What I Want to Learn:** Why is it more common in certain parts of the world? How many people die from it? What is the biggest obstacle in treating it?

3. Have students explore the Epidemic TB Website to check their responses.

Direct students to the Introduction to TB section on the Epidemic TB Website. Ask students to work with a partner and choose one response from each sheet of chart paper. (The chosen responses do not have to be their own.)

Have pairs use the website to clarify the item they chose from “What I Know” and “What I Think I Know” and to try to answer the question they chose from “What I Want to Learn.”

Bring the class together, and go over the items on each piece of chart paper, highlighting essential TB facts and clarifying any misinformation students had about TB.

Ask students:

- Where is the highest concentration of TB in the world?
- Why do think the disease is distributed unequally?

***Possible answers:** In areas where population is more dense, the disease spreads more rapidly; in these areas, there may be less access to treatment and less knowledge about prevention and treatment*

- Do you think that people in countries where TB is not a big problem (such as the United States) should still be concerned about TB? Why or why not?

Teacher's Note: Discussing TB in the United States

While TB is more rare in the United States than in the developing world, there were still approximately 13,000 cases of TB in the United States reported in 2008. TB has been an issue in this country, particularly in some urban areas, and along the border with Mexico. If you want students to explore the scope of the TB problem in the United States, and issues related to its treatment and prevention, direct them to the websites in the TB in the United States section listed in Resources in the Teacher Center of the Epidemic TB Website. You might also use this opportunity to discuss the role that globalization plays in transmitting the disease throughout the world.

- What responsibility does the global community have to fight an infectious disease that is concentrated in particular parts of the world?

4. Introduce the unit project and divide students into case country teams.

Tell students that in this unit they will explore the role that the global community can play in fighting TB by engaging in a mock global conference. Explain that they will begin by working in teams to learn about the interests of communities in one of three countries: South Africa, India, and Moldova.

Divide the class into case country teams, and distribute **Handout 1: Global TB Conference Project Description** and **Assessment Checklist: Global TB Conference Project**.

Note: Ideally, teams should comprise three to five students. Depending on the number of students in your class, you may want to have more than one team for each country.

5. Have teams begin exploring their country websites.

Distribute **Handout 2: Country Analysis**. Tell students to use this handout to take notes on their country throughout the unit, which will help them prepare for the global conference.

Give students a few minutes to browse their country photos on the website and individually write down on Handout 2 key words and phrases that represent their first impressions of TB, their case country itself, and how TB affects people in their country. Encourage students to note anything that resonates with them.

Note: Students will complete the rest of Handout 2 during the next lesson.

Ask for volunteers to share some of their phrases. Record a class list on chart paper.

Possible answers: *Tired, poverty, antiquated treatment facilities, stigma, trouble breathing, skinny, sad, hopeless, young and middle-age victims, so many medicines at once, unsanitary conditions, hospitals look barren and old*

Note: Acknowledge that many pictures on the website are very sad and difficult to look at, as TB can be very painful and deadly. Tell students that during the unit, they will explore the efforts that people have made to improve life for those afflicted with the disease and to prevent TB from spreading. When they come back to this list at the end of the unit, they likely will have a more positive and hopeful outlook regarding the future of the disease and the communities depicted here.

6. Have teams choose one photograph that reflects an issue in their case country.

Ask each team to choose a photograph from their country site that they think depicts something significant about TB in their case country. Encourage students to choose a photograph that reflects a broader social, economic, or political issue in the country and how that issue complicates or exacerbates the TB problem.

Note: You may need to give students some examples of how a photograph of one individual can reveal a broader issue. (See Advance Preparation for suggestions.) If necessary, share a photograph from the site with the class and model how to analyze it to reveal a broader issue.

7. Have each team present its photograph to the class.

Have teams present their photographs, explaining why they chose that photograph and what issue(s) it reveals about their case country.

8. Have students complete Journal 1.

Distribute **Handout 3: Journal Assignments**.

Have students complete Journal 1, either in class or for homework.

Journal 1

Choose a photograph that you saw from one of the other countries (not your team's case country). Imagine that you are a person depicted in the photograph (or a person not depicted—for example, a family member or someone who works with that person), writing in your journal. Write a paragraph from that person's perspective, describing how your daily life is affected by TB.



Handout 1: Unit Project Description

TB is a contagious and potentially deadly disease that spreads through the air. Nearly 2 million people died from TB in 2009. Why does TB—a treatable disease—kill so many people? And what can the global community do to improve the diagnosis, treatment, and prevention of TB?

In this unit, you'll work in a team that is assigned one of three case countries: South Africa, India, or Moldova. You'll read personal stories about how TB affects people and communities in your case country, and you'll learn about specific issues—such as economic conditions, access to health care, and access to education and training—that affect the way TB is transmitted, treated, and perceived in that country. You'll evaluate a set of proposals for fighting TB and choose one that would most benefit your case country. You'll present this proposal at a global conference on TB, and then work with other country team representatives to develop one proposal for fighting TB worldwide.

Your work on the project will involve the following steps.

Step 1: Explore your country's section on the Epidemic TB Website

Familiarize yourself with your case country by exploring the website. Note words and phrases that represent your first impression of how TB affects people in your country. Look at all the photographs of your country.

In your team, choose one photograph from your country site to share with the class that you think tells something specific and significant about how TB is a problem there. For example, the photograph might convey how the prevalence of HIV in your case country exacerbates the TB problem, or how hard it is for people to get to the treatment centers, or how the country's population density encourages the rapid spread of TB.

Share with your classmates why you chose the photo and what you think other people should know about TB in your case country.

Step 2: Identify your country's problems and priorities

Identify your case country's specific issues and problems, and brainstorm ways to address the TB problem in this country.

Step 3: Evaluate proposals

Read and discuss with your team the set of proposals for fighting TB that your teacher gives you, and choose the one that will best serve your case country.



Step 4: Participate in a global conference

Meet with other country representatives and hold a conference about addressing TB worldwide. Share the proposal your case country team chose, and listen to the other representatives' ideas about what would be best for their case country. Work with the other representatives to develop a plan that will benefit the entire global community.



Assessment Checklist: Global TB Conference Project

Use this checklist to help you plan and assess your project. Make sure that you include all the required components. Your teacher will use this checklist to help evaluate your work.

Requirements	Percentage of Total Grade	Comments	
Country Analysis (Handout 2)	%	Student Comments	Teacher Comments
Describes the effect of TB on people living in the case country.	10%		
Demonstrates an understanding of economic, social, or political issues in the case country and describes how problems in the country affect how TB is contracted, transmitted, or treated.	10%		
Explains how the chosen proposal will benefit specific communities in the case country.	10%		
Global Summit Proposal Presentation	%	Student Comments	Teacher Comments
Presents a clear and easily understood message about how the chosen proposal will benefit each case country.	15%		
Demonstrates understanding of how TB affects people in each case country.	10%		
Presents arguments for prioritizing the chosen proposal over other proposals in a clear, engaging, and persuasive manner.	15%		



Teamwork	%	Student Comments	Teacher Comments
Actively participated in team discussions by contributing ideas and/or building on teammates' ideas.	10%		
Communicated thoughts clearly and used specific evidence to back up ideas and opinions.	10%		
Listened to other team members, and helped to resolve disagreements in a non-confrontational manner.	10%		
Total	100%		



Handout 2: Country Analysis

Use this handout to take notes on TB, issues in your case country, and what your country needs to help fight the TB problem. Your notes will help you prepare for the global TB conference.

Introduction to Case Country

First Impressions

Write down key words and phrases that represent your first impression of TB, your case country itself, and how TB affects people in your case country.

Powerful Photographs

Choose a photograph that especially resonated with you. Write down the number of the photograph: ____

What does this photograph tell you about TB?

What does this photograph tell you about how TB affects people's lives—both TB patients and their friends, family, or community?

What does this photograph tell you about conditions or issues in your case country?



Country Problems and Priorities

Issues

What are the major issues in your case country that affect how TB is contracted, transmitted, and treated (for example, poverty; the prevalence of HIV; misinformation about the disease; the high cost of treatment; outdated medicine, approaches to treatment, and/or technology)?

Needs

What would most help your case country fight TB (for example, a new vaccine, funding for treatment, improving education about the disease)?

Proposals for Fighting TB

What proposal did your team choose? Why?

Who will benefit the most from this proposal? How will they benefit?

What, if anything, are the costs or challenges of implementing this proposal?

What arguments against this proposal do you think other people might present? How might you counter their arguments against this proposal?



Handout 3: Journal Assignments

Journal 1

Choose a photograph that you saw from one of the other countries (not your team's case country). Imagine that you are a person depicted in the photograph (or a person not depicted—for example, a family member or someone who works with that person), writing in your journal. Write a paragraph from that person's perspective, describing how your daily life is affected by TB.

Journal 2

Revisit the diary entry you wrote from the perspective of someone affected by TB (Journal 1). Imagine that your team's TB proposal was implemented. Write another diary entry from the perspective of the same person that describes how the proposal might affect him or her personally. (You can imagine that you're writing months or even years after the first entry.)

Journal 3

How has your understanding of TB changed as a result of this unit?

Revisit the list of words and phrases your class created at the beginning of the unit. Describe the tone or mood of that list. What, if any, words or phrases about TB, the case countries, or the future of the disease would you now add to the list?

How, if at all, have your feelings about the issue changed?

What do you think other high school students should know about this issue? Why?

Why should American students care about the global spread of MDR-TB? What actions could students in the United States take to help stem the spread of this disease?

Lesson 2: How Can We Fight TB?

Case country teams evaluate different proposals for fighting TB globally. They choose one proposal that they think will most benefit their case country, and prepare to present their decision at the global conference.

Materials Needed

- Computers with access to the Internet (at least one per case country team)
- Students' copies of **Handout 2: Country Analysis** (from Lesson 1)
- **Handout 4: Proposals for Fighting TB**

Instructions

1. Have teams identify and prioritize their case country's issues.

Ask teams to identify their case country's most pressing issues and problems and to brainstorm ways to address the country's TB problem. Have students discuss the following questions, recording their answers on Handout 2:

- What are the major issues in your case country that affect how TB is contracted, transmitted, and treated (for example, poverty; the prevalence of HIV; misinformation about the disease; the high cost of treatment; outdated medicine, approaches to treatment, and/or technology)?
- What would most help your case country fight TB (for example a new vaccine, funding for treatment, improving education on the disease)?

Note: You may need to give students additional time to finish exploring their country site in order to answer these questions. You might also encourage students to use the keyword search function on the website to search for images that illustrate specific topics or issues. Show students how to use the drop-down menu on the search bar to search by topic.

Teacher's Note:

Helping Students Make Connections to Their Own Experience

You may want to ask students to compare the social, economic, or political conditions in their own community to those in their case country. Ask students:

- What do the photographs tell you about life in particular communities in this country? What aspects of life there seem similar to yours? What seems different?
- How do you think the infrastructure in your community affects the spread and treatment of diseases? For example, if a school in your town had an outbreak of a highly contagious disease, what protocols are in place to keep students and families healthy and informed about the disease and its prevention and treatment? How does that differ from your understanding of the infrastructure of your case country?

Note that students may have to do further research on their case country, as well as their own community's protocols, in order to answer these questions.

2. Have students read and rank proposals for fighting TB.

Distribute **Handout 4: Proposals for Fighting TB**.

Have students individually read through the proposals and rank them in order of preference, identifying which ones they think would most benefit their case country. If possible, give students time to research the proposals.

Teacher's Note: Optional Extension: Researching Proposals

If you have time, you may want to have teams assign team members specific proposals to research, so that each team can make a more informed decision about which proposal to choose. Have each student conduct in-depth research on the proposal(s) he or she has been assigned, using the websites listed in *Resources* in the *Teacher Center* of the Epidemic TB Website. Have students identify the costs and benefits of their assigned proposal(s), and present that information to their team.

3. Have teams choose the proposal that would most benefit their case country.

Have students discuss with their team how they ranked the proposals. Have each team choose one proposal that offers the greatest benefits to their case country.

Tell students that in the next session they will form new teams, made up of representatives from each case country team. Each student will represent the interests of his or her original country team; therefore, it is important that each member of the country team is on the same page about what proposal the team chose and why.

Have students answer the following questions, recording their responses on Handout 2:

- What proposal did your team choose? Why?
- Who will benefit the most from this proposal? How will they benefit?
- What, if anything, are the costs or challenges of implementing this proposal?
- What arguments against this proposal do you think other people might present? How might you counter their arguments against this proposal?

4. Have students complete Journal 2.

Have students complete Journal 2, either in class or for homework.

Journal 2

Revisit the diary entry you wrote from the perspective of someone affected by TB (Journal 1). Imagine that your team's TB proposal was implemented. Write another diary entry from the perspective of the same person that describes how the proposal might affect him or her personally. (You can imagine that you're writing months or even years after the first entry.)



Handout 3: Proposals for Fighting TB

Read the following proposals. Use the middle column to note the potential pros and cons of each proposal. Who might this proposal benefit? How? Who might this proposal hurt? What are the costs or challenges of this approach?

Rank the proposals in order, from the proposal that would most benefit your case country to the proposal that would be the least effective.

Finally, do you have another idea for a proposal or approach to fighting TB that is not listed here? Write your idea in the last row of the chart.

Proposal	Notes	Rank (1 for most effective, 7 for least effective)
<p>Focus efforts on developing a new vaccine.</p> <p><i>Rationale:</i> The vaccine currently used in most countries to prevent TB is the BCG, or bacille Calmette-Guerin vaccine, which has been used since the 1920s. However, over time, the effectiveness of the vaccine has lessened—while it's effective at preventing certain types of TB, it's not effective at preventing other types, particularly in adults. Its effectiveness also varies from country to country, where the strains of the disease may vary. While there have been efforts to develop a new vaccine, more support for research and clinical trials is needed, so that a more effective vaccine can be used to prevent future cases of all types of TB.</p>		

**Focus on education about the disease.**

Rationale: TB is treatable. But when patients don't take their medicine correctly, or stop taking it when they're feeling better, the result—drug-resistant strains of TB—can be worse than no treatment at all. Patients need to understand how important it is to follow their treatment exactly. In addition, many myths about TB persist, leading patients to fear potentially helpful treatments. Some people are even afraid to get tested for TB because of the social stigma attached to having the disease. Promoting educational programs will decrease stigma about the disease, clear up misinformation, and help people learn the best ways to both prevent and treat the disease.

Develop more effective treatment plans.

Rationale: TB patients are often required to go to a health clinic to take medicine daily. But for many patients, it is difficult and/or too expensive to travel to a clinic each day, so many discontinue their treatment. Research and money should focus on developing treatment regimes that are easier to follow—for example, treatment plans that don't require people to take pills as often or for as long.

Improve diagnostic tools.

Rationale: There are many misdiagnoses of TB every year. While inaccurate tests can show that TB antibodies are present, they don't necessarily show whether a person has an active form of TB, so many people are told mistakenly that they are sick with TB and need treatment. Taking drugs unnecessarily can make the drugs ineffective when they are needed. To stop TB, particularly in the developing world, efforts need to focus on improving technology to develop an efficient and accurate diagnostic exam.

**Isolate patients to prevent the spread of MDR-TB**

Rationale: Multiple drug-resistant TB (MDR-TB) is the most serious form of TB and the most difficult and costly to treat. Death rates for this strain can be very high, even with optimal treatment. Stopping the spread of MDR-TB is essential. There should be global guidelines that require patients diagnosed with MDR-TB to be immediately placed in *negative pressure isolation rooms*—rooms that allow air to flow into the room, but don't allow contaminated air to escape the room—at hospitals and treatment centers for the duration of treatment.

Improve anti-poverty programs.

Rationale: Desmond Tutu, South African archbishop and Nobel Peace Prize winner, once said, "TB is the child of poverty—and also its parent and provider." Unsanitary and crowded living conditions, poor nutrition, and lack of access to quality health care—problems that are associated with living in poverty—also promote the spread of TB (and other infectious diseases) and make it more difficult for people to complete their treatment. Reducing poverty and improving social services will have the largest impact on ensuring quality treatment of patients with TB, and on preventing the further spread of TB.

Other suggestions?

Do you have another idea for a proposal to fight TB in your case country? Write it here!

Lesson 3: The Global TB Conference

Students work in new global conference teams, each with at least one representative from each case country. Representatives share the decisions they made for their case country, and collaborate to come up with a global plan for fighting TB that would benefit all three countries.

Materials Needed

- Students' copies of **Handout 2: Country Analysis** (from Lesson 1)
- Chart paper and markers
- Chart paper from Lesson 1 of key words and phrases representing students' first impressions of TB, their case country itself, and how TB affects people in their country

Instructions

1. Have students "jigsaw" to form new teams and present proposals to their team.

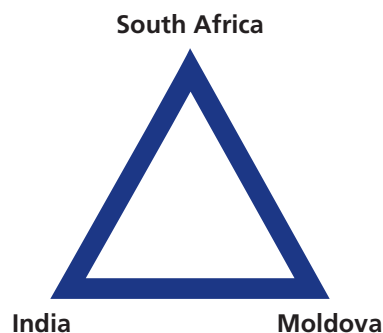
Divide the class into new global conference teams of three to six students. Each new team should have at least one representative from each case country.

Have students tell their team which proposal their case country team chose and present the arguments for this proposal, describing specifically how communities in their case country will benefit.

Note: Encourage students to use their completed copies of Handout 2 to help them organize and present their chosen proposal.

2. Have students identify similarities and differences among the countries' issues and needs.

Give each team a piece of chart paper and a marker. Have them draw a triangle on the chart paper and write the name of one case country on each point of the triangle. For example:



On the inside of the triangle, have teams write down issues that are common to each country, based on the arguments presented by the country representatives.

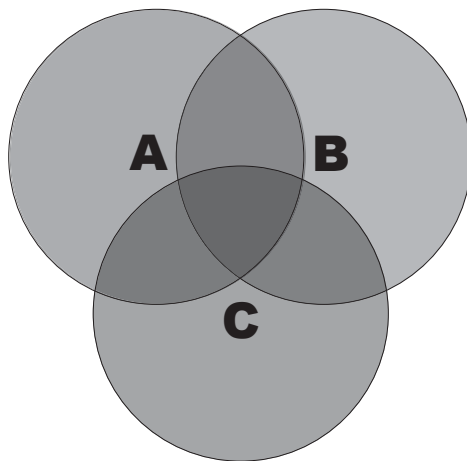
Note: If students need suggestions, you might point out that each country likely identified the emergence of MDR-TB as a pressing issue, or that patients in each country lack sufficient information or resources to get appropriate treatment.

On the outside of each triangle point, have teams write down issues that are unique to each country, or more pressing in one country than another.

Note: One example is that the South Africa team likely identified HIV as a pressing issue, while other teams might not have done so.

Teacher's Note: Venn Diagram

Instead of the triangle, you might have students use a Venn diagram to complete this step, with common issues listed in the areas where the circles overlap:



3. Have students collaborate to develop a global strategy for fighting TB.

In their global conference teams, have students choose a proposal that will benefit all three case countries (and, ideally, other countries with a TB problem), using the diagram of common and unique issues to guide their discussion. Tell students that they can choose a proposal that a teammate presented, pick a new proposal from Handout 4, combine two or more proposals, or come up with a completely new proposal of their own.

Have teams develop a three- to five-minute persuasive presentation on their proposal that answers the following questions:

- How will your proposal benefit communities in each case country?
- Why did you choose this proposal over other ones?
- What short- and long-term changes do you expect will come about if your proposal is fully implemented?
- What, if any, are the costs and challenges of implementing your proposal?
- Why should the global community care about this issue and support this proposal?

Optional Extension: Write a Grant Proposal

Have students individually write a formal grant proposal seeking funding to implement their proposal. Tell students that their proposal should include two key things:

- A description of the specific issue the grant would address, including any relevant statistical information
- The impact that the proposal, if funded, would have on the communities involved

Students should use a persuasive style of writing in order to convince a grant review board to finance their proposal.

4. Have each global conference team present its proposal to the class.

Have teams present their proposals to the class.

Ask students:

- Which team's presentation was the most persuasive? Why?
- What did you find challenging about choosing one proposal?
- In reality, do you think the proposal you chose could be implemented? Why or why not?

5. Have students reflect on their work in this unit.

Display the chart paper list of students' first impressions of TB, which they created in Lesson 1. Have students complete Journal 3, either in class or for homework. If time permits, discuss students' responses as a class.

Journal 3

How has your understanding of TB changed as a result of this unit?

Revisit the list of words and phrases your class created at the beginning of the unit. Describe the tone or mood of that list. What, if any, words or phrases about TB, the case countries, or the future of the disease would you now add to the list?

How, if at all, have your feelings about the issue changed?

What do you think other high school students should know about this issue?
Why?

Why should American students care about the global spread of MDR-TB? What actions could students in the United States take to help stem the spread of this disease?

Teacher's Note: Having Students Take Additional Action Regarding TB

In conjunction with this project, students may want to take additional action, such as writing e-mails or letters to politicians, or raising funds to fight the disease. For more information about how to go about these activities, you can give students the *TB Action Packet* available for download on the Epidemic TB Website.

Resources

These recommended websites have been checked for their availability and for advertising and other inappropriate content. However, because websites' policies and content change frequently, we suggest that you preview the sites shortly before using them.

General Resources

www.cdc.gov/tb/

www.globalization101.org/issue_sub/health/globaldiseases/Tuberculosis

www.who.int/mediacentre/factsheets/fs104/en/

www.stoptb.org/

www.gatesfoundation.org/photogalleries/pages/default.aspx?gallery=&image=0&pager=2&filter=#gallery=/tuberculosis/Pages/what-is-tb.aspx&image=0&pager=0&filter=Tuberculosis

Lesson 1: Introduction to Tuberculosis as a Global Disease

TB in the United States

www.cdc.gov/tb/statistics/reports/2009/default.htm

www.nytimes.com/2010/06/13/health/13tuberculosis.html

www.cdc.gov/tb/publications/factsheets/statistics/TBTrends.htm

www.stoptbusa.org/

TB in India

www.newyorker.com/reporting/2010/11/15/101115fa_fact_specter#ixzz15SDdzN1n

whoindia.org/en/Section3/Section123.htm

www.tbcindia.org/

www.theglobalfund.org/en/savinglives/india/tb1/

TB in Moldova

www.usaid.gov/our_work/global_health/id/tuberculosis/countries/eande/moldova_profile.html

<http://pulitzercenter.org/people/david-rochkind>

<https://www.cia.gov/library/publications/the-world-factbook/geos/md.html>

TB in South Africa

<http://allafrica.com/stories/201006090828.html>

www.internationalreportingproject.org/stories/detail/1090/

www.usaid.gov/our_work/global_health/id/tuberculosis/countries/africa/safrica_profile.html

www.pbs.org/newshour/bb/africa/jan-june09/southafricatb_03-24.html

Lesson 2: How Can We Fight TB?

Proposals for Fighting TB

TB Vaccine

www.cdc.gov/tb/topic/vaccines/default.htm

http://arabnews.com/lifestyle/food_health/article260304.ece

www.aeras.org/about-tb/need.php

TB and HIV

www.globalization101.org/issue_sub/health/globaldiseases/AIDS_and_TB

www.cdc.gov/tb/topic/TBHIVcoinfection/default.htm

TB Diagnostic Tools

www.mayoclinic.com/health/tuberculosis/DS00372/DSECTION=tests-and-diagnosis

www.medindia.net/news/New-Diagnostic-Tool-for-Quick-Identification-of-Tuberculosis-81228-1.htm

Misinformation about TB

<http://www.aidsmap.com/page/1422206/>

TB and Poverty

http://www.action.org/tb_champions/archbishop_desmond_tutu/

<http://healthinitiative.org/html/tbpoverty/index.htm>

MDR-TB

www.pbs.org/wgbh/rxforsurvival/series/diseases/tuberculosis.html

www.theglobalfund.org/en/savinglives/philippines/tb3/

Isolation Rooms

www.infectioncontrolday.com/articles/2000/05/infection-control-today-creating-tb-isolation-rooms.aspx

www.nursingtimes.net/nursing-practice-clinical-research/the-ethics-of-legally-detaining-a-patient-who-has-tuberculosis/204146.article

TB and Poverty

www.action.org/tb_champions/archbishop_desmond_tutu/

<http://healthinitiative.org/html/tbpoverty/index.htm>

Standards

This unit was developed to meet the following standards.

National Academic Standards and Core Skills

Social Studies: Content Standards 9–12

Compiled from the National Council for the Social Studies (NCSS)
(www.socialstudies.org/standards/)

Social Studies: Curriculum Standards for Social Studies

9. Global Connections

- 9c: Analyze effects of changing technologies on the global community.
- 9d: Analyze persistent, contemporary, and emerging global issues.
- 9e: Analyze the relationship between national sovereignty and global interests.

10. Civic Ideals and Practices

- 10c: Locate, analyze, synthesize, and apply information about selected public issues, considering and evaluating multiple points of view.
- 10d: Practice forms of civic discussion and participation consistent with the ideals of citizens in a democratic republic.
- 10i: Construct a policy statement and an action plan to achieve one or more goals related to an issue of public concern.
- 10j: Participate in activities to strengthen the “common good,” based upon careful evaluation of possible options for citizen action.

Partnership for 21st Century Skills

21st Century Learning Skills Content Standards List

Compiled from Partnership for 21st Century Skills (www.21stcenturyskills.org)

21st Century Themes

Schools must move beyond a focus on basic competency in core subjects to promoting understanding of academic content at much higher levels by weaving 21st century interdisciplinary themes into core subjects

1. Global Awareness

- 1A. Using 21st century skills to understand and address global issues

4. Health Literacy

- 4E. Understanding national and international public health and safety issues

Learning and Innovation Skills

A focus on creativity, critical thinking, communication and collaboration is essential to prepare students for the future

5. Creativity and Innovation

- 5B. Developing, implementing and communicating new ideas to others
- 5C. Being open and responsive to new and diverse perspectives

6. Critical Thinking and Problem Solving

- 6B. Making complex choices and decisions
- 6E. Framing, analyzing and synthesizing information in order to solve problems and answer questions

7. Communication and Collaboration

- 7A. Articulating thoughts and ideas clearly and effectively through speaking and writing
- 7B. Demonstrating ability to work effectively with diverse teams
- 7D. Assuming shared responsibility for collaborative work

Information, Media and Technology Skills

Students must be able to exhibit a range of functional and critical thinking skills related to information, media and technology

8. Information Literacy

- 8A. Accessing information efficiently and effectively, evaluating information critically and competently and using information accurately and creatively for the issue or problem at hand

10. ICT (Information, Communications & Technology) Literacy

- 10A. Using digital technology, communication tools and/or networks appropriately to access, manage, integrate, evaluate, and create information in order to function in a knowledge economy
- 10B. Using technology as a tool to research, organize, evaluate and communicate information, and the possession of a fundamental understanding of the ethical/legal issues surrounding the access and use of information

Life and Career Skills

The ability to navigate the complex life and work environments in the globally competitive information age requires students to pay rigorous attention to developing adequate life and career skills

13. Social & Cross-Cultural Skills

- 13A. Working appropriately and productively with others
- 13B. Leveraging the collective intelligence of groups when appropriate

15. Leadership & Responsibility

15A. Using interpersonal and problem-solving skills to influence and guide others toward a goal

15B. Leveraging strengths of others to accomplish a common goal

Bibliography

Centers for Disease Control and Prevention. (July 1, 2010). *Tuberculosis: General information*. Retrieved February 15, 2011, from www.cdc.gov/tb/publications/factsheets/general/tb.htm

Globalization 101. (November 2007). *Tuberculosis issue brief*. Retrieved February 16, 2011, from www.globalization101.org/issue_sub/health/globaldiseases/Tuberculosis

Spector, M. (November 15, 2010). *A deadly misdiagnosis*. Retrieved February 16, 2011, from www.newyorker.com/reporting/2010/11/15/101115fa_fact_spector#ixzz15SDdzN1n

World Health Organization. (November, 2010). *2010/2011 Global TB facts*. Retrieved February 15, 2011, from www.who.int/tb/publications/factsheets/en/index.html

World Health Organization. (n.d.). *Initiative for vaccine research*. Retrieved February 16, 2011, from www.who.int/vaccine_research/diseases/tb/vaccine_development/bcg/en/