

# *Global Health Summit*

INTEGRATED  
CURRICULUM UNIT  
ON HIV/AIDS



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# Global Health Summit

## CONTENTS

	Page
<b>Unit Overview</b>	<b>1</b>
<b>Subunit 1 Overview</b>	<b>3</b>
Lesson 1.1 English Language Arts	5
Lesson 1.2 Biology	9
Lesson 1.3 World Geography	17
<b>Subunit 2 Overview</b>	<b>25</b>
Lesson 2.1 Health Science	27
Lesson 2.2 Biology or Health Science	33
Lesson 2.3 English Language Arts or Health Science	39
<b>Subunit 3 Overview</b>	<b>49</b>
Lesson 3.1 English Language Arts	51
Lesson 3.2 World Geography	61
Lesson 3.3 English Language Arts	69

### National Healthcare Foundation Standards that apply to this unit include:

- Academic Foundations
- Communications
- Information Technology Applications



# Global Health Summit

## UNIT OVERVIEW

### **Essential Question for This Unit**

What is the responsibility of the United States to address health crises in the developing world?

### **Unit Summary**

This unit focuses on the impact that HIV/AIDS continues to have around the world. Students look at the biology of the disease and then delve into the social and personal implications of addressing a deadly pandemic.

In Subunit 1, students come to understand how widespread and devastating the disease is by reading and discussing personal accounts of HIV-positive and AIDS patients from different regions of the world. After learning about the structure and action mechanisms of HIV in biology class, students map the infection rates of nations throughout the world to get a clear picture of the magnitude of the problem.

The second subunit emphasizes current methods of prevention and treatment of AIDS in the individual, as well as research in the field of HIV/AIDS. Students learn about the paths of HIV transmission and discuss the best prevention methods for these paths. They then investigate the biology of antiretroviral drugs and the reasoning behind taking several drugs at once to combat AIDS. The last lesson in the subunit asks students to consider the ethical issues surrounding drug trials in developing nations.

Subunit 3 teaches students about the current large-scale efforts to combat the AIDS pandemic. The subunit starts by examining how much developed nations have donated to help combat the problem through individual donor nation contributions or participation in international aid organizations. Students are then asked to research developing nations to find out what national and local programs are already in place and whether they are working. They will put this information to use when creating the best plan for a country that they have researched, which is the culminating experience of this unit.

### **Culminating Event**

World leaders have convened a summit to discuss better solutions to the AIDS pandemic, especially in the hardest hit areas of the developing world. The country that students researched in Lesson 3.2 has asked for a proposal to create an HIV/AIDS program targeted toward its needs. Students are asked to write a report including background information and the current HIV/AIDS situation of that country, as well as provide a plan that would best handle AIDS education, prevention, and treatment. Students will share their proposal with the class during a PowerPoint presentation and will create a sample pamphlet for one of the proposed intervention programs.

### **Key Questions/Issues**

- What does it feel like to have AIDS? How are AIDS patients treated around the world? (English Language Arts)
- How does HIV infect the body? (Biology)
- What is the difference between being HIV positive and having AIDS? How does HIV make you sick? (Biology)
- How widespread is AIDS around the world? Which areas are hit the hardest by the disease? (World Geography)
- What are the ways that HIV is spread? (Health Science)
- How can HIV infection be prevented? (Health Science)
- What is the current best practice for treating AIDS? How does it work? (Biology or Health Science)
- How are drug trials conducted ethically in developing nations? (English Language Arts or Health Science)
- What are wealthy nations currently doing to help the developing world combat AIDS? How does donated money get to the places that need it the most? (English Language Arts)

- What is the developing world currently doing in their own countries to combat AIDS? (World Geography)
- What are the barriers hindering the prevention and treatment of AIDS in the developing world? (World Geography)
- What is the best plan for combating AIDS in specific countries? (English Language Arts)

### Learning Scenario to Kick Off the Unit

Your cousin, who has just graduated from college, has decided to spend the summer traveling through South Africa. To your great excitement, she invites you to join her for a travel adventure. When you broach the subject with your parents, they have two conditions that you must meet in order to get their permission. First, your parents are very concerned about the high HIV/AIDS incidence rates in sub-Saharan nations. They want assurances that you know how HIV is transmitted and that you won't put yourself at risk. Second, your parents want you to be more than a tourist. They want you to give back to the country you are visiting, either by volunteering or making a substantial donation to an AIDS organization of your choosing. They want proof that you put a lot of thought into choosing the organization, and that the organization's programs work effectively.

What do you tell your parents about HIV/AIDS?  
What is the best thing you can do to help with the AIDS crisis in the developing world?

### Biomedical/Healthcare and Education Partner Roles

- A school librarian/media specialist can assist the English Language Arts and World Geography instructors with teaching research skills, particularly in using print and other media resources.
- A computer technology or graphic arts instructor can assist with the layout and production of reports, PowerPoint slides, and flyers.
- Possible invited speakers to discuss the impact of AIDS in the local and global community include international aid organization representatives, local AIDS activists, someone who is HIV positive or has AIDS, public health educators and policymakers, elected officials, and AIDS researchers.
- Additional individuals can be invited to participate as speakers or to help evaluate the culminating event. These include:
  - Pharmacologist
  - Psychologist
  - Registered Nurse
  - Social Worker
  - Pathologist
  - Epidemiologist
  - Ethicist
  - Patient Advocates

### SUBUNITS AND MAJOR TOPICS (ACROSS ACADEMIC AND TECHNICAL SUBJECT AREAS)

Subunit 1 <i>A Serious Situation</i>	Subunit 2 <i>Treating the Problem</i>	Subunit 3 <i>Finding the Right Solution</i>
ENGLISH LANGUAGE ARTS · BIOLOGY · WORLD GEOGRAPHY	HEALTH SCIENCE · BIOLOGY · ENGLISH LANGUAGE ARTS	ENGLISH LANGUAGE ARTS · WORLD GEOGRAPHY
<ul style="list-style-type: none"> <li>• Personal narratives of AIDS patients from around the world</li> <li>• Structure and life cycle of HIV</li> <li>• Mapping HIV infection rates</li> <li>• Social impact of HIV/AIDS</li> </ul>	<ul style="list-style-type: none"> <li>• Paths of HIV transmission</li> <li>• HIV/AIDS prevention strategies</li> <li>• Current HIV/AIDS treatment strategies and how they work</li> <li>• Ethics of HIV/AIDS treatment testing in developing nations</li> <li>• Writing reasoned arguments on ethical issues</li> </ul>	<ul style="list-style-type: none"> <li>• Current contributions of developed nations to the fight against the global AIDS crisis</li> <li>• Barriers against successful prevention and treatment of HIV/AIDS in developing nations</li> <li>• Researching and evaluating current HIV/AIDS programs in specific developing nations</li> <li>• Creating the best possible HIV/AIDS program for a specific country</li> </ul>



# A Serious Situation

## SUBUNIT 1 OVERVIEW

### Essential Question for This Unit

What is the responsibility of the United States to address health crises in the developing world?

### Subunit Goals

Subunit 1 gives students an idea of the impact of HIV/AIDS around the world, from the individual experience of being a patient to the changes an entire society must make due to high infection rates. In Lesson 1.1, students read and discuss personal narratives of AIDS patients from different regions of the world. Next, in a Biology lesson, students learn how HIV infects the body, what it does to the immune system, and how a person progresses from being HIV positive to having AIDS. In the last lesson, students investigate HIV infection rates across the globe by interpreting statistics and creating maps that visually represent how heavily affected certain geographical areas are by HIV/AIDS. The lesson ends with excerpts from a UNAIDS report about the social impact of HIV/AIDS.

### Subunit Key Questions

- What does it feel like to have AIDS? (English Language Arts)
- How does HIV spread throughout the body? (Biology)
- How does a person turn from being HIV positive to having AIDS? (Biology)
- How widespread is the AIDS epidemic? Which regions of the world are most affected by AIDS? (World Geography)
- How is AIDS affecting societies in various parts of the world? (World Geography)

### Lesson Summaries

Lesson	Subject	Description
1.1	English Language Arts	<b><i>The Personal Toll</i></b> Students read the personal narratives of those affected by HIV/AIDS.
1.2	Biology	<b><i>HIV and the Immune System</i></b> Students investigate the mechanism of viral infections, specifically HIV. The effect of the virus on the human immune system is explained, as well as the progression of being HIV positive into having AIDS.
1.3	World Geography	<b><i>The Global Impact of HIV/AIDS</i></b> Students study current health statistics and use maps to chart HIV infection rates around the world. They read about the global social and economic impact of HIV/AIDS to understand how serious and widespread the epidemic is.



# The Personal Toll

## LESSON 1.1

### ENGLISH LANGUAGE ARTS

**Time**  
45 minutes

**Materials**  
**Equipment**  
Computer with Internet access

**Resources**  
HIV Treatment Personal Accounts:  
• <http://www.hiv aids.webcentral.com.au/text/stories.html>  
• [http://bbs.thebody.com/index/treat/start\\_accounts.html](http://bbs.thebody.com/index/treat/start_accounts.html)

**Prior Student Learning**  
A basic knowledge of AIDS is desirable but not necessary.

### **Essential Question for This Unit**

What is the responsibility of the United States to address health crises in the developing world?

### **Objectives**

After completing this lesson, students should be able to

- Describe the physical effects of *acquired immunodeficiency syndrome (AIDS)*.
- Explain the travails of people living with AIDS and its impact on their families and friends.
- Identify the factors that put teens at risk for *human immunodeficiency virus (HIV)*.

### **Lesson Activities**

#### **Lesson Springboard**

Ask students what they know about AIDS. What causes it? How does it affect the body? Provide the basic definition of AIDS and its effects on the body:

- AIDS is the last and often fatal stage of infection from the virus known as HIV.
- HIV is the virus that causes AIDS. It steadily weakens the immune system until the body is no longer able to fight infections and disease. HIV is spread through direct contact with bodily fluids (blood, semen, and breast milk).
- There are several stages of HIV infection:
  - When a person is first infected, he or she may get flu-like symptoms that go away without treatment.
  - Several years after infection, people will begin to show symptoms of HIV disease. These include swollen lymph glands, fevers, skin and nail changes, dental disease, weight loss, and tiredness. This stage may last for a few months or for many years.
  - The final stage in an HIV infection is AIDS. Without effective treatment, the long-term damage caused to the body's defenses means that it can no longer fight off many infections. These infections are called "opportunistic" because they exploit the weakened immune system and may become fatal for a person with AIDS. Common symptoms of AIDS include severe diarrhea, appetite and weight loss, pneumonia, brain infections, memory loss, tiredness, a general decline in health, and, in some cases, death.

Subunit 1—A Serious Situation  
*The Personal Toll*

LESSON 1.1

**Lesson Development**

***Student Reading***

Ask the class to imagine what it is like to live with AIDS. What are the challenges, fears, coping strategies, and daily routines? Would they feel angry, sad, frustrated, determined, or tired? What feelings might they have about themselves or their partners?

Tell students that they are going to read accounts written by people with AIDS or by their families and friends. The following websites offer stories for student reading from men and women of all ages, ethnicities, and backgrounds:

<http://www.hivaidcentral.com.au/text/stories.html>

[http://bbs.thebody.com/index/treat/start\\_accounts.html](http://bbs.thebody.com/index/treat/start_accounts.html)

Have students skim a wide range of stories and choose one to explore in detail. As they read, they should take notes and consider the following questions:

- How did this person contract AIDS or HIV? How old was he or she?
- How did the person learn of the diagnosis? What type of treatment did he or she receive?
- How did the person's life change after he or she got HIV or AIDS?
- What feelings did this person have? Did these feelings change as the disease worsened?
- How was the person's life with family and friends?
- What resources or people in the community helped this person?

Besides taking notes, students should choose one quotation from the story that is especially moving, instructive, or surprising. They should write down this quotation together with the person's name, age, and date of death (if no longer living). When students have finished reading their stories, have them read these quotations aloud to the class.

***Class Discussion***

The following questions will help to guide students' discussion:

- What were some of the ways people contracted HIV? How did they learn of their diagnosis?
- How did these people manage living with AIDS? Were there differences among them? Similarities?
- How did friends and family influence their experiences?
- Did the person with AIDS face stereotyping or discrimination? How did society at large respond to his or her plight?
- What are some of the common symptoms of AIDS?
- What treatments are available for people with AIDS? What are the benefits and disadvantages of each treatment?

Subunit 1—A Serious Situation  
*The Personal Toll*

LESSON 1.1

**Lesson Closure**

Ask the class to peruse the AIDS stories once again and select two more that interest them. As **homework**, they will choose one of the questions from the class discussion above and respond to it in a 300-word essay, using their three stories as evidence.

**Possible Prior Misconceptions**

Students may not know that HIV does not always result in AIDS. In the United States, most people who are infected with HIV live for years and in various states of health without contracting AIDS.

Students may not realize that heterosexuals now constitute the majority of people with HIV. Others who are HIV positive include homosexuals, users of intravenous drugs, and people who received transfusions of contaminated blood.

**Student Assessment Artifacts**

300-word essay on the plight of living with AIDS

**Variations and Extensions**

Have students choose a story and write a personal response to it, such as a poem, a diary entry, or a letter to the person living with AIDS.

Or, have students choose a story that is relatively long and detailed. Divide students into “support groups,” in which they assume the role of the person whose story they have read and share their experiences with one another. It may be helpful for one student to assume the role of moderator, or counselor, in order to guide the discussion.

**National and State Academic Standards**

**NATIONAL**

**NCTE Standards for the English Language Arts**

1. Students read a wide range of print and non-print texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.
3. Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics).
6. Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language, and genre to create, critique, and discuss print and non-print texts.

**CALIFORNIA**

**English Language Arts Content Standards**

**Reading**

- 3.7 Recognize and understand the significance of various literary devices, including figurative language, imagery, allegory, and symbolism, and explain their appeal.
- 3.8 Interpret and evaluate the impact of ambiguities, subtleties, contradictions, ironies, and incongruities in a text.
- 3.9 Explain how voice, persona, and the choice of a narrator affect characterization and the tone, plot, and credibility of a text.

**Writing**

- 2.2 Write responses to literature:
  - a. Support important ideas and viewpoints through accurate and detailed references to the text or to other works.
  - c. Demonstrate awareness of the author’s use of stylistic devices and an appreciation of the effects created.
  - d. Identify and assess the impact of perceived ambiguities, nuances, and complexities within the text.



# HIV and the Immune System

## LESSON 1.2

### BIOLOGY

#### Time

200 minutes

#### Materials

#### Equipment

Computer lab with Internet access

#### Resources

- Bio-Rad ELISA Immuno Explorer Kit (<http://www.explorer.bio-rad.com/>)
- Human Immunodeficiency Virus diagram
- Life Cycle of HIV handout
- The Biology Project, ELISA Activity ([http://www.biology.arizona.edu/immunology/activities/elisa/elisa\\_intro.html](http://www.biology.arizona.edu/immunology/activities/elisa/elisa_intro.html))

#### Prior Student Learning

Students should have a basic understanding of the structure and function of viruses.

Students should be familiar with the major components and functioning of the innate and adaptive immune systems.

Students should be familiar with the difference and the relationship between DNA and RNA.

### Essential Question for This Unit

What is the responsibility of the United States to address health crises in the developing world?

### Objectives

After completing this lesson, students should be able to

- Describe the HIV replication process.
- Explain the action of HIV on the functioning of the immune system.
- Conduct and interpret an HIV test simulation.
- Describe the direct and indirect physical consequences of HIV/AIDS.

### Lesson Activities

#### Lesson Springboard

Write *HIV* and *AIDS* on the board and ask students if they can describe how the terms are different and how they are related. Explain that HIV and AIDS are both acronyms. Discuss each term in more detail:

- H Human—the virus can only infect humans
- I Immunodeficiency—the effect is to weaken the immune system
- V Virus—the type of pathogen
  
- A Acquired—nonhereditary, caught from contact with a pathogen
- I Immuno—associated with the immune system
- D Deficiency—characterized by lack or weakness
- S Syndrome—a group of health problems that make up a disease

Emphasize that HIV and AIDS are not the same. HIV is a virus, and AIDS is a disease. While it is true that HIV causes AIDS, a person can be HIV positive without developing AIDS for many years. Being HIV positive is sometimes referred to by the medical community as having HIV disease, which is **not** the same as having AIDS.

### Lesson Development

#### Direct Instruction

Pass out the Human Immunodeficiency Virus diagram and explain the components that make up an HIV particle (sometimes called *virions*). HIV is a spherical virus. Its viral envelope is a lipid membrane embedded with 72 “spikes,” made up of the gp41 and gp120 glycoproteins. Just within the envelope is a layer known as the *virus matrix*, made of protein p17. The viral core is a capsid made of protein p24. The capsid encloses

# HIV and the Immune System

## LESSON 1.2

HIV's two strands of genomic RNA, as well as the three enzymes HIV uses in replication: reverse transcriptase, integrase, and protease.

If necessary, review the functions of the following basic cellular components:

- DNA—the genetic material found in the nucleus of cells, which acts as the “blueprint” for building and maintaining living cells.
- Enzymes—the “workers of a cell.” They build new proteins, transport materials around the cell, and carry out other important cellular functions.
- RNA—the “construction boss.” Cells use RNA to tell enzymes how to build a specific part of a cell. To make a new protein, enzymes will copy a specific part of the DNA into a piece of RNA. This RNA is then used by other enzymes to build a new protein or enzyme.
- Proteins—the building blocks that are used to make living things.

Pass out the Life Cycle of HIV handout. Introduce the states of the HIV life cycle and have students take notes as you present them. Students will review the HIV life cycle when they learn about HIV treatments in Lesson 2.2.

1. Binding/Fusion—when HIV comes into contact with a helper T-cell, the glycoproteins on the HIV envelope (gp120 and gp41) bind to the CD4 and CCR5/CXCR4 receptors on the surface of the T-cells. The virus fuses to the host cell and releases its RNA into the host.
2. Reverse Transcription—an HIV enzyme, reverse transcriptase, injected along with the RNA transcribes the viral RNA into HIV DNA or provirus using nucleotides found in the host cell's cytoplasm. The HIV DNA contains the instructions for hijacking the genetic machinery of the T-cell.
3. Integration—once the viral genetic material is in DNA form, it is transported into the nucleus where another viral enzyme, integrase, inserts the HIV DNA into the T-cell's own DNA. This integrated DNA is known as provirus. Provirus can remain dormant in a cell for several years.
4. Transcription—when the T-cell is activated, the provirus awakens and instructs the host T-cell to use its own RNA polymerase to transcribe new HIV RNA and transport it back out of the nucleus. Some of the RNA will act as new viral genetic material, while other mRNA is translated into HIV protein chains.
5. Assembly—when the protein chains are produced, a final HIV enzyme, protease, cuts the long protein strands into the smaller pieces. These smaller proteins come together with the HIV RNA to assemble new HIV particles.
6. Budding—the newly assembled virus “buds” out from the host T-cell, stealing a portion of the host's cell membrane to serve as the new viral envelope.



# HIV and the Immune System

## LESSON 1.2

### **Direct Instruction**

Even though HIV targets the T-cells, the immune system still reacts to HIV as with any other pathogen by producing antibodies. It is the presence of the HIV antibodies that provides the means to test whether someone has been infected with HIV. Quickly review the following points:

- The immune system detects antigens present on the surface of foreign substances.
- The immune system produces antibodies in reaction to the presence of antigens. Each antigen has a unique antibody that binds to it.
- If HIV antibodies are added to an HIV-positive blood sample, agglutination will occur. If HIV antibodies are added to an HIV-negative blood sample, no agglutination will occur. Unfortunately agglutination is not visible to the naked eye.

Enzyme-Linked ImmunoSorbent Assay (ELISA) is a diagnostic technology that allows scientists to visualize antigen-antibody agglutination. The basic steps in ELISA are as follows:

1. Bind the antigen.
2. Bind the primary antibody.
3. Add the enzyme-linked secondary antibody.
4. Add a colorless substrate that will turn into a colored product the if enzyme is linked to the primary antibodies,.

### **Lab or Computer Simulation**

Have students conduct their own ELISA test. Several scientific supply companies sell kits for high school use, including Bio-RAD. In addition, Bio-Rad has an ELISA animation on their ELISA Immuno Explorer Kit webpage (<http://www.explorer.bio-rad.com/>).

Alternatively, take students to the computer lab and have them go through a computer simulation of an ELISA test ([http://www.biology.arizona.edu/immunology/activities/elisa/elisa\\_intro.html](http://www.biology.arizona.edu/immunology/activities/elisa/elisa_intro.html)).

Another option would be to use the HIV Testing Activity provided by the Museum of Science and Industry (<http://www.msichicago.org/ed/AIDS/hivtst4.htm>). This activity also includes the western blot follow-up test.

### **Direct Instruction and Class Discussion**

Because HIV can remain latent in the T-cells, it is possible to be HIV positive, and yet not get sick for many years. The progression of HIV infection occurs in several distinct stages:

- Primary (or acute) HIV infection—Initial HIV infection is often accompanied by some flu-like symptoms, but few (<20%) of people have symptoms serious enough to warrant seeing a doctor. During this stage, the virus travels to the lymph nodes over the course of several days and then actively reproduces and releases new virus par-

# HIV and the Immune System

## LESSON 1.2

ticles into the bloodstream. This burst of rapid HIV replication usually lasts about 2 months. People at this stage often have a very high HIV “viral load” because the body has not yet begun producing antibodies. What implications does this have for getting tested for AIDS at this stage?

- **Seroconversion**—During this stage, the body begins producing antibodies to the virus. The vast majority of those infected will begin seroconversion within 3 to 6 months of primary infection. Once antibodies are produced, the HIV ELISA test can be used.
- **Asymptomatic immune system decline**—HIV damages the immune system slowly, possibly because the immune system is still able to respond at the early stages. The length of this stage varies widely, but on average, HIV disease (not AIDS) can remain asymptomatic for 10 years.
- **Symptomatic Infection**—Eventually HIV causes enough damage to the immune system that symptoms appear. The progression from asymptomatic to symptomatic is thought to be the result of the combination of lymph node damage, HIV mutation to a more pathogenic form, and the body’s failure to replace T-cells at the rate they are being lost. At this stage, the body is vulnerable to opportunistic infections that the immune system could normally fend off.
- **AIDS**—According to the Centers for Disease Control and Prevention (CDC), HIV disease has progressed to full-blown AIDS once the patient has a CD4 T-cell count below 200 (a healthy count is 1000) and has one or more opportunistic infections. Opportunistic infections commonly related to HIV include tuberculosis, bacterial pneumonia, septicemia, PCP, toxoplasmosis, isopsoriasis, candida, herpes simplex, herpes zoster, non-Hodgkin’s lymphoma, Kaposi’s sarcoma, and other squamous cell carcinomas.

### Lesson Closure

Review the stages of the HIV life cycle. Given the various steps required for HIV to replicate, ask students to identify at least three different spots in the life cycle that would disrupt replication if the process were to somehow break down or get blocked. Students will return to this topic in Lesson 2.2.

### Possible Prior Misconceptions

Some students may believe HIV and AIDS are the same, as they are often used somewhat interchangeably in popular media.

There is a common, lingering belief that HIV affects primarily gay men and/or intravenous drug users. It may be important to emphasize that anyone engaging in at-risk behaviors can be infected.

There are some controversial claims about the origin of the HIV virus (i.e., it is a bioengineered weapon against “undesirable” populations) and about the true cause of AIDS (i.e., drugs used to treat AIDS are actually the cause of AIDS). None of these claims are accepted by the mainstream medical community.

# HIV and the Immune System

## LESSON 1.2

### **Student Assessment Artifacts**

Completed Life Cycle of HIV handout  
Lab write-up (optional)

### **Variations and Extensions**

Invite a health professional to speak to the class about the symptoms and treatment of AIDS in the United States and around the world.

## National and State Academic Standards

### **NATIONAL NRC National Science Education Standards**

#### *The Cell*

- Cells have particular structures that underlie their functions. Every cell is surrounded by a membrane that separates it from the outside world. Inside the cell is a concentrated mixture of thousands of different molecules which form a variety of specialized structures that carry out such cell functions as energy production, transport of molecules, waste disposal, synthesis of new molecules, and the storage of genetic material.
- Cells store and use information to guide their functions. The genetic information stored in DNA is used to direct the synthesis of the thousands of proteins that each cell requires.

#### *Personal and Community Health*

- The severity of disease symptoms is dependent on many factors, such as human resistance and the virulence of the disease-producing organism. Many diseases can be prevented, controlled, or cured. Some diseases, such as cancer, result from specific body dysfunctions and cannot be transmitted.

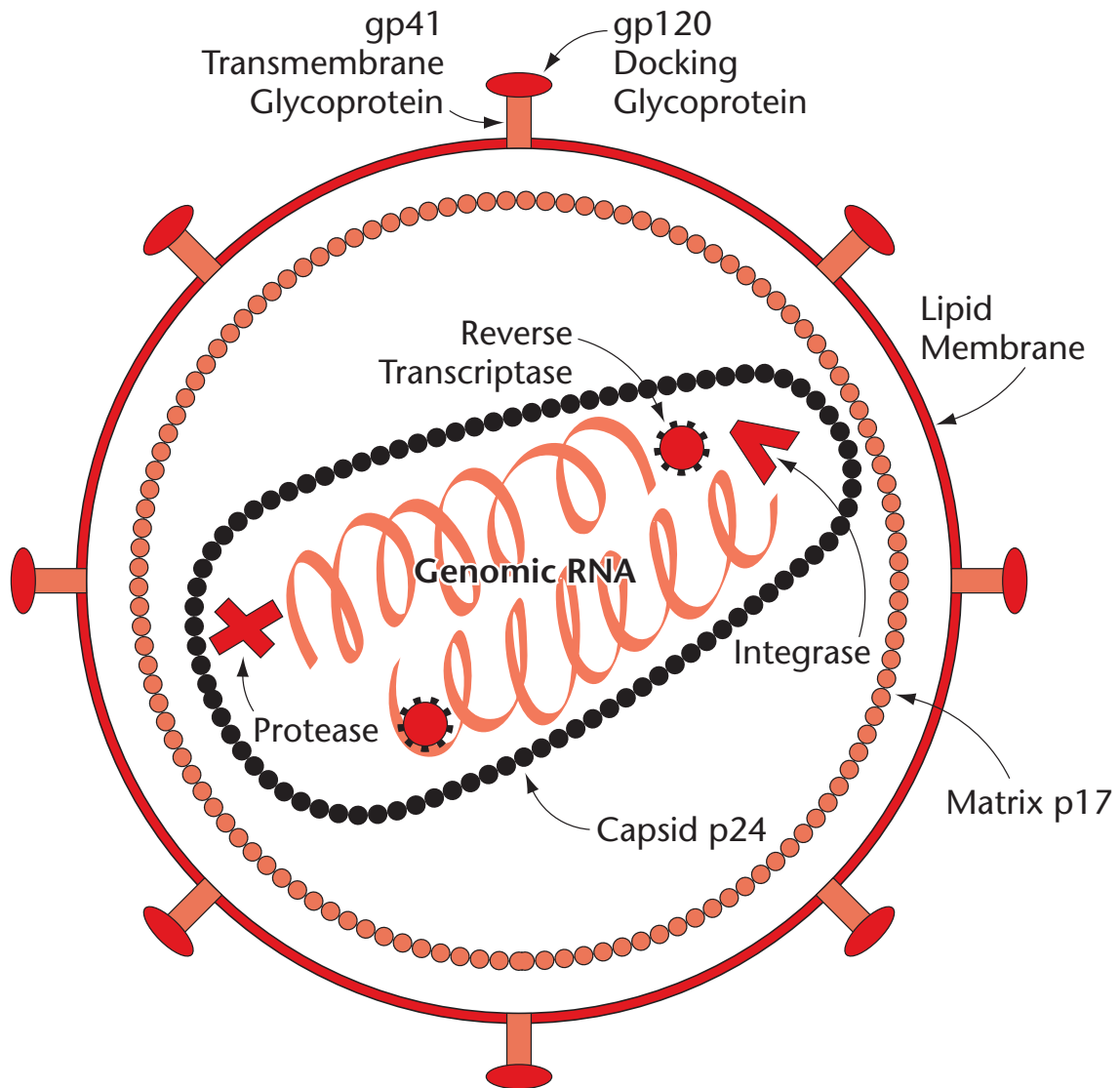
### **CALIFORNIA Science Content Standards**

#### *Biology/Life Science*

4. Genes are a set of instructions encoded in the DNA sequence of each organism that specify the sequence of amino acids in proteins characteristic of that organism. As a basis for understanding this concept:
  - a. Students know the general pathway by which ribosomes synthesize proteins, using tRNAs to translate genetic information in mRNA.
5. The genetic composition of cells can be altered by incorporation of exogenous DNA into the cells. As a basis for understanding this concept:
  - b. Students know how to apply base-pairing rules to explain precise copying of DNA during semi conservative replication and transcription of information from DNA into mRNA.
10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response:
  - b. Students know the role of antibodies in the body's response to infection.
  - e. Students know why an individual with a compromised immune system (for example, a person with AIDS) may be unable to fight off and survive infections by microorganisms that are usually benign.
  - f. Students know the roles of phagocytes, B-lymphocytes, and T-lymphocytes in the immune system.

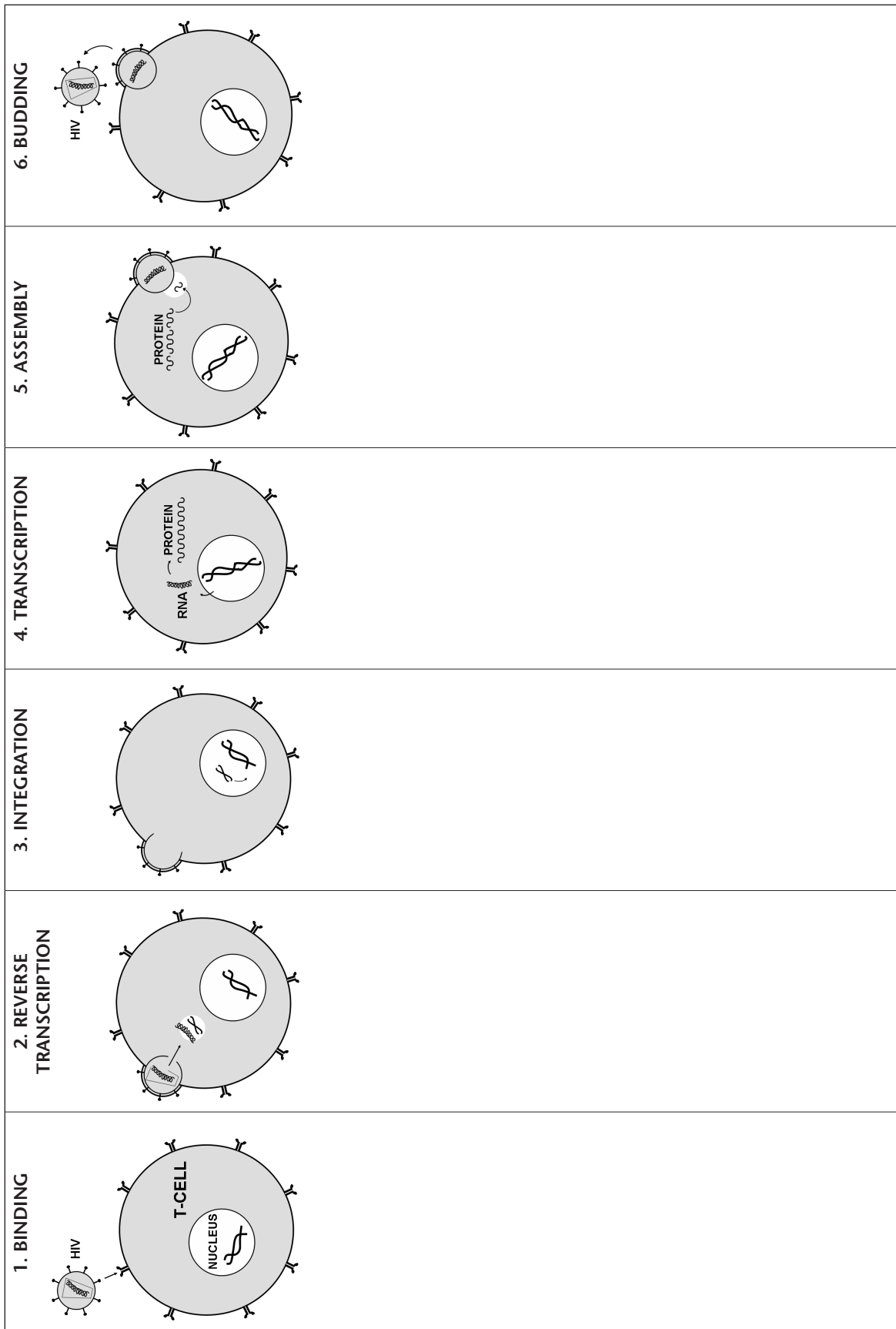
Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## Human Immunodeficiency Virus



Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

# Life Cycle of HIV





# The Global Impact of HIV/AIDS

## LESSON 1.3

### WORLD GEOGRAPHY

#### Time

100 minutes

#### Materials

##### Equipment

- Transparencies
- Colored transparency pens
- Colored pencils
- Computer lab (optional)

#### Resources

- Excerpts from *2006 Report on the Global AIDS Epidemic*, UNAIDS
- Blank political map of the world and of each continent (<http://www.nationalgeographic.com/xpeditions/atlas/index.html?Parent=world&Rootmap=&Mode=b&SubMode=w>)
- UNAIDS/WHO Epidemic Update: December 2006 reports for each geographical region ([http://www.unaids.org/en/HIV\\_data/epi2006/default.asp](http://www.unaids.org/en/HIV_data/epi2006/default.asp))
- Statistics on regional and national rates of infection (<http://www.avert.org/statindx.htm>)

#### Prior Student Learning

Students should already have a general understanding of how HIV is spread and the medical implications of having AIDS.

### Essential Question for This Unit

What is the responsibility of the United States to address health crises in the developing world?

### Objectives

After completing this lesson, students should be able to

- Locate the nations most heavily affected by HIV/AIDS on a map.
- Compare the prevalence of HIV/AIDS across major geographical region of the world.
- Explain the short-term and possible long-term social and economic effects of HIV/AIDS on the global population.

### Lesson Activities

#### Lesson Springboard

How serious is the AIDS epidemic, and how does the global situation affect individuals? Ask the class to reflect on the recent news stories or discussions about HIV/AIDS and comment on their views of the seriousness of the problem in their neighborhood and in the world. Check for prior knowledge by asking students which countries are most heavily affected by the epidemic and where those countries are located.

#### Lesson Development

##### Mapping Activity

Define the terms *epidemic* and *pandemic*. Tell students that they will be getting a sense of exactly how widespread the AIDS problem is around the world by looking at current statistics and displaying the information on maps. Divide the class into six groups, one for each of the populated continents of the world. Hand each group an overhead transparency of a blank political map of their continent and some colored transparency pens. The blank political maps can be printed directly on the transparencies. Then have students access statistical data on AIDS infection rates for their continent online or give them handouts of the information. (See the Resources section for how students can locate the blank political maps and gain access to current statistics online.)

Ask groups to locate and label the name of each of the countries listed in their statistical table on their map. Then, as a class, choose a color-coded key for HIV/AIDS incidence rates (e.g., red could represent rates over 15%, yellow 10%–15%, etc.). Have each group color the countries on their continent maps to create a visual display of the prevalence of the AIDS epidemic.

# The Global Impact of HIV/AIDS

## LESSON 1.3

### **Regional Impact Summaries**

Although the maps students just produced provide an effective visual representation of the epidemic, they do not provide information about whether HIV infection rates are increasing or decreasing, the mortality rate of each region, or other factors important in considering the impact of the disease.

Have each group access the UNAIDS/WHO Epidemic Update for their geographical region, either online (see the Resources section above) or by handing out copies. Ask each group to read their regional update and summarize it for the class. At this point, it might be necessary to define *mortality rate*, *NGO*, *WHO*, and other terms that are commonly used in AIDS reports. Give each group a blank transparency where they can record the main points they would like to emphasize in their presentation. Because continents like Africa are split into multiple reports by UNAIDS, decide on an equitable way to distribute the work throughout the class.

### **Group Presentations**

Give each student a copy of a blank world map and colored pencils before the presentations begin. Each student is responsible for labeling all of the countries that are mentioned in the presentations and transparencies and color-coding each country according to its present infection rate. By the end of the presentations, the map should serve as a reference of the HIV/AIDS “hotspots” around the world.

Have each group present their maps and summarize the information in their regional epidemic update. Make sure that each group addresses how prevalent the epidemic is now, whether or not the infection rate is growing or diminishing, the most common pathways of transmission, and the demographic groups that are most heavily affected in the region.

### **Class Discussion**

When the students have completed their presentations, discuss as a class any previous misconceptions students may have had about the AIDS crisis, either in a specific region or in the world as a whole. Compare and contrast regions and have students draw upon their prior knowledge of cultural geography and AIDS to explain the differences between regions. Tell students that they will be able to confirm or refute their explanations as they learn more about the global AIDS crisis in later lessons.

### **Lesson Closure**

Remind students that HIV/AIDS affects not only the infected individual, but also the entire community with which the individual interacts. There is certainly a societal impact of AIDS. Pass out Excerpts from the *UNAIDS 2006 Report on the Global AIDS Epidemic*, Chapter 4: “The Impact of AIDS on People and Societies.” Groups can jigsaw the information in the handout or have each student read it in class or at home. Ask the class to prepare a 5-minute quick write explaining their reactions to their new knowledge about the AIDS epidemic.



# The Global Impact of HIV/AIDS

## LESSON 1.3

### ***Possible Prior Misconceptions***

Students may only be aware of the AIDS crisis in sub-Saharan Africa and may not realize that there are growing and serious impacts of AIDS in other parts of the world.

Students may not understand the cultural and religious influences that still drive the stigmatization of HIV/AIDS in parts of the world.

### ***Student Assessment Artifacts***

Color-coded continent transparencies (group)

Transparencies of main summary points from regional epidemic updates (group)

Color-coded world map (individual)

Participation in class discussion comparing the regional impacts of AIDS

Quick write responses to the AIDS epidemic (individual)

### ***Variations and Extensions***

Invite a representative from an AIDS advocacy group to speak to the class about the impact of AIDS on particular nations.

Invite a human rights advocate to speak about the treatment of AIDS victims around the world.

Expand the lesson to include more content about the effects of the AIDS epidemic on political and economic stability around the world.

Expand the lesson to include a timeline of AIDS as it has spread around the world over the past several decades. Explain when and how AIDS was first discovered and its cultural impacts since its discovery.

# The Global Impact of HIV/AIDS

## LESSON 1.3

### National and State Academic Standards

#### NATIONAL

##### NCSS Curriculum Standards for Social Studies

###### III. People, Places, and Environments

Social studies programs should include experiences that provide for the study of people, places and environments, so that the learner can:

- a. refine mental maps of locales, regions, and the world that demonstrates understanding of relative location, direction, size, and shape;
- b. create, interpret, use, and synthesize information from various representations of the earth, such as maps, globes, and photographs;
- e. describe, differentiate, and explain the relationships among various regional and global patterns of geographic phenomena such as landforms, soils, climate, vegetation, natural resources, and population;
- h. examine, interpret, and analyze physical and cultural patterns and their interactions, such as land use, settlement patterns, cultural transmission of customs and ideas, and ecosystem changes;
- i. describe and assess ways that historical events have been influenced by, and have influenced, physical and human geographic factors in local, regional, national, and global settings.

##### NCGE National Geography Standards

###### The World in Spatial Terms

- Understand how to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.
- Understand how to use mental maps to organize information about people, places, and environments in a spatial context.
- Understand how to analyze the spatial organization of people, places, and environments on Earth's surface.

###### Places and Regions

- Understand the physical and human characteristics of places.
- Understand that people create regions to interpret Earth's complexity.
- Understand how culture and experience influence people's perceptions of places and regions.

#### CALIFORNIA

##### History-Social Science Content Standards

###### Chronological and Spatial Thinking

1. Students compare the present with the past, evaluating the consequences of past events and decisions and determining the lessons that were learned.
2. Students analyze how change happens at different rates at different times; understand that some aspects can change while others remain the same; and understand that change is complicated and affects not only technology and politics but also values and beliefs.
3. Students use a variety of maps and documents to interpret human movement, including major patterns of domestic and international migration, changing environmental preferences and settlement patterns, the frictions that develop between population groups, and the diffusion of ideas, technological innovations, and goods.
4. Students relate current events to the physical and human characteristics of places and regions.

###### World History

- 10.10 Students analyze instances of nation-building in the contemporary world in at least two of the following regions or countries: the Middle East, Africa, Mexico and other parts of Latin America, and China.
  1. Understand the challenges in the regions, including their geopolitical, cultural, military, and economic significance and the international relationships in which they are involved.
  2. Describe the recent history of the regions, including political divisions and systems, key leaders, religious issues, natural features, resources, and population patterns.
  3. Discuss the important trends in the regions today and whether they appear to serve the cause of individual freedom and democracy.

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## Excerpts from *2006 Report on the Global AIDS Epidemic*

### A UNAIDS 10th anniversary special edition

#### Chapter 4: “The Impact of AIDS on People and Societies”

[http://www.unaids.org/en/HIV\\_data/2006GlobalReport/default.asp](http://www.unaids.org/en/HIV_data/2006GlobalReport/default.asp)

The impact of AIDS is still not fully understood, particularly when the long term is considered. The epidemic comes in successive waves, with the first wave being HIV infection, followed several years later by a wave of opportunistic diseases, and later still by a wave of AIDS illness and then death (Barnett and Whiteside, 2002). The final wave affects societies and economies at various levels, from the family and community to the national and international levels. None of the highly affected countries have yet hit the peak of the third wave nor advanced very far into the fourth, and as one study put it (Bell et al., 2003):

*We don't know how severe the impacts of the third and fourth waves will be—little about this pandemic is linear and AIDS is a unique threat ... What for example is the likely long-term damage social, economic, psychological—wrought by the orphaning of millions of children? What we do know is that impacts will continue to be felt for years to come and the situation will get significantly worse before it gets better.*

#### **Population and population structure**

The overall impact of AIDS on the global population has not yet reached its peak, and its demographic effects will likely be felt well into the second half of the 21st century. Current projections suggest that by 2015, in the 60 countries most affected by AIDS, the total population will be 115 million less than it would be in the absence of AIDS. Africa will account for nearly three-quarters of this difference in 2050, and although life expectancy for the entire continent will have risen to 65.4 years from the current 49.1 years, it will still be almost 12 to 17 years less than life expectancy in other regions of the world (UN Population Division, 2005b).

The steady progress towards improved life expectancy that was being made until the advent of the epidemic has eroded ... the biggest increase

in mortality has been among adults aged 20–49 ... This phenomenon reverses the usual pattern of disease-related mortality, normally concentrated among the very young and very old. Instead, AIDS strikes down adults in their most economically productive years and removes the very people who could respond to a crisis. Outside of sub-Saharan Africa, in regions with lower HIV prevalence, AIDS has slowed rather than reversed gains in life expectancy. It is estimated that life expectancy in Cambodia is currently four years lower than it would have been without AIDS.

Current projections of the long-term demographic impact of AIDS are somewhat less severe than in previous reports. This is partly due to revised HIV prevalence and AIDS mortality estimates for some countries and partly because projections now assume that antiretroviral therapy will reach increasing numbers of people in hard-hit regions. However, this assumption carries a big “if”: it will only be realized if sustained progress is made towards universal access to—and widespread uptake of—a comprehensive range of prevention, treatment and impact-mitigation measures.

#### **Poverty and inequality**

AIDS tends to affect the poor more heavily than other population groups. In Botswana, it is estimated that, on average, every income earner is likely to acquire one additional dependent over the next 10 years due to the epidemic. But families in the poorest quartile will acquire an additional eight people who will become dependent on their income as a result of AIDS. Moreover, a “dramatic” increase in destitute households—those with no income earners—is predicted (Greener, 2004). Similar findings apply to India, where a review of economic research on AIDS concluded that households belonging to the poor and less educated or unskilled groups, as well as female members of households, face a pro-

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

portionately greater economic burden due to AIDS (Mahal and Rao, 2005).

Governments are increasingly recognizing the importance of tackling poverty as a response to AIDS and tackling AIDS as a means of reducing poverty, but they have been slow in translating this into programmes. A 2004 review of the Poverty Reduction Strategy Papers and National Strategic Plans on AIDS of 19 African countries showed that most governments remain focused on health sector responses. Only 16% of the papers reviewed included a clear discussion of the link between AIDS and poverty, and 42% did not analyze the issue at all (Bonnell et al., 2004).

### **The weight of stigma and discrimination**

HIV-related stigma and discrimination are found in all parts of the world, but their manifestation varies from place to place. Half the participants in a study in an eastern Chinese coastal city believed that punishment was an appropriate response towards those living with HIV, over half (56%) were unwilling to be friends with HIV-positive people and 73% thought that those living with HIV should be isolated. Stigmatizing attitudes tended to be associated with being male, older, married, less educated and unwilling to be tested for HIV (Lee et al., 2005).

Such attitudes have serious implications. Research in other parts of the country shows that to avoid stigma and discrimination, some HIV-positive people refuse to get information about HIV and sexually transmitted diseases, staying away from healthcare professionals and shunning those suspected of risk behaviour in an effort to blend in with community norms (Lieber et al., 2005).

Stigma can persist even when treatment becomes readily accessible. In Brazil, where antiretroviral therapy is universally available, many HIV-positive children and youth still face significant stigma (Abadia-Barrero and Castro, 2005). In Botswana, where free antiretroviral therapy, infant formula and safe drinking water are widely available, stigma was given as the reason why over half of the pregnant women in a study did not feed their babies with formula—an

important means of preventing mother to-child transmission of HIV but one that in many settings clearly announces a mother's HIV status (Shapiro et al., 2003).

Stigma attaches itself strongly to women because of negative assumptions made about sexual risk behaviour—even when a woman has not engaged in any—and its association with HIV. A recent four-city study in India found that while almost 90% of the HIV-positive women were infected by their husbands, they faced more stigma and discrimination than men and were often blamed for their husbands' illnesses. Women living with their husband's family frequently faced expulsion if the husband died, and many had trouble finding anyone to care for them when they themselves became ill (ILO, 2003). This is common in other regions as well.

### **Impact on children**

The impact of AIDS on children continues to mount in various parts of the world. Currently, children under 15 account for one in six AIDS-related deaths worldwide and one in seven new HIV infections—the vast majority through mother-to-child transmission of the virus (UNICEF, 2005). After illness and death itself, the harshest impact on children is the loss of their parents' affection, support and protection. The likelihood of a parent becoming infected if the other parent unknowingly has HIV rises over time. The emotional shock of losing one parent may be inexorably followed by the death of the other. Separation from siblings is frequent as orphans from large families are often sent to live in different households.

In addition to the psychological trauma suffered by these children, poverty and social dislocation, as well as stigma and discrimination, may also be added to their woes and in turn increase their vulnerability to HIV. Furthermore, countless children coping with the impact of HIV-related illness on their families become responsible for the care of their siblings and other family members when parents are debilitated by poor health.

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

Overall, paternal orphans are more likely to live with their mothers than maternal orphans are to live with their fathers. An orphan's attendance in school can depend on which parent has died. In Zimbabwe, a study found markedly low primary school completion rates among children who had lost their mothers. This is partly because of a lack of support from fathers (many of whom are absent for employment reasons) and stepmothers' reluctance to care for their stepchildren. School completion was higher among paternal orphans and double orphans, particularly girls (Nyamukapa and Gregson, 2005). A similar study involving 20,000 Kenyan children found that school participation rates fell by an average of 5% after a parent's death, but the decrease following a maternal death was more than twice that of a paternal death (Evans and Miguel, 2005).

### **Governments and governance**

In countries with high levels of HIV prevalence, the epidemic is having a serious impact on public service sectors. At the same time as productivity and tax bases are being constrained by the deaths of adults in their productive prime, AIDS is placing increasing demands on public sector services, such as health and education, and on public administration (Grant et al., 2004).

Concerns are growing about the long-term effects on the continuity and quality of public services and governance, with the significant destruction of 'institutional memory.' For example, a government ministry can likely accommodate the one-time loss of 2–3% of staff (that is, staff lost during a single year, above normal losses due to retirement, non-AIDS deaths, etc.) by increasing recruitment or re-assigning staff internally. If, however, 25% of staff beyond normal turnover is lost cumulatively to AIDS over 10 years, the change in age composition and the loss of staff experience and expertise may seriously impair that institution's effectiveness and efficiency. For example, a reduction in the number of candidates for senior management positions may result in less experienced or less qualified individuals

being appointed, with a likely erosion of the quality of decision-making (Haacker, 2004).

The epidemic is placing unprecedented burdens on the scarce healthcare resources that currently exist. People with HIV-related diseases occupy more than half of all hospital beds in sub-Saharan Africa. Excessive workloads, compounded in many cases by fear of infection due to the absence of standard infection-control practices in many healthcare workplaces, are causing many to leave the health profession altogether.

The implications for the hardest-hit countries are obvious, but the threat also applies to countries with much lower prevalence. In Viet Nam, a recent assessment suggests that by 2007, HIV and AIDS may absorb nearly 5% of all public health spending, if spending meets the level required to provide a comprehensive response to the epidemic. Although donor assistance can offset some of this spending, "financing the necessary prevention, care and treatment services will test the commitment, capacity, and will of the Vietnamese economy" (UNDP, 2003a).

In India, the epidemic could have a severe impact on the poorest citizens' access to healthcare. Health insurance, both public and private, currently covers only 15% of the population, and the public health facilities available to the poor are underfunded and understaffed. As India increases the availability of antiretroviral therapy, the additional workload and increase in costs will fall most heavily on public facilities, as increasing numbers of poor people living with HIV begin to seek treatment (Mahal and Rao, 2005).

### **Impact on education**

Education is one of the pillars of development, and providing universal access to primary education by 2015 is a target of both the Millennium Development Goals and the Education For All (EFA) Initiative (UNESCO, 2000). The latest UNESCO report on progress towards the EFA goals set at the World Education Forum in Dakar in 2000 indicates that,

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

despite steady improvement, current rates of progress in school enrolments need to quadruple in sub-Saharan Africa and double in south Asia to reach the 2015 goal. Currently, only 64% of children in Africa and 83% of children in south and west Asia are enrolled in primary school (UNESCO, 2006).

Over half the countries considered unlikely to meet the 2015 goal are among the most AIDS-affected. UNESCO states unequivocally that, along with armed conflict and high fertility rates, “HIV/AIDS is a major global constraint on the provision of good-quality education” (UNESCO, 2005).

Although prevalence and death rates vary greatly, in some countries the impact of AIDS on teaching staff is critical. The United Republic of Tanzania needs around 45,000 additional teachers to make up for those who have died or left the system because of AIDS. The greatest proportion of these,

according to the Tanzania Teachers’ Union, constituted highly experienced staff in the 41–50 year age group (ILO/GTZ, 2004).

### **The world of work**

Because it most frequently strikes adults in the prime of their working years, HIV poses a threat to the economic growth and development of millions of people employed in the informal sector (also known as the ‘informal economy’). The impact is widespread and complex: consumption is reduced, profits are foregone, tax revenue and investments are lost and essential services not delivered. Adults living with HIV, who would otherwise be generating income, supporting families and contributing to local and national economies, find themselves losing wages, jobs, savings and, eventually, their lives.



# Treating the Problem

## SUBUNIT 2 OVERVIEW

### Essential Question for This Unit

What is the responsibility of the United States to address health crises in the developing world?

### Subunit Goals

Subunit 2 investigates the current prevention strategies and treatments available to combat the HIV/AIDS pandemic. The first lesson (Health Science) addresses the common paths of transmission for HIV. Students then discuss prevention methods that are most appropriate for each path, keeping the cultural and religious beliefs of different societies in mind. The science behind the most effective AIDS drugs, antiretroviral medication, is covered in Lesson 2.2. The lesson also discusses the reasons for taking a drug “cocktail” to keep viral loads down instead of just one drug at a time. The unit concludes with a discussion about the ethical questions involved in conducting AIDS drug trials in the developing world. Students are asked to form and defend their own opinions about what constitutes adequate informed consent and an ethical drug trial protocol.

### Subunit Key Questions

- What are the ways in which HIV is spread? (Health Science)
- What are the most effective ways to prevent the spread of HIV? (Health Science)
- How do antiretroviral drugs work? Why do AIDS patients take a drug “cocktail”? (Biology)
- How do you prevent the exploitation of people who have AIDS and are desperate for help? (English Language Arts or Health Science)
- What are the ethics involved with drug trials in the developing world? (English Language Arts or Health Science)

### Lesson Summaries

Lesson	Subject	Description
2.1	Health Science	<b>Paths of Transmission</b> This lesson introduces the major paths of HIV transmission and then discusses prevention methods that address each path of transmission.
2.2	Biology or Health Science	<b>HIV Treatments</b> In this lesson, students investigate the science behind antiretroviral treatments for HIV. Students gain an understanding of the types of HIV medications currently produced, and why a combination of AIDS medications is the most effective treatment available.
2.3	English Language Arts or Health Science	<b>Vaccine Trials and Ethics</b> Students examine the Nuremberg Code and discuss the concept of <i>informed consent</i> in AIDS drug trials. They then form their own opinions as to the appropriate protocol for drug trials in developing nations that have been established by researchers from developed nations.





# Paths of Transmission

## LESSON 2.1

### HEALTH SCIENCE

#### Time

50 minutes

#### Materials

#### Equipment

Whiteboard with multiple colored dry-erase markers

#### Resources

HIV Transmission: Yes or No? worksheet

#### Prior Student Learning

Students should be familiar with the chain of infection and common methods of infection.

### *Essential Question for This Unit*

What is the responsibility of the United States to address health crises in the developing world?

### *Objectives*

After completing this lesson, students should be able to

- Identify the means through which HIV can and cannot be transmitted.
- Identify high-risk behaviors for AIDS infection, and ways to avoid infection.
- Identify the common paths of transmission in different regions of the world.

### *Lesson Activities*

#### **Lesson Springboard**

Ask students to list different ways it is possible to get sick. You may start by listing common childhood infectious diseases (e.g., colds, stomach flu, ear infections, pink eye, sore throat), and ask students how they are transmitted. Remind students of the common means of transmission including vectorborne, food- or waterborne, airborne, and bloodborne infections.

Pass out the HIV Transmission: Yes or No? worksheet. Have students fill it out independently. Draw the chart on the board and fill it in based on students' responses. You may wish to use different colors based on whether or not there is any disagreement about which column an activity belongs in.

#### **Lesson Development**

##### *Direct Instruction*

Unlike many other pathogens students are likely to have encountered, HIV is a bloodborne virus, meaning direct contact with **infected** bodily fluid is necessary for transmission.

Bodily fluids that contain HIV are blood, semen, vaginal secretions, and breast milk. Bodily fluids that contain little to no HIV include saliva, tears, sweat, and urine.

There are three primary ways to transmit HIV:

1. Unprotected sexual contact with an infected partner—Mucous membranes in the genital regions are delicate and very efficient routes to the bloodstream. Minute, often unnoticeable, tearing can occur during physical intercourse of any kind.

# Paths of Transmission

## LESSON 2.1

2. Direct blood contact—The most common way of transmitting HIV via direct blood contact comes through sharing (drug) injection needles. Another means of direct blood transmission, less common especially in countries where blood is screened for HIV antibodies, is getting transfusions of infected blood or receiving certain blood-clotting factors.
3. Infected mother to baby (before or during birth, and through breast milk)—Women can transmit HIV to their babies during pregnancy or birth. Approximately one-quarter to one-third of all untreated pregnant women infected with HIV will pass the infection to their babies. HIV also can be spread to babies through the breast milk of mothers infected with the virus.

Emphasize that HIV can infect **anyone** who practices risky behaviors such as

- Sharing drug needles or syringes.
- Having sexual contact, including oral, with an infected person without using a condom.
- Having unprotected sexual contact with someone whose HIV status is unknown. This includes sexual contact within a relationship. **In many cases, women (or men) are infected by their spouse or partner, who has engaged in unsafe sex or intravenous drug use without their knowledge.**

Next, cover ways to avoid transmission:

1. Abstain from sexual contact.
2. Maintain a monogamous relationship with an uninfected partner.
3. If engaging in intercourse, use latex or polyurethane protection. As with pregnancy, using condoms is not 100% effective, but does greatly reduce the chance of infection.
4. Do not share needles or any other injection supplies.
5. If an infected mother takes certain drugs during pregnancy, she can significantly reduce the chances that her baby will get infected with HIV. If healthcare providers treat HIV-infected pregnant women and deliver their babies by cesarean section, the chances of the baby being infected can be reduced to a rate of 1 percent. HIV infection of newborns has been almost eradicated in the United States due to appropriate treatment.

### ***Class Discussion***

Have students discuss other means of HIV transmission they may have heard about (including activities from the Lesson Springboard). Use this opportunity to debunk myths about HIV transmission. Common myths include transmission through

- Insect bites—In fact, HIV dies almost instantly within the digestive system of insects. This myth may be perpetuated due to confusion

# Paths of Transmission

## LESSON 2.1

with another bloodborne disease, malaria, which is transmitted by mosquitoes.

- Casual contact, including kissing, hugging, sharing of food/drink—HIV is not transmitted through casual contact. Saliva contains only trace amounts of virus, and the mouth is a very inhospitable environment for HIV. This myth is perpetuated by confusion over “bodily fluid” exchange required in HIV transmission. Fluid exchange is required, but not all bodily fluids contain significant quantities of HIV.
- Donating blood—Needles used during blood donation are always sterilized, so there is no risk of contracting HIV when donating blood. This myth may be perpetuated by association with the actual risk of infection that comes with receiving donated blood. In the 1980s, the nation’s blood supply was discovered to be contaminated with HIV, infecting many innocent people. Today, this risk is minimal since the blood supply is screened for the presence of HIV.
- Swimming pools/hot tubs—Chemicals used in swimming pools kill HIV.
- Pets—HIV is transmitted to and from humans only. Other species, including cats, have their own immune deficiency virus, but those viruses cannot be transmitted to people.

### Lesson Closure

Return to the HIV Transmission: Yes or No? worksheet created at the beginning of class. Review each activity and make sure that students move any incorrectly placed activities to the appropriate column.

### Possible Prior Misconceptions

There may be a lingering belief that HIV affects primarily gay men and/or intravenous drug users. It may be important to emphasize that anyone engaging in risky behaviors can be infected.

There are several controversial myths about the origin of the HIV virus (e.g., HIV was bioengineered by the CIA as a weapon against undesirable populations) and its link to AIDS (e.g., AIDS is actually caused by recreational drug use; AIDS is actually caused by antiretroviral drugs). However, there is no widely accepted evidence in support of these claims.

### Student Assessment Artifacts

Completed (and revised) HIV Transmission: Yes or No? worksheet

### Variations and Extensions

Invite a speaker, such as a public health official or community outreach worker to discuss local efforts to reduce the incidence of risky behaviors that lead to HIV transmission. Engage students in a discussion about how young people can contribute to these efforts.

## National and State Career Technical Education Standards

### NATIONAL

#### NCHSTE National Healthcare Skill Standards

##### *Foundation Standard 7: Safety Practices*

Healthcare workers will understand the existing and potential hazards to clients, co-workers, and self. They will prevent injury or illness through safe work practices and follow health and safety policies and procedures.

##### *Foundation Standard 9: Health Maintenance Practices*

Healthcare workers will understand the fundamentals of wellness and the prevention of disease processes.

- 9.11 Apply behaviors that promote health and wellness
- 9.12 Advocate available preventive health screening and examinations
- 9.13 Use practices that promote the prevention of disease and injury
- 9.14 Use appropriate safety practices as related to high-risk behaviors

### CALIFORNIA

#### Health Science and Medical Technology Standards

##### *6.0 Health and Safety*

Students understand health and safety policies, procedures, regulations, and practices, including the use of equipment and handling of hazardous materials.

##### *7.0 Responsibility and Flexibility*

Students know the behaviors associated with the demonstration of responsibility and flexibility in personal, workplace, and community settings

- 7.7 Understand and demonstrate methods for promoting health and wellness

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## HIV Transmission: Yes or No?

In what ways is HIV transmitted? Place each of the following into the box you think is appropriate.

Blood transfusion

Breastfeeding

Donating blood

Handshakes

Hugging

Insect bites

Kissing

Oral sex

Pets

Pregnancy (from mother to baby)

Protected sexual intercourse

Sharing food or drink

Sharing needles

Swimming pools

Unprotected sexual intercourse

Yes, HIV can be transmitted by:	No, HIV cannot be transmitted by:



# HIV Treatments

## LESSON 2.2

### BIOLOGY OR HEALTH SCIENCE

#### Time

50 minutes

#### Materials

##### Equipment

- Overhead projector
- Large paper
- Markers or colored pencils

#### Resources

- Lifecycle of HIV transparency
- HIV Medications handout

#### Prior Student Learning

Students should be familiar with the Life Cycle of HIV covered in Lesson 1.2.

### *Essential Question for This Unit*

What is the responsibility of the United States to address health crises in the developing world?

### *Objectives*

After completing this lesson, students should be able to

- Describe the standard treatment for HIV infection.
- Classify the different types of HIV medications.
- Explain the action mechanism for the four primary classes of HIV antiretroviral drugs.

### *Lesson Activities*

#### **Lesson Springboard**

Project an overhead of the Life Cycle of HIV and have students recall the different stages of HIV replication: binding/fusion, reverse transcription, integration, transcription, assembly, and budding.

#### **Lesson Development**

##### *Class Discussion*

If drugs could be developed, what action would they take to prevent HIV from replicating? Guide the discussion so students recognize that disruption at any point in the life cycle would reduce and halt replication. Does it seem more effective to target the replication process at the early or late stages? Why?

##### *Group Illustrations*

Divide students into groups of four. Pass out the HIV Medications handout, along with poster-sized paper and drawing materials. Each group will make a poster that illustrates the mechanism of each of the four primary classes of HIV antiviral drugs that are currently being used. You may ask students to illustrate the two classes of drugs under development for extra credit. Give students the option of making a schematic representation (like the one provided on the Life Cycle of HIV transparency) or making a symbolic representation (e.g., portrayal of a fusion inhibitor as a bouncer at the door). Remind students to label and/or annotate their illustration as necessary.

##### *Poster Walk*

After students have completed their posters, hang them up around the room and give students time to view each poster. At each poster, provide slips of scrap paper for students to write a quick critique that includes at least two comments on what they liked about the poster and at least one suggestion for improvement. Encourage students to make comments about the accuracy of the representation, not just the quality of the il-

# HIV Treatments

## LESSON 2.2

illustrations. Have students leave their critiques in a folder next to each poster. You may wish to collect and read the comments before distributing them to the groups.

### **Direct Instruction**

Explain to students that the most effective long-term treatments for HIV require taking multiple different drugs simultaneously. Taking three or more HIV drugs in combination (a “cocktail”) is called *Highly Active Antiretroviral Therapy (HAART)*. The goal of HAART is to reduce the amount of virus in the blood to very low, even nondetectable, levels; however, this does not mean the virus is gone. At present, HIV is still incurable.

Like all drugs, HIV medications have side effects that vary from patient to patient. And taking HIV medications comes with different restrictions. Some are taken once per day, some twice a day, some with food, and some without. In addition to these constraints, HIV is a highly mutable virus. Consideration must be made to crafting a drug cocktail that will leave additional treatment combinations available if an individual’s HIV becomes resistant to one or more of his or her medications. Each patient needs to consult with his or her doctor individually to determine the best HAART therapy for his or her situation.

### **Lesson Closure**

Have students vote on which poster is the best representation of antiretroviral drug action. Have that group bring their poster to the front of the class and review the action of antiretrovirals by explaining their illustration to the class.

### **Possible Prior Misconceptions**

Some students may believe that an HIV-positive diagnosis is an automatic death sentence. Students may not realize that with proper treatment, HIV infection can be managed and those infected can continue living relatively healthy lives for many years.

Students may not realize that HIV drugs specifically target actions of the HIV virus alone and would interfere with fusion, transcription, and other enzymatic action that takes place as part of the functioning of normal cells.

### **Student Assessment Artifacts**

Antiviral drug action illustrations

### **Variations and Extensions**

Expand the lesson to include an explanation of the different phases of clinical drug trials. Have students research an individual HIV drug and its history, including drugs that are still in clinical trials.

Extend the lesson by including discussion of the other types of treatment for HIV in practice and under development, including immune therapy. Treatment of advanced HIV, including direct treatment of opportunistic infections characteristic in AIDS, can be included as well.



## National and State Academic Standards

### **NATIONAL**

#### **NRC National Science Education Standards**

##### *Personal and Community Health*

The severity of disease symptoms is dependent on many factors, such as human resistance and the virulence of the disease-producing organism. Many diseases can be prevented, controlled, or cured. Some diseases, such as cancer, result from specific body dysfunctions and cannot be transmitted.

### **CALIFORNIA**

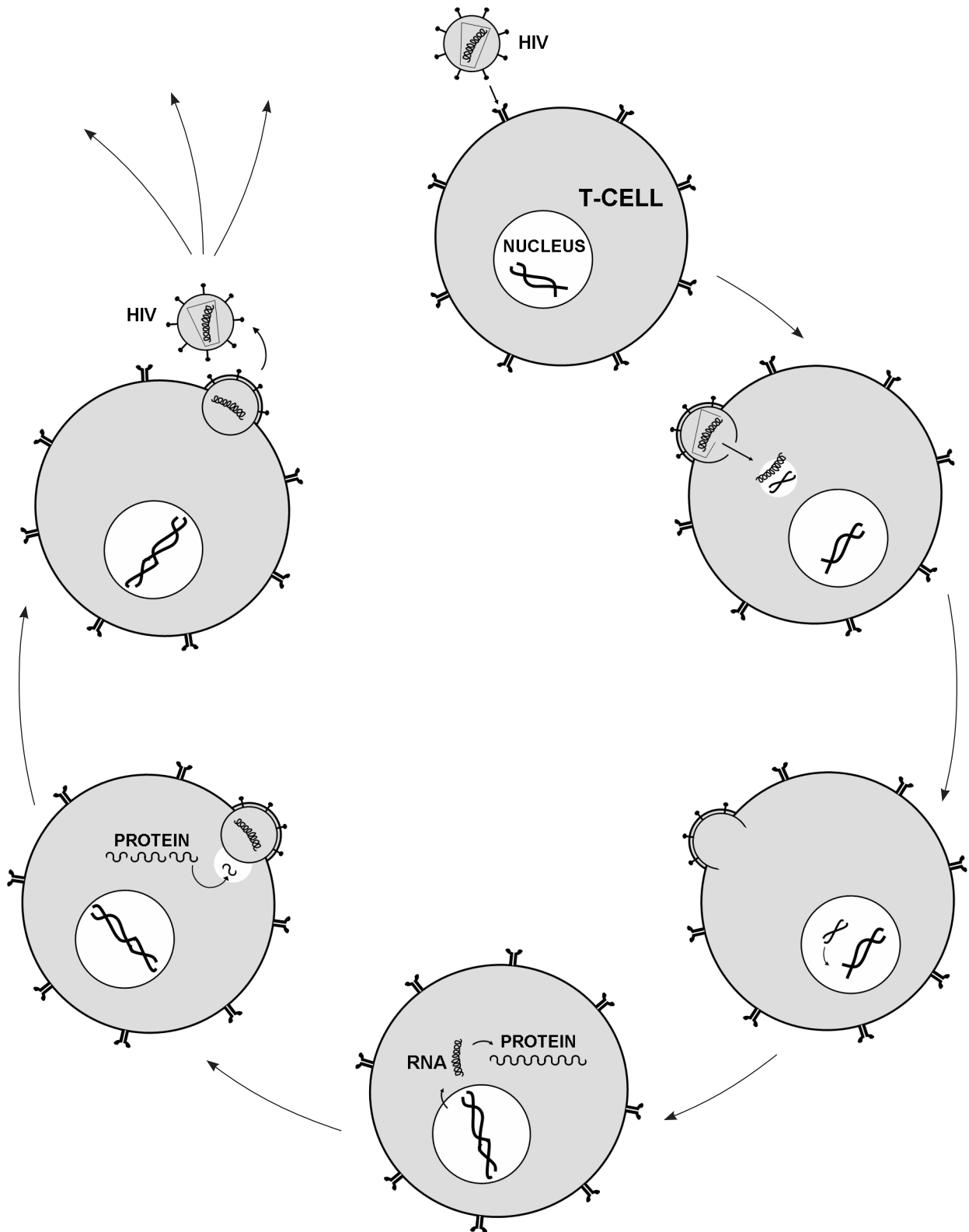
#### **Science Content Standards**

##### *Biology/Life Science*

10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response:
  - d. Students know there are important differences between bacteria and viruses with respect to their requirements for growth and replication, the body's primary defenses against bacterial and viral infections, and effective treatments of these infections.

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

### Life Cycle of HIV



Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## HIV Medications

Treatments for HIV infection fall into several categories. The most extensive set of treatments involves preventing HIV from replicating in the body through the use of drugs known as *antivirals*, or *antiretrovirals*. There are currently four classes of drugs approved to treat HIV infection:

### 1. Fusion (or Entry) Inhibitors

As the name implies, fusion inhibitors act to prevent HIV from entering healthy CD4 T-cells. In order to enter a T-cell, the proteins on the outside of HIV bind to proteins on the outside of T-cells. Fusion inhibitors work by attaching themselves to the different proteins on the surface of either HIV or CD4 cells. With the fusion inhibitor in the way, HIV cannot bind to T-cells and gain entry. Different fusion inhibitors bind to different proteins. Some target HIV's gp120 and gp41 proteins, while others bind to the T-cell CD4 protein or CCR5/CXCR4 receptors.

### 2. Nucleoside/Nucleotide Reverse Transcriptase Inhibitors (NRTIs)

NRTIs are the oldest class of HIV drugs. HIV uses the enzyme reverse transcriptase to convert its RNA into DNA that can be inserted into the T-cell's genetic code. Under normal circumstances, reverse transcriptase uses nucleotides found in the cell to assemble the viral DNA. NRTIs contain faulty versions of nucleotides so that as the viral DNA is being assembled, bad copies of nucleotides are being used. This "broken" DNA cannot be incorporated into the T-cell's healthy DNA.

### 3. Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs)

NNRTIs also inhibit the reverse transcription process, but they work by attaching themselves to the reverse transcriptase enzyme. NNRTIs act as a "hanger-on" that prevents the enzyme from doing its job of converting RNA to DNA. Without the conversion, HIV's genetic material cannot be incorporated into the T-cell DNA.

### 4. Protease Inhibitors

Protease enzymes act like scissors to cut up other proteins at specific locations. The HIV protease cleaves the polyprotein chains translated from viral mRNA into the functional proteins needed to assemble a new HIV particle. Protease inhibitors disable the HIV protease enzyme before it is able to cleave the HIV polyprotein chains.

There are two additional classes of HIV antivirals currently under development:

### 5. Integrase Inhibitors

In order for HIV to successfully take over a T-cell's machinery so that it can produce new viruses, HIV's RNA is converted into DNA by the reverse transcriptase enzyme. After the reverse transcription of RNA into DNA is complete, HIV's DNA is then incorporated into the T-cell's DNA. This process is known as *integration*. As the name implies, integrase inhibitors work by blocking this process. Integrase inhibitors have been studied for several years, but only a few have made it to advanced clinical trials.

### 6. Maturation Inhibitors

The last class of drugs under development focuses on disrupting the late stages of new virus particle assembly within the host cells. There is currently only one drug candidate in this class, which acts to inhibit the assembly of the capsid that surrounds the viral RNA genome within HIV particles. Without this capsid, the HIV viral core is defective and noninfectious.





Subunit 2—Treating the Problem

# Vaccine Trials and Ethics

## LESSON 2.3

### ENGLISH LANGUAGE ARTS OR HEALTH SCIENCE

#### Time

50 minutes

#### Materials

##### Equipment

- The Nuremberg Code (<http://www.nihtraining.com/ohsr/site/guidelines/nuremberg.html>)
- The Nuremberg Code and HIV Vaccine Trials worksheet

#### Resources

- The Office of Human Subjects Research (<http://ohsr.od.nih.gov/>)
- *The New York Times* article “Uganda AIDS Vaccine Test: Urgency Affects Ethics Rules” (<http://query.nytimes.com/gst/fullpage.html?sec=health&res=9401E2D91738F932A35753C1A96E958260>)
- World Medical Association: Declaration of Helsinki (<http://ohsr.od.nih.gov/guidelines/helsinki.html>)
- HIV Vaccine Trials Network (<http://www.hvtn.org>)

#### Prior Student Learning

Students should have basic knowledge of HIV/AIDS, viruses, vaccines, and antiretroviral drugs.

### *Essential Question for This Unit*

What is the responsibility of the United States to address health crises in the developing world?

### *Objectives*

After completing this lesson, students should be able to

- Form and verbally express an opinion concerning a medical ethics issue, such as HIV vaccine testing.
- Explain the key provisions of the Nuremberg Code, and apply the Code to a situation involving modern medical ethics.
- Write an essay articulating their opinion on an ethical issue.

### *Lesson Activities*

#### **Lesson Springboard**

After the discovery of HIV in the 1980s, many predicted the invention of a vaccine would soon follow. Today, over two decades later, there is still no vaccine, which many believe is the only way to harness the global HIV/AIDS pandemic. However, there are many HIV vaccine trials under way.

Developing countries such as Brazil, Thailand, and Uganda are desirable places for vaccine trials because they have populations with high HIV infection rates, which provide quick results in vaccine trials. Plus, they have the potential to receive the greatest benefit from a successful vaccine. Many also assert that vaccine trials are conducted in developing countries because the many ethical problems involved with vaccine trials encounter less regulation than in countries like the United States.

As a springboard to this lesson, introduce students to the many ethical questions that were raised in *The New York Times* article “Uganda AIDS Vaccine Test: Urgency Affects Ethics Rules.”

“...Who will take part in the first round, and what will happen if people become infected and sick after they have volunteered, given that Uganda spends about \$6 a person annually on health care? Will they receive the best medical care that money can buy, as they would in America or France, two other countries that are testing AIDS vaccines? If they do, who will pay? If not, will they be treated like any other Africans—given aspirin, good wishes and no hope?”

What if, as is often the case with vaccines, this trial shows that it may not prevent an AIDS infection but that it may make the disease less deadly? Should the test be stopped immediately so that the vaccine can be given to people right away, before scientists can find out the

# HIV Vaccine Trials and Ethics

## LESSON 2.3

answers to how good the vaccine might ultimately be or how best to use it? Or should the test go on, with some people receiving a useless placebo, so that researchers can learn the full potential of any possible vaccine?"

### Lesson Development

#### Direct Instruction

After reading the above excerpt to students, explain that vaccine trials typically have one of three outcomes: the vaccine is ineffective; it prevents infection; or it does not prevent infection but it can slow or halt the disease's progress.

Provide the definition of *informed consent*—an approval to undergo a treatment or a test after acquiring full understanding of the procedure and its consequences—and tell students that initially village chiefs or leaders were able to give consent on behalf of the villagers. Now informed consent is standard for these trials. Explain that exploitation has always been a concern in vaccine testing.

#### Class Discussion

Have students imagine an English-speaking vaccine trial recruiter in an African village among desperate and malnourished villagers, many of whom have witnessed their relatives suffering from AIDS. Ask students if they understand the potential for exploitation.

Facilitate a discussion concerning the issues raised in the excerpt. As part of this discussion, ask students the following questions:

- Should infected participants receive immediate treatment if they contract HIV during the trial, or should the disease be allowed to run its course to see if the vaccine slows or stops it? Why?
- Who is responsible for providing medical care to participants who become infected during the trial? The individual, the vaccine sponsor, or the host country? Why?
- If participants are treated, should they receive the best medical care given by the country supporting the trial, the best treatment available in the participant's home country, or the level of treatment they would have received using their personal resources? Why?

(Remind students that antiretroviral drugs are not available to everyone due to their costs.)

- If the vaccine does prove to be somewhat effective, should the control group receive it or continue getting the placebo? Why?

Inform students that there was a similar issue in an AZT trial in the Dominican Republic, Thailand, and several African countries. The study focused on the effects of AZT on HIV transmission between HIV-positive pregnant women and their infants. The problem was that even though the effectiveness of AZT had previously been established, HIV-positive women in the control group received a placebo instead of AZT treatment

# HIV Vaccine Trials and Ethics

## LESSON 2.3

that was proven to significantly reduce the likelihood of HIV transmission between the mother and her infant and slow the progression of the disease for the mother.

### **Document Interpretation**

Distribute the Nuremberg Code worksheet to students. Explain that the code was created in 1947 after World War II in response to unethical human experimentation in Nazi Germany. As the World Health Organization described, “The Nuremberg code evokes a dark time for medicine, yet remains a powerful symbol in inspiring the medical profession to stand up for its Hippocratic values and protect individuals from harmful medical experiments.” Other international standards for human experimentation have also been created such as the Belmont Report and the Declaration of Helsinki. Yet the Nuremberg Code remains relevant and is still referenced. In fact, it is recognized in the California Health and Safety Code in The Protection of Human Subjects in Medical Experiments Act.

Have students read the Nuremberg Code and answer the questions on The Nuremberg Code and HIV Vaccine Trials worksheet. This assignment can also be given as **homework**.

### **Essay Writing**

Have students write a one-page essay explaining their positions on how much treatment should be provided for vaccine trial participants who become infected with HIV from their own personal actions (not from the vaccine), and who should provide the treatment. Have students support their positions with directives from the Nuremberg Code. Also, allow students to conduct research on and use the Declaration of Helsinki.

### **Lesson Closure**

Tell students that the Declaration of Helsinki is explicit concerning the issues raised in this lesson. It states, “In medical research on human subjects, considerations related to the well-being of the human subject should take precedence over the interests of science and society,” and that “[a]t the conclusion of the study, every patient entered into the study should be assured of access to the best proven prophylactic, diagnostic and therapeutic methods identified by the study.”

Ask for a show of hands to indicate how many students would take part in HIV/AIDS vaccine testing if they were legally old enough (minimum age is 18); be sure to tell students that researchers emphasize that it is impossible to contract the virus from these trial vaccines.

Ask students if they remember how the standard HIV test works. If they do not remember, tell them that it tests for antibodies to the HIV virus, not the presence of the actual virus. Ask students what the body produces in response to unfamiliar invaders such as bacteria, viruses, *and* vaccines. Their answer should be that it produces antibodies. Therefore, people who participated in vaccine trials will likely test positive after taking a standard HIV test (there are other tests that detect the actual

# HIV Vaccine Trials and Ethics

## LESSON 2.3

virus). Students may think that getting a “false-positive” result is not a big deal, but it can have huge ramifications on the participant’s life. Ask students what some of the consequences are of testing positive for HIV. Correct answers may be that the participant may not be able to donate blood, or may have difficulty securing health insurance, serving in the military, traveling abroad, or gaining certain types of employment. And testing positive might even affect one’s relationships with family or significant others because of the stigma attached to HIV/AIDS.

### ***Possible Prior Misconceptions***

Students may think that HIV/AIDS vaccine trials only occur in developing countries, and may not know that many trials are also under way in the United States. Also, they may not know that countries participating in vaccine trials do not always receive benefits when the trials are successful. Pharmaceutical companies often absorb huge research and development costs when creating and testing vaccines and also have a responsibility to create profits for shareholders. This often translates into charging high prices for their products that developing countries cannot afford.

### ***Student Assessment Artifacts***

Student essays

Completed Nuremberg Code and HIV Vaccine Trials worksheet

### ***Variations and Extensions***

Have students research the issue of pharmaceutical industry patents on AIDS antiretroviral drugs, and have them study countries such as Brazil, India, and Thailand that have ignored or bypassed patent laws to create generic drugs based on expensive patented drugs to provide these drugs at affordable costs. Have students conduct research and write a two-page essay explaining their position on the issue of patent (intellectual property) protection vs. universal access to life-saving drugs for people living in poverty.



# HIV Vaccine Trials and Ethics

## LESSON 2.3

### National and State Academic Standards

**NATIONAL****NCTE Standards for the English Language Arts**

4. Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes
5. Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes
6. Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language, and genre to create, critique, and discuss print and non-print texts.
12. Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information)

**CALIFORNIA****English Language Arts Content Standards****Reading**

- 1.2. Distinguish between the denotative and connotative meanings of words and interpret the connotative power of words.
- 2.3. Generate relevant questions about readings on issues that can be researched.
- 2.4. Synthesize the content from several sources or works by a single author dealing with a single issue; paraphrase the ideas and connect them to other sources and related topics to demonstrate comprehension.
- 2.5. Extend ideas presented in primary or secondary sources through original analysis, evaluation, and elaboration.

**Writing**

- 1.1. Establish a controlling impression or coherent thesis that conveys a clear and distinctive perspective on the subject and maintain a consistent tone and focus throughout the piece of writing.
- 1.5. Synthesize information from multiple sources and identify complexities and discrepancies in the information and the different perspectives found in each medium (e.g., almanacs, microfiche, news sources, in-depth field studies, speeches, journals, technical documents).

**Listening and Speaking**

- 1.1. Formulate judgments about the ideas under discussion and support those judgments with convincing evidence.
- 1.3. Choose logical patterns of organization (e.g., chronological, topical, cause and effect) to inform and to persuade, by soliciting agreement or action, or to unite audiences behind a common belief or cause.

### National and State Career Technical Education Standards

**NATIONAL****NCHSTE National Healthcare Skill Standards****Foundation Standard 6: Ethics**

Healthcare workers will understand accepted ethical practices with respect to cultural, social, ethnic differences within the healthcare environment. They will perform quality healthcare delivery.

- 6.16 Analyze and evaluate the implications of medical ethics

**CALIFORNIA****Health Science and Medical Technology Standards****8.0 Ethics and Legal Responsibilities**

Students understand professional, ethical, and legal behavior consistent with applicable laws, regulations, and organizational norms.

- 8.2 Understand the concept and application of ethical and legal behavior consistent with workplace standards.
- 8.4 Understand the ways in which ethical considerations affect emerging technologies and their impact on society.

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## The Nuremberg Code and HIV Vaccine Trials

**Background:**

The Nuremberg Code was developed in 1947. It is a set of principles concerning human experimentation. Although it was developed after World War II as a result of the Nuremberg trials for unethical human experimentation, it still has modern applications and, in fact, is the foundation for many standards concerning human experimentation today.

**Instructions:**

Read each of the 10 Nuremberg Codes and interpret the Code in your own words, and then answer the questions that follow.

### NUREMBERG CODE

#### Directives for Human Experimentation

1. The voluntary consent of the human subject is absolutely essential. This means that the person involved should have legal capacity to give consent; should be so situated as to be able to exercise free power of choice, without the intervention of any element of force, fraud, deceit, duress, overreaching, or other ulterior form of constraint or coercion; and should have sufficient knowledge and comprehension of the elements of the subject matter involved as to enable him to make an understanding and enlightened decision. This latter element requires that before the acceptance of an affirmative decision by the experimental subject there should be made known to him the nature, duration, and purpose of the experiment; the method and means by which it is to be conducted; all inconveniences and hazards reasonable to be expected; and the effects upon his health or person which may possibly come from his participation in the experiment.

The duty and responsibility for ascertaining the quality of the consent rests upon each individual who initiates, directs or engages in the experiment. It is a personal duty and responsibility which may not be delegated to another with impunity.

**Interpret in your own words** (Hint: think of *informed consent*):

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**Give an example of how this directive would protect someone who is considering participating in an HIV vaccine trial.**

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Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

- 2. The experiment should be such as to yield fruitful results for the good of society, unprocurable by other methods or means of study, and not random and unnecessary in nature.

**Interpret in your own words:**

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**What type of HIV vaccine trials would this protect trial participants from?**

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- 3. The experiment should be so designed and based on the results of animal experimentation and a knowledge of the natural history of the disease or other problem under study that the anticipated results will justify the performance of the experiment.

**Interpret in your own words:**

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**Give a reason why this could ease the fears of someone considering participating in an HIV vaccine trial.**

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- 4. The experiment should be so conducted as to avoid all unnecessary physical and mental suffering and injury.

**Interpret in your own words:**

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Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

**Why would this directive be important to someone participating in an HIV vaccine trial?**

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5. No experiment should be conducted where there is an a priori reason to believe that death or disabling injury will occur, except, perhaps, in those experiments where the experimental physicians also serve as subjects.

**Interpret in your own words:**

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**Give an example of how this directive would protect someone participating in an HIV vaccine trial (hint: think about the “Golden Rule”).**

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6. The degree of risk to be taken should never exceed that determined by the humanitarian importance of the problem to be solved by the experiment.

**Interpret in your own words:**

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**How does this relate to HIV vaccine trials? What does it prevent?**

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Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

- 7. Proper preparations should be made and adequate facilities provided to protect the experimental subject against even remote possibilities of injury, disability, or death.

**Interpret in your own words:**

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**Give an example of how this relates to someone participating in an HIV vaccine trial.**

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- 8. The experiment should be conducted only by scientifically qualified persons. The highest degree of skill and care should be required through all stages of the experiment of those who conduct or engage in the experiment.

**Interpret in your own words:**

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**What type of problems does this HIV vaccine trial protect participants from** (hint: think about the relationship among qualifications, experience, malpractice, and quality of care)?

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- 9. During the course of the experiment the human subject should be at liberty to bring the experiment to an end if he has reached the physical or mental state where continuation of the experiment seems to him to be impossible.

**Interpret in your own words:**

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Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

**Give an example of why this is important to someone participating in an HIV vaccine trial.**

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10. During the course of the experiment the scientist in charge must be prepared to terminate the experiment at any stage, if he has probable cause to believe, in the exercise of the good faith, superior skill and careful judgment required of him that a continuation of the experiment is likely to result in injury, disability, or death to the experimental subject.

**Interpret in your own words:**

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**Give an example of how this relates to someone participating in an HIV vaccine trial.**

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# Finding the Right Solution

## SUBUNIT 3 OVERVIEW

### Essential Question for This Unit

What is the responsibility of the United States to address health crises in the developing world?

### Subunit Goals

Students research the current global response to AIDS and then come up with their own plans of action in the last subunit. In Lesson 3.1, students examine what the international community, including donor nations and nonprofit aid organizations, are currently contributing to the fight against AIDS. In addition, students discuss the advantages and disadvantages of the path these resources take—from initial donation to use on the ground. Students then learn about the social, cultural, and economic barriers to successful HIV/AIDS programs in the developing world. In doing so, they research various national HIV/AIDS programs and share strategies that developing countries use to help their own people. The unit concludes with a culminating project in which students are asked to design the best comprehensive AIDS program for the country they have researched.

### Subunit Key Questions

- What are developed countries currently doing to help developing countries fight AIDS? Is this amount of aid enough? (English Language Arts)
- What are developing countries doing themselves to fight AIDS? (World Geography)
- Why is it so hard to prevent and treat HIV/AIDS in developing countries? (World Geography)
- What would be the best national strategy for combating AIDS in a specific developing country? (English Language Arts)
- How can a proposal be presented effectively with both intellectual and emotional impact? (English Language Arts)

### Lesson Summaries

Lesson	Subject	Description
3.1	English Language Arts	<b><i>Rich Countries, Poor Victims: The Global Response to AIDS</i></b> Students are introduced to the role of donor nations and international aid organizations and examine the path that donations take to places of greatest need. Students consider whether the amount given by rich nations is enough.
3.2	World Geography	<b><i>Existing HIV/AIDS Programs</i></b> Students learn about the economic and social barriers that hinder successful AIDS prevention and treatment. They then research the current AIDS programs of individual developing nations in groups and present those strategies to the class.
3.3	English Language Arts	<b><i>Summit Presentations</i></b> After completing their research, students assume that additional resources are donated to fight AIDS and design the best AIDS program for the countries they researched in Lesson 3.2. They produce a written report and PowerPoint presentation to share with the class.





# Rich Countries, Poor Victims: The Global Response to AIDS

## LESSON 3.1

### ENGLISH LANGUAGE ARTS

#### Time

50 minutes

#### Materials

- PEPFAR: America’s War Against AIDS handout
- AVERT article “AIDS funding for community organisations” (<http://www.avert.org/aids-funding.html>)
- “Rich Countries, Poor Victims” Vocabulary handout

#### Prior Student Learning

Students should know the basic elements of American government and be familiar with the work of the United Nations.

Students should have a general understanding of the nature and scope of the AIDS pandemic in poor countries.

### *Essential Question for This Unit*

What is the responsibility of the United States to address health crises in the developing world?

### *Objectives*

After completing this lesson, students will be able to

- Identify the sources of AIDS funding and how money is delivered from rich countries to poor ones.
- Describe the American effort to combat AIDS in poor countries and explain its benefits and limitations.
- Understand the work of community organizations that respond to AIDS and the role that foreign money and decision making plays in their efforts.

### *Lesson Activities*

#### **Prior to Lesson**

Students should have read the PEPFAR: America’s War Against AIDS handout and the AVERT Internet article “AIDS funding for community organisations” (<http://www.avert.org/aids-funding.html>).

#### **Lesson Springboard**

As a springboard for this lesson, introduce or review the following information with the class. Total funding for the response to AIDS in low- and middle-income countries has grown from \$300 million in 1996 to about \$9.5 billion in 2007, but this amount remains inadequate. The medical expenditures of a person living with HIV in the United States are one thousand times greater than for a person living in Africa. The United Nations believes that \$18 billion is needed to combat AIDS in developing countries in 2007, and this amount will rise to \$22.1 billion in 2008. Half of this money is required for HIV prevention, a quarter is for treatment and care, and the rest is for support of orphans and vulnerable children and for program costs. Most of the funding comes from the rich countries. In fact, the worst-affected and poorest countries depend on foreign money for 80% of their HIV and AIDS resources.

#### **Lesson Development**

##### *Direct Instruction*

##### How much money?

Ask students whether they think \$9.5 billion is a lot of money. In one sense, it is: this amount will pay for 300,000 students to attend 4 years of college, or for the annual healthcare costs of nearly one million families. In another sense, it is not much money at all—about \$30 per person in the United States. In 2007, the war in Iraq is costing an estimated \$9 billion each month, and \$9 billion represents about 2% of our current an-

## Rich Countries, Poor Victims: The Global Response to AIDS

### LESSON 3.1

nual military budget. If every American put aside an extra dollar a week, we could provide the right drugs to every HIV victim on the planet.

Where does the money come from?

Ask students if they know how this money gets from the rich countries to the poor ones. For example, does our government collect it from taxes and then create AIDS projects in the developing world? In reality, it's more complicated than that. AIDS money from rich countries is solicited by projects in poor countries—some of them quite small and based in a single community—and reaches them through one or more “funding streams”:

- **Donations from national governments**, straight from one government to another, are the biggest source of funding. Governments that receive aid pass it down to the regional or local level. About 75% of this money comes from the G-7 countries (the seven most industrialized countries in the world) and is often targeted at specific projects. The best-known and wealthiest example is the USA's PEPFAR, a 5-year \$15 billion global initiative begun in 2003. Donor governments can establish rules about how their aid dollars can be spent. PEPFAR, for example, requires that 33% of funds spent on HIV prevention be directed to “abstinence only” programs that oppose the use of condoms.
- **Major multilateral funding organizations**, such as the United Nations, receive money from their members and distribute it to various projects in the developing world. The U.N. has 29 agencies working on AIDS: the most important ones are the World Bank, which focuses on poverty and economic development, and the World Health Organization. Another large multilateral donor is the Global Fund, created specifically to fight AIDS. The Fund distributes money given to it by national governments, foundations, and the public. Multilaterals like these are able to make decisions that are somewhat independent of the countries that provide their funds. They can fund countries or projects that national governments might ignore for political reasons or other prejudices.
- **The private sector** comprises foundations, international non-governmental organizations (NGOs) and charities, and individual philanthropists. They often make grants to small-scale and community-based projects that are overlooked by larger donors. The Bill and Melinda Gates Foundation, for instance, helped to create Africa's first national antiretroviral treatment program in Botswana and directs a large HIV prevention program in India.
- **Domestic spending** is another source of AIDS funding, one that has been increasing as economic growth, good governance, and debt relief contribute to the budgets of national governments. Even in severely affected countries, such as South Africa, the amount available in the national budget for spending on AIDS has increased. Domestic spending also includes the money spent by individuals on such things as their own AIDS medication. This spending has the advantage of making countries somewhat independent of foreign donations, which can come and go.

## Rich Countries, Poor Victims: The Global Response to AIDS

### LESSON 3.1

#### *Class Discussion*

##### **Rich Countries, Poor Countries and the “Funding Chain”**

Students should have completed reading the PEPFAR handout and the article “AIDS funding for community organisations.” Begin the discussion by asking students how money from rich countries “filters down” to AIDS victims in poor countries. Why don’t the big donors, like the United Nations or the U.S. government, just set up their own programs “from scratch”? What is gained by making community organizations apply for grants? And what are the disadvantages of this process?

Ask students to explain the “funding chain” that delivers money from large donors to the grassroots level in poor countries. What are the reasons that this is such a long chain? What are its problems? See if students understand that national governments, such as South Africa, wish to have oversight of money flowing into local communities. They also must coordinate programs and prevent wasteful duplication. Large donors recognize that they are ignorant of local conditions and must rely on “intermediaries” who distribute their money. On the other hand, these donors are wary of corruption and abuse by the intermediaries.

According to one AIDS charity, “There is great emphasis (in the rich countries) on raising money for AIDS, but once that money has been collected, little attention is paid to where it goes.” Ask students if this seems true, given what they know so far about AIDS projects in poor countries.

Imagine that you’re the director of a project in Tanzania that distributes condoms to truck drivers, soldiers, and migrant workers—the kind of men who support the sex trade that flourishes around East Africa’s long-distance roads. Your project needs support from several donors. Which donors would you approach first? Which would you be reluctant to approach?

##### **PEPFAR, America’s Response to AIDS**

Ask one student to summarize the President’s Emergency Plan for AIDS Relief (PEPFAR) and another student to explain how it apportions the money it spends. In part, money is apportioned according to need, but it also reflects the political conflict over AIDS that rages in Washington, DC. How does PEPFAR represent a compromise between political opponents?

PEPFAR has many goals. Ask the students to describe these, especially the goals that seem unfamiliar or surprising to them. For example, why does the plan emphasize care for orphans? What is the meaning of its goal to prevent “mother-to-child transmission” of HIV? Are there any goals that students think should be included but are not part of PEPFAR?

America’s response to AIDS has provoked a lot of criticism. Some condemn its emphasis on “abstinence only” programs, and others its encouragement of condoms and sex-education programs for prostitutes. PEPFAR has been reproached for withholding aid from countries that harbor terrorists and for not doing more to lower the price of antiretroviral drugs. Do these criticisms have merit? Ask students for their own evaluation of the PEPFAR priorities, based on the article they have read.

## *Rich Countries, Poor Victims: The Global Response to AIDS*

### LESSON 3.1

Ask students to reflect on the irony of PEPFAR funding. In Botswana it works with the Ministry of Education to develop abstinence-focused HIV education materials for schools, and it has supported a popular soap opera on the radio to deliver its message. In Mozambique, only a few hundred miles away, PEPFAR supports a project to promote condoms in bars, hotels, and shops along transport corridors and other areas of high-risk sexual behavior. Friends of PEPFAR say this is an appropriate response to local needs, which differ from one place to another, and to community groups that make their own requests for funding. Critics say it's a contradiction and sends a confusing message to Africans. Ask the students what they think.

Ask students to imagine that they're a member of the Senate committee that will decide whether to renew PEPFAR when it expires in 2008. Your staff informs you that the program supports a very different mix of projects from one country to another. For example, in Swaziland, 21% of American money is spent on antiretroviral drugs (ARVs), 15% on HIV counseling and testing, and 9% on the prevention of mother-to-child transmission. In Tanzania, only 8% is spent on ARVs and a significant amount is spent on upgrading laboratories, scientific training, and research. Are these discrepancies due to differences in local conditions, or merely due to which grant applications were funded? As a Senator, how would you find out?

#### **Lesson Closure**

There are two key players in the battle against AIDS in poor countries: rich countries that work at a distance and provide most of the funding, and community organizations among the poor themselves who are at the "front line" in this effort. Both are essential, and they are entwined in complicated ways. Tell students that as **homework**, they will write a 500-word report that relates the activities of these two groups. Their topic is to compare PEPFAR activities in two poor countries of their choice.

#### ***Possible Prior Misconceptions***

Most students have a weak grasp of large magnitudes, even of the difference between one million and one billion. In this lesson, the significance of large numbers must be conveyed, perhaps through examples and comparisons.

Students often have very simple ideas about how rich countries assist poor ones. Many students may believe that the U.S. government creates and operates its own AIDS projects in the developing world or that HIV/AIDS victims approach the government directly for help.

Students often do not understand that multilateral organizations such as the World Health Organization are distinct from but also dependent upon the national governments that fund them. They may also not understand the nature of NGOs, such as the Red Cross or Doctors Without Borders, which are independent of national governments but typically constrained by them.

# Rich Countries, Poor Victims: The Global Response to AIDS

## LESSON 3.1

### **Student Assessment Artifacts**

A 500-word report on PEPFAR (the American AIDS initiative) at work in two countries of the developing world

### **Variations and Extensions**

Have students research the AIDS initiatives of other G-7 countries and write a 500-word report on one country's initiative. These initiatives are extensively documented on the Internet.

Have students do research on a single charity that is responding to AIDS, such as The National Council of Churches or The Bill and Melinda Gates Foundation. How do the goals, methods, and results of these charities differ from those of national governments or multilateral organizations?

## National and State Academic Standards

### **NATIONAL**

#### **NCTE Standards for the English Language Arts**

1. Students read a wide range of print and non-print texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.
4. Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.
5. Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.
6. Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language, and genre to create, critique, and discuss print and non-print texts.

### **CALIFORNIA**

#### **English Language Arts Content Standards**

- 1.3 Use clear research questions and suitable research methods (e.g., library, electronic media, personal interview) to elicit and present evidence from primary and secondary sources.
- 1.4 Develop the main ideas within the body of the composition through supporting evidence (e.g., scenarios, commonly held beliefs, hypotheses, definitions).
- 2.3 Write expository compositions, including analytical essays and research reports:
  - a. Marshal evidence in support of a thesis and related claims, including information on all relevant perspectives.
  - b. Convey information and ideas from primary and secondary sources accurately and coherently.
  - c. Make distinctions between the relative value and significance of specific data, facts, and ideas.
  - d. Include visual aids by employing appropriate technology to organize and record information on charts, maps, and graphs.
  - e. Anticipate and address readers' potential misunderstandings, biases, and expectations.
  - f. Use technical terms and notations accurately.

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## PEPFAR: America's War Against AIDS

The President's Emergency Plan for AIDS Relief (PEPFAR) is America's \$15 billion initiative to combat the global HIV/AIDS pandemic. The following excerpts are from a summary of this plan by AVERT, a leading international AIDS charity. (The full summary can be found at <http://www.avert.org/pepfar.html>.)

### ***What is the President's Emergency Plan for AIDS Relief?***

The President's Emergency Plan for AIDS Relief, also known as PEPFAR, is a 5-year, \$15 billion American Government initiative to combat the global HIV/AIDS epidemic. In his State of the Union Address in January 2003, President Bush stated, "I ask the Congress to commit \$15 billion over the next 5 years, to turn the tide against AIDS in the most afflicted nations of Africa and the Caribbean." In May 2003, the U.S. Congress approved expenditure of up to \$15 billion over 5 years. Full implementation of PEPFAR began in June 2004.

### ***Is this the total U.S. government expenditure on HIV/AIDS?***

The sum of \$15 billion is the proposed expenditure of the U.S. Government on HIV/AIDS outside of the U.S. over a 5-year period. This is in addition to domestic HIV/AIDS expenditure for which \$21 billion was requested for fiscal year (FY) 2006.

### ***How is the money to be divided between different areas of work?***

Congress required that the PEPFAR money should be divided in the following way:

1. 55% for the treatment of individuals with HIV/AIDS (and in FYs 2006 through 2008, 75% of this is to be spent on the purchase and distribution of antiretroviral drugs).
2. 15% for the palliative care of individuals with HIV/AIDS.
3. 20% for HIV/AIDS prevention (of which at least 33% is to be spent on abstinence until marriage programmes).
4. 10% for helping orphans and vulnerable children (and in FYs 2006 through 2008, at least 50% [of the 10%] is to be provided through nonprofit, nongovernmental organisations, including faith-based organisations, that implement programmes at the community level).

Obviously, PEPFAR emphasizes the provision of treatment and care for people with AIDS, with only a fifth of its budget marked for HIV prevention work. And in 2006 through 2008, 41% of the total money is to be spent on the purchase and distribution of antiretroviral drugs.

To ensure that the legislation was passed, cooperation was required among people of differing political, religious, and ideological views, which caused many to be dissatisfied with the outcome. Some people were dismayed by the requirement that a third of prevention resources had to be spent on programmes promoting sexual abstinence before marriage. However, others were equally dismayed that two-thirds of prevention funds would be used for activities other than abstinence promotion, including condom dissemination.

### ***Which countries are going to benefit from PEPFAR?***

The Leadership Against HIV/AIDS Act of 2003 refers to HIV/AIDS funding that will focus on 14 specific countries chosen by the President: Botswana, Cote d'Ivoire, Ethiopia, Guyana, Haiti, Kenya, Mozambique, Namibia, Nigeria, Rwanda, South Africa, Tanzania, Uganda, and Zambia. These are referred to as the "focus" countries. In 2004, Congress asked that a 15th focus country be included from outside Africa and the Caribbean, and chose Vietnam to add to the list. However, the U.S. government provides HIV/AIDS money to other nations as well, including substantial funds to India and Russia.



Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

***What are the goals of PEPFAR?***

The President has stated, “This comprehensive plan will prevent 7 million new infections, treat at least 2 million people with life-extending drugs, and provide humane care for millions of people suffering from AIDS, and for children orphaned by AIDS.” When Congress passed the legislation, it specified that

1. By the end of 2004 at least 500,000 individuals with HIV/AIDS receive antiretroviral treatment through U.S. assistance programs.
2. By the end of 2005, at least one million receive treatment.
3. By the end of 2006, at least two million receive treatment.

The PEPFAR legislation also renewed U.S. commitments, made at the United Nations in 2001, to the prevention of mother-to-child transmission. The primary goal is to reduce the proportion of infants infected with HIV by 20% by the year 2005, and by 50% by the year 2010.

In June 2007, President Bush suggested a new set of targets for the end of 2013: to support treatment for nearly 2.5 million people, to prevent more than 12 million new infections, and to support care for 12 million people, including more than 5 million orphans and vulnerable children.

***What progress is being made toward these goals?***

By the end of September 2005, some 401,000 people were receiving treatment with PEPFAR support in the focus countries, and around 70,000 were benefiting in other countries through U.S. bilateral programmes.

The focus country number had risen to 822,000 by the end of September 2006, of whom 61% were women and 9% were children aged 14 and under. Although this figure falls short of the one million target set by the 2003 Act, some countries have performed better than others, and three have already exceeded their targets for the end of 2008.

In regard to the prevention of mother-to-child transmission, in 2004, around 125,500 women were provided with antiretroviral therapy to prevent infection of their unborn children, and as a result an estimated 23,700 infant infections were averted. The figures for 2005 were slightly lower and the target of a 20% reduction in infant infections was not met. The figures were much better in 2006, with around 285,600 pregnant women receiving the preventive drugs. Over the 3 years, PEPFAR estimates that it has helped to avert around 101,500 infant HIV infections. Around 21% of HIV-positive, pregnant women in focus countries received antiretroviral drugs in FY 2006, up from 9% in 2004.

PEPFAR supported care for over 1.7 million people through March 2005, exceeding a goal of 1.1 million set for June 2005. By the end of September 2006, the initiative had helped more than two million orphans and vulnerable children, and also helped to provide care for more than 2.4 million people living with HIV. During 2003–06, PEPFAR supported over 18.6 million HIV counseling and testing sessions.

So far no figures have been presented for prevention of sexual HIV transmission.

***What products can be purchased with PEPFAR money?***

Several billion dollars of PEPFAR money is spent on the purchase of HIV antiretroviral drugs, and there are also significant purchases of a wide range of other supplies. These include such diverse items as soap and nonsterile gloves (for home care kits), laboratory equipment for CD4 counts, other laboratory supplies such as refrigerators, and breast-milk substitutes (for the prevention of mother-to-child transmission).

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

The strategy document specifies that all products purchased with Emergency AIDS Plan money must be “of the highest quality,” and that “products will be procured from reliable manufacturers to ensure product safety and efficacy.” But how is safety and efficacy to be ensured? For pharmaceuticals, the rule is that drugs must be approved by the FDA or a regulatory agency in Canada, Japan, or Western Europe. It is not sufficient for drugs to have been prequalified by the World Health Organisation (WHO), even though the WHO is trusted by most other donors and governments and approves drugs more quickly than does the FDA.

***How does this policy affect the purchase of generic drugs?***

Drugs purchased with PEPFAR money are allowed to be “bioequivalent versions of branded ARV and other medications,” meaning that lower priced generics could be in theory be purchased. However, the requirement for approval by the FDA, or a similar regulatory body, initially excluded the purchase of most generics insofar as most generic antiretrovirals were only prequalified by the WHO. The policy totally excluded the purchase of Fixed Dose Combinations (FDCs), none of which were approved by the FDA.

In May 2004, the FDA announced an accelerated review process for FDCs and generic drugs, and it was agreed that drugs approved through this process could then be purchased with PEPFAR money “where international patent agreements permit them to be purchased.” But although FDA approval can be provided in as little as 6 weeks after submission of an application, the first drugs received “tentative” FDA approval through this route only in December 2004.

By August 2005, nine generic drugs had won FDA approval. However, none could be distributed by PEPFAR because several African countries refused to trust the FDA, and insisted the drugs be approved by the WHO before allowing them to be imported. To solve this unforeseen problem, FDA officials agreed to share its drug files with the WHO, so that the WHO could quickly add them to its list of approved medicines. PEPFAR eventually began distributing generics toward the end of 2005, by which time 15 such drugs had been approved by the FDA, including two FDCs.

By January 2007, the FDA had approved 34 generic antiretroviral drugs, including eight FDCs and eight paediatric formulations. Generics accounted for around 27% of spending on drug procurement in focus countries in FY 2006—varying from 0% in Namibia and Tanzania to 87% in Haiti. Critics maintain that unnecessary bureaucracy is hindering the greater use of generics.

***Is it proposed that a very significant amount of PEPFAR money be spent on “abstinence until marriage” and other HIV prevention work?***

HIV prevention accounts for around 20% of total PEPFAR expenditure, and Congress has specified that at least a third of this money should be spent on abstinence until marriage programmes. This spending requirement has been the focus of considerable discussion; many people have questioned the effectiveness of promoting abstinence at the expense of other initiatives such as the distribution of condoms.

In late 2005, PEPFAR introduced a new rule that at least two-thirds of all funds for preventing sexual transmission of HIV should be spent on promoting abstinence and being faithful (known as “AB” strategies). In countries with generalised epidemics (which includes most of Africa), the document says “a very strong justification is required to not meet the 66 percent AB requirement.” All 15 focus countries are expected to comply with the two-thirds rule.

The remaining one-third of money for preventing sexual transmission is supposed to be spent on “condoms and related activities.” According to *PEPFAR’s Third Annual Report*, this includes not just condom



Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

distribution and promotion but also “mass media and community outreach programmes to promote avoidance of or reduction of HIV risk behavior” and “community mobilization for HIV testing.”

Furthermore, PEPFAR requires that programmes that provide information about condom use must also teach the benefits of abstinence and partner reduction. And any programme that is not focused solely on promoting abstinence until marriage does not count toward the AB earmark. This means that AB activities should receive much more than twice the resources committed to encouraging condom use.

***What are the effects of these prevention policies?***

In April 2006, the Government Accountability Office (GAO) released the results of an extensive investigation of PEPFAR’s policies for preventing sexual HIV transmission. Seventeen of the 20 country teams interviewed by the GAO said that fulfilling the spending requirements set by PEPFAR presented “challenges to their ability to respond to local prevention needs.” Some said that they had to scale down efforts to prevent mother-to-child transmission or to improve blood safety in order to try to meet the one-third AB requirement, and many said that not enough emphasis was being placed on condoms. In one country, the budget for outreach work with high-risk groups such as sex workers, sexually active youth, and discordant couples was cut from \$8 million to \$4 million in order to meet AB requirements.

***The Institute of Medicine Report, 2007***

The Leadership Act that created PEPFAR required the Institute of Medicine (IOM) to undertake a review of the initiative within 3 years of its inception. The report of this expert evaluation—published in March 2007—contained a number of criticisms of PEPFAR policies and suggestions for improvement. To a large extent, these findings vindicated what many AIDS activists had been saying for some time:

- Inflexible budget allocations, including the one-third earmark for AB programmes, are harmful and should be removed.
- More effort is needed to empower women and girls and improve their status.
- PEPFAR should trust the WHO to prequalify drugs, and not require FDA approval, in order to increase use of generics.
- PEPFAR must transform from an emergency response agency into a long-term, sustainable programme—in particular by helping to expand the health workforce.

***What is PEPFAR doing “on the ground” in its focus countries?***

The program’s highest priority activities for each of its 15 focus countries are described on the website of AVERT, an international AIDS charity (see <http://www.avert.org/pepfar-countries.html>).

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## “Rich Countries, Poor Victims” Vocabulary

1. **Abstinence only**—a sex-education program that encourages people not to have any kind of sexual intercourse prior to or outside marriage. For abstinence to be effective, people must not have any kind of sex, whether vaginal, oral, or anal.
2. **Bilateral**—an agreement or relationship between two countries.
3. **Bureaucracy**—a large, complex administrative structure. Such structures exist in organizations such as governments and businesses. The executive branch of the federal government has a complex bureaucracy, with a hierarchy of bureaus and agencies.
4. **Commercial sex worker (CSW)**—a man or woman who engages in sexual acts for the sole purpose of soliciting payment.
5. **Developing nations**—nations that have a low-income average, a relatively backwards infrastructure, and a poor human development index when compared to the global norm. The term has tended to edge out earlier ones, such as “poor” or “backward” or the Cold War-defined “Third World.”
6. **Epidemic**—any unusual occurrence of disease, generally first noticed by an unexpected number of cases occurring over a particular amount of time or in a particular place.
7. **Grassroots**—people or society at a local level, rather than at the center of major political activity. A grassroots political movement is a movement organized by a network of citizens.
8. **Intravenous drug user (IDU)**—a person who uses a drug (e.g., heroin, cocaine) that is administered with a needle and syringe.
9. **Literacy rate** —the percentage of people in a country who can read and write.
10. **Mortality rate**—the proportion of a population that dies during a specified time period, usually expressed as a percent or as deaths per 1,000 or deaths per 100,000.
11. **Multilateral**—an agreement or relationship between more than two countries.
12. **Nongovernmental organization (NGO)**—any nonprofit, voluntary citizens’ group that is organized on a local, national, or international level.
13. **PEPFAR**—President’s Emergency Plan For AIDS Relief (PEPFAR) is a U.S. government fund to combat AIDS by injecting 15 billion American dollars over a 5-year period.
14. **Philanthropy**—the donation of money to various worthy charitable causes. It is seen as a way to directly effect change in society without recourse to the bureaucratic mechanisms of government.
15. **World Health Organization (WHO)**—a United Nations agency to coordinate international health activities and to help governments improve health services.
16. **World Bank**—an international bank owned by 171-member countries that provides loans and technical assistance to developing countries to help them develop economically.
17. **United Nations (UN)**—an international organization made up of 191 nations (most of the nations of the world), formed in 1945, to promote peace, security, and economic development.

# Existing HIV/AIDS Programs

## LESSON 3.2

### WORLD GEOGRAPHY

#### Time

100 minutes

Additional days for in-class research optional

#### Materials

##### Equipment

Computer lab access

#### Resources

- HIV/AIDS Impact and Intervention Research Assignment handout
- HIV/AIDS: Strategy Matrix worksheet

#### Prior Student Learning

Students should already be familiar with paths of HIV transmission and the global impact of HIV/AIDS from previous lessons.

### *Essential Question for This Unit*

What is the responsibility of the United States to address health crises in the developing world?

### *Objectives*

After completing this lesson, students will be able to

- Research the current state of the HIV/AIDS crisis in a specific nation.
- Describe the different types of prevention, treatment, and human rights programs that exist to combat HIV/AIDS.
- Understand the barriers to effective HIV/AIDS prevention and treatment, especially in underdeveloped nations.

### *Lesson Activities*

#### **Lesson Springboard**

Students have already learned from previous lessons how widespread and serious the AIDS pandemic is around the world. Ask students: What is being done about it, and how do individual nations handle the crisis differently? Ask students to volunteer what they already know about HIV/AIDS programs in the developing world and have them suggest reasons why these programs are not curbing the crisis quickly enough.

Tell students that they will be learning about barriers to effective HIV/AIDS prevention and treatment and will also be researching nations as case studies of the impact of and response to HIV/AIDS. Introduce the culminating event, during which students will design an HIV/AIDS intervention plan that is tailored to the nation they are researching in this lesson.

#### **Lesson Development**

##### *Direct Instruction*

Present the major barriers to successful HIV/AIDS prevention and treatment in developing nations. Tell students to keep these factors in mind when researching their country's AIDS program, as it will provide context to the program's overall design and intention.

The major barriers to successful HIV/AIDS prevention and treatment include the following:

- **Lack of Funding.** Developing nations do not have the resources to reach all of the people necessary for an effective treatment program. Antiretroviral drug treatments remain prohibitively expensive despite efforts to produce generic drugs more cheaply.
- **Poverty and Malnutrition.** In some nations, a high percentage of the population lives on less than \$1 a day (in U.S. dollars). Poverty leads to malnutrition, lack of sanitation, poor healthcare, and little

# Existing HIV/AIDS Programs

## LESSON 3.2

access to education for many in the developing world. This exacerbates the HIV/AIDS problem because once infected, patients tend to get sick more quickly if they are malnourished or otherwise unhealthy. The disease also spreads more quickly because of the lack of education and resources to maintain preventative practices.

- **Stigma and Discrimination.** Many AIDS patients are shunned by their families and communities. Some are no longer accepted by their loved ones because it is assumed that they contracted the disease through culturally unacceptable behavior. Others lose their job because people are afraid to work with someone who is HIV positive. The result is that many people do not want to be screened for HIV because they do not want anyone to know their HIV status, and nations have an inaccurate view of HIV infection rates. Further, patients have a harder time finding treatment because they have been ostracized by people in their communities. Lastly, people assume that HIV/AIDS is a problem that affects “others”—prostitutes, gay men, and drug users—so they are unwilling to educate themselves and those they know about the disease.
- **Cultural Norms About Gender.** In many cultures, women are not expected or allowed to make decisions about their sexuality, family planning, or education. This leaves half of the population unable to fight the HIV/AIDS problem effectively. For example, women report being unable to ask their husbands or partners to use condoms. Many girls are kept out of school in order to work or take care of younger siblings, while their brothers get an education.
- **Lack of Education.** Access to education is lacking in many nations of the developing world, leading to a lack of understanding about how HIV/AIDS is spread, preventative measures, and treatment options.
- **Government Instability and/or Corruption.** It is difficult to create an effective national program when the country is politically unstable due to war, weak leadership, and natural catastrophes such as earthquakes or drought. Further, some countries suffer from widespread corruption that keeps resources away from effective programs.
- **Lack of Health Infrastructure.** Even if the developing world could afford current treatments, many countries do not have the infrastructure in place to effectively distribute and store the drugs. Currently, antiretroviral treatments are taken regularly for a lifetime with regular blood tests, which requires permanent clinics and laboratories in even the most rural areas and a secure transportation system to ensure a ready supply of drugs. Some drugs need refrigeration while others are injected, which requires refrigerators in areas that do not have constant electricity and a steady supply of clean needles. As the number of AIDS cases grows, more hospitals and related supplies will be needed. The infrastructure needed to care for the orphans and other family members left behind by AIDS victims is also a concern.
- **Brain Drain.** The most highly educated healthcare professionals in developing nations often immigrate to developed countries for a bet-

# Existing HIV/AIDS Programs

## LESSON 3.2

ter salary and living standards. The developed world accepts these workers because they often have a shortage of trained healthcare professionals. This leaves the home country without enough healthcare specialists to provide basic care to the population, let alone fight the AIDS pandemic.

- **Distrust of Western Medicine.** As students learned in Lesson 2.3, the developing world has experienced several examples of mistreatment and unethical behavior by the Western medical establishment. This has resulted in a widespread perception of Western medical treatment as intentionally harmful, especially in Africa. People have been known to reject vaccines and other treatments offered to them because of the belief that they are meant to sterilize, poison, or otherwise harm them instead of help.

### **Group Research Project**

Divide the class into groups and hand out the HIV/AIDS Impact and Intervention Research assignment. Each group is responsible for investigating the HIV/AIDS education, prevention, and treatment programs available in a specific nation, and to report on the efficacy of those programs to the class. Brazil, Cuba, India, Kenya, Nigeria, the Russian Federation, South Africa, and Thailand are suggested for research because there is a lot of readily accessible information on these countries, and they span different geographical regions, religions, and cultural heritages.

Assign each group a country and announce a due date for the reports and presentations. Each presentation should be accompanied by a student-created informational handout. Take into consideration the days that the computer lab will be available for research. Allow groups time to divide the work and assign individual responsibilities to each member.

Inform students that the written report required in this lesson will be included as one section within a larger report due as part of the culminating event (Lesson 3.3). As such, students can view this report as merely a draft report. On the day of the final presentation, check-in with the groups to make sure they have made adequate progress in researching and writing their draft reports.

### **Teacher Background Information**

Instructors may want to learn more about the countries being presented before evaluating students' work. The World Health Organization (WHO) provides concise health fact sheets on the impact of HIV/AIDS on specific countries—including the eight countries that students study here—as well as statistics on key indicators of population health. WHO also provides HIV/AIDS summaries for Kenya, Nigeria, and the Russian Federation (see <http://www.who.int/countries/en/>). In 2004, UNAIDS published more detailed summaries of the impact of HIV/AIDS on individual nations, including the eight nations covered here. The summaries are listed in alphabetical order by country name (see [http://www.unaids.org/en/Regions\\_Countries/Countries/default.asp](http://www.unaids.org/en/Regions_Countries/Countries/default.asp)).

# Existing HIV/AIDS Programs

## LESSON 3.2

### **Group Presentations**

Before presentations begin, hand out the HIV/AIDS: Strategy Matrix to each student. Tell the class that everyone is responsible for recording each type of education, prevention, and treatment strategy mentioned in the presentations. The handout that each group distributes to the class should help students complete the matrix. Some strategies are used in several countries, but each country has unique circumstances that create different advantages and disadvantages, which should also be recorded. This matrix will help students remember the range of strategies currently being implemented around the world, which will help them complete the final unit project.

### **Lesson Closure**

Reflect upon and discuss the inherent difficulty of dealing with a pandemic on both a national and individual scale. Ask students to consider what they would do if they were in charge of the HIV/AIDS program of a developing country. What factors would they have to consider when coming up with the best plan? Then ask students to think about an individual who is HIV positive in a developing nation. What does that person need most from an AIDS program? Repeat the question for an AIDS orphan, a healthy person, and an individual already in the later stages of AIDS. Have students write a journal entry or a personal reflection on this topic.

### **Possible Prior Misconceptions**

Students may have believed that the solution to the HIV/AIDS crisis is simply a matter of having enough money.

Students may have assumed that there are not major differences in the methods developing nations use to address the HIV/AIDS pandemic.

### **Student Assessment Artifacts**

Draft research report  
Group presentation  
Presentation handout  
Completed HIV/AIDS: Strategy Matrix

### **Variations and Extensions**

Invite a public health official to speak about the challenges that HIV/AIDS programs face in the local area.

Invite a representative from an international aid organization to speak about funding and grassroots efforts to stop the spread of HIV/AIDS in the developing world.

# Existing HIV/AIDS Programs

## LESSON 3.2

### National and State Academic Standards

#### NATIONAL

##### NCSS Curriculum Standards for Social Studies

###### *III. People, Places, and Environments*

Social studies programs should include experiences that provide for the study of people, places and environments.

###### *VII. Production, Distribution, and Consumption*

Social studies programs should include experiences that provide for the study of how people organize for the production, distribution, and consumption of goods and services.

##### NCGE National Geography Standards

###### *Places and Regions*

- Understand the physical and human characteristics of places.
- Understand that people create regions to interpret Earth's complexity.
- Understand how culture and experience influence people's perceptions of places and regions.

###### *Human Systems*

- Understand the characteristics, distribution, and migration of human populations on Earth's surface.
- Understand the characteristics, distribution, and complexity of Earth's cultural mosaics.
- Understand the patterns and networks of economic interdependence on Earth's surface.
- Understand the processes, patterns, and functions of human settlement.
- Understand how the forces of cooperation and conflict among people influence the division and control of Earth's surface.

###### *The Uses of Geography*

- Understand how to apply geography to interpret the past.
- Understand how to apply geography to interpret the present and plan for the future.

#### CALIFORNIA

##### History-Social Science Content Standards

###### *Chronological and Spatial Thinking*

1. Students compare the present with the past, evaluating the consequences of past events and decisions and determining the lessons that were learned.
2. Students analyze how change happens at different rates at different times; understand that some aspects can change while others remain the same; and understand that change is complicated and affects not only technology and politics but also values and beliefs.
3. Students use a variety of maps and documents to interpret human movement, including major patterns of domestic and international migration, changing environmental preferences and settlement patterns, the frictions that develop between population groups, and the diffusion of ideas, technological innovations, and goods.
4. Students relate current events to the physical and human characteristics of places and regions.

###### *World History, Culture, and Geography: The Modern World*

- 10.10 Students analyze instances of nation-building in the contemporary world in at least two of the following regions or countries: the Middle East, Africa, Mexico and other parts of Latin America, and China.
  1. Understand the challenges in the regions, including their geopolitical, cultural, military, and economic significance and the international relationships in which they are involved.
  2. Describe the recent history of the regions, including political divisions and systems, key leaders, religious issues, natural features, resources, and population patterns.
  3. Discuss the important trends in the regions today and whether they appear to serve the cause of individual freedom and democracy.



Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## HIV/AIDS Impact and Intervention Research Assignment

Depending on many different social, political, and economic factors, HIV/AIDS can affect each nation differently. In groups, this class will investigate the effects of the HIV/AIDS pandemic on nations around the world. The countries being researched are a sample of those that are trying different strategies and asking for international support and contributions to continue or expand their efforts against AIDS.

The nations are the following:

Brazil	Cuba	India	Kenya
Nigeria	Russian Federation	South Africa	Thailand

Your group will research the HIV/AIDS programs implemented in the country you are assigned, and then will present the information to the class.

Your group must do research on your county and write a **draft report** that covers the following:

- *General background and statistics*, including (but not limited to) physical geography and location, total population and demographics, major religions and cultural values, type of government, current political leaders and health minister, healthcare system, recent economic and political events, current regional issues, education system, major industries.
- *Current statistics on the HIV/AIDS pandemic*, including (but not limited to) a map showing infection rates in the country; mortality and infection rates by gender, age, and social status or occupation; annual cost of AIDS to the healthcare system; graph showing trends in infection rate and cost to society.
- *Most prevalent paths of HIV transmission*, and, if possible, reasons why they are prevalent.
- *Detailed descriptions of existing programs to curb the rate of HIV infection*, and their possible strengths and weaknesses.
- *Detailed descriptions of existing programs to treat AIDS patients*, and their possible strengths and weaknesses.
- *Detailed descriptions of existing programs to change the public perception of HIV/AIDS* and reduce stigma and discrimination, and their possible strengths and weaknesses.
- *Amount and type of assistance received by international community and NGOs*.

**Note:** Pay attention to proper citations.

Your group's **presentation** must be at least 5 minutes long and include the following:

- A brief description of the *impact that AIDS is having in your country*.
- *Descriptions of all existing HIV/AIDS-related programs and their effectiveness*.
- *A handout summarizing your country's current HIV/AIDS programs*. It should not be longer than one typed page. Both concise paragraphs and bullet points are acceptable.

**DUE DATE:** \_\_\_\_\_



Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## HIV/AIDS: Strategy Matrix

Description of Strategy	Population Reached by Strategy	Advantages	Disadvantages



# Summit Presentations

## LESSON 3.3

### ENGLISH LANGUAGE ARTS

#### Time

130 minutes

#### Materials

#### Equipment

Computer lab access

#### Resources

- Summit Presentation Assignment handout
- Oral Presentation Rubric: HIV/AIDS Summit Presentation (Sample) handout

#### Prior Student Learning

Students should already have completed all of the previous lessons in this unit.

### *Essential Question for This Unit*

What is the responsibility of the United States to address health crises in the developing world?

### *Objectives*

After completing this lesson, students will be able to

- Write a written report detailing the HIV/AIDS situation in a specific country.
- Create a proposed action plan for the country that would best address its HIV/AIDS pandemic.
- Design a pamphlet or flyer that would target a specific audience about an aspect (e.g., stigma, prevention, treatment) of the HIV/AIDS pandemic.
- Create a PowerPoint presentation about a national HIV/AIDS program.

### *Lesson Activities*

#### **Lesson Springboard**

From previous lessons, students have learned about the extent of the HIV/AIDS crisis around the world, existing prevention and treatment programs, and barriers to success in the developing world. They have conducted an in-depth investigation of the HIV/AIDS situation in geographically and culturally diverse countries to see the different approaches being used against AIDS. With all of this acquired knowledge, ask students what they would do if they were in charge. What is the best way of handling the AIDS crisis in a developing nation?

As a culminating project, students will design the best possible AIDS education, prevention, and treatment program for the countries they researched in the Lesson 3.2.

#### **Lesson Development**

##### *Direct Instruction*

Hand out the Summit Presentation Assignment and describe the culminating event for this lesson. The world has convened a summit to discuss the HIV/AIDS pandemic and any possible solutions that can curb its progress and treat its victims. Tell students that they are experts in the countries they have been researching in Lesson 3.2, and the governments of those countries have asked each group to create the best possible HIV/AIDS action plan. The plan must take into account the unique characteristics of each country, including its main religions, cultural beliefs, HIV infection rate, infrastructure, and government.

Remind students that most of the research for this project has already been done in Lesson 3.2. The HIV/AIDS: Strategy Matrix that each stu-

*Subunit 3—Finding the Right Solution*  
**Summit Presentations**

**LESSON 3.3**

dent created in that lesson will help groups remember the strategies of other countries when devising the best plan for their own nation. However, students should not limit themselves to approaches that have already been used—new and creative strategies are often needed to solve complex problems.

There are two sections of the written report that students have not yet begun. The first is a personal account of someone affected by HIV/AIDS in their country, similar to the accounts discussed in Lesson 1.1. This information can be added to the part of the report where the group feels it would make the strongest emotional impact.

The second section is the actual detailed description of the best HIV/AIDS program. Remind students that they need to address all aspects of the problem, including public perception, prevention, testing, and treatment. They also need to make reasoned arguments as to why their comprehensive strategy is better than others. Allow students to have more latitude in developing their strategies by relaxing the funding constraint that all developing nations feel. Assume that the international community will contribute enough funds and support to implement the plan if they are convinced that it will be the most effective without being wasteful. After all, resources must be equitably allocated to other nations as well.

Tell students that the PowerPoint presentation will last 10–15 minutes and should focus on the proposed program, rather than on background information and the existing strategy. Remind students that they already outlined the existing strategies in their presentations in Lesson 3.2. Background information should be included in the presentation primarily to support the arguments made for why their proposed plan is the best. For example, students may argue that an education plan geared at truck drivers would be effective, and then offer evidence that the most prevalent mode of transmission in their country is from migrant workers to their wives.

Remind students that the most effective presentations have an emotional impact. Encourage groups to include photographs, personal testimony, and other narratives in their presentations to highlight key points. They can also add video or audio clips and indigenous music.

The pamphlet is intended to have students present information about HIV/AIDS to a specific audience other than their peers. Groups are asked to create a one-page pamphlet or flyer that would be typical of something one of their HIV/AIDS programs would distribute. For example, if the group proposed a treatment program aimed at preventing rural women from passing HIV on to their newborn children, they would create a pamphlet with selective information and persuasive language for that population. Encourage bi- and multi-lingual students to translate the pamphlet into a language spoken in their researched country. They can also ask their parents or language teachers to help.

Subunit 3—Finding the Right Solution  
**Summit Presentations**

LESSON 3.3

Choose an appropriate due date for the reports and presentations. Announce days reserved for computer lab use or group collaboration time (one to three class sessions is suggested).

**Group Presentations**

Choose an appropriate way to hold the class accountable for the information presented by each group. Some instructors give a quiz or test, while others choose to collect student notes or have students summarize what they have heard after each presentation.

It is often useful to have students self-evaluate their presentations with the same rubric the instructor uses. (See attached sample rubric.) Alternatively, the class can use the rubric to grade each presentation, and the instructor can include an average grade for the class evaluations as part of the group's final project grade. A Sample Oral Presentation Rubric solely for the PowerPoint presentation is provided in this lesson.

**Lesson Closure**

After students have finished their presentations, return to the unit question and ask them to voice their opinions. What is the responsibility of the United States to address health crises in the developing world? Remind the class that they have learned about how much donor nations and international aid organizations are already contributing in their fight against AIDS. Considering the research they have done on countries with growing or already daunting HIV/AIDS problems, do they think the international community has done enough? Do they feel that the plans they created without major resource limitations were significantly better than the programs already in place? Were other barriers to successful programs more or equally burdensome than not having enough money?

Have students reflect on what they have done to contribute to the fight against AIDS, and on whether what they have learned in this unit has changed their opinion about what their personal responsibilities are locally, regionally, and globally. Ask students to consider what power they have to make a difference in the global struggle, whether it be volunteering abroad, donating money, or advocating for policies at home or internationally.

**Possible Prior Misconceptions**

Students may not see the connection between the research and problem solving they are doing in the culminating project and their personal responsibility to do something about the HIV/AIDS problem.

**Student Assessment Artifacts**

Written report (group)  
PowerPoint presentation (group)  
Sample pamphlet or flyer (group)  
Participation in lesson closure discussion

Subunit 3—Finding the Right Solution  
*Summit Presentations*

LESSON 3.3

***Variations and Extensions***

Invite a panel of community leaders, international aid organization representatives, and parents to listen to and evaluate the student presentations.

Mail the proposals to the appropriate embassy or consulate and request responses from the countries the students have researched.

Write letters to elected representatives in the U.S. government detailing what students feel is the appropriate response to the global AIDS crisis, and request a response. Most congressional staffs will respond, although it may take some time.

Invite recent immigrants from the nations researched to speak to the class about healthcare conditions in their home country and the experiences they have had with HIV/AIDS.

## National and State Academic Standards

### NATIONAL NCTE Standards for the English Language Arts

1. Students read a wide range of print and non-print texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.
4. Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.
5. Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.
6. Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language, and genre to create, critique, and discuss print and non-print texts.
7. Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and non-print texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience.
8. Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.

### CALIFORNIA English Language Arts Content Standards

#### Reading

- 2.2 Prepare a bibliography of reference materials for a report using a variety of consumer, workplace, and public documents.
- 2.3 Generate relevant questions about readings on issues that can be researched.
- 2.4 Synthesize the content from several sources or works by a single author dealing with a single issue; paraphrase the ideas and connect them to other sources and related topics to demonstrate comprehension.
- 2.5 Extend ideas presented in primary or secondary sources through original analysis, evaluation, and elaboration.
- 2.8 Evaluate the credibility of an author's argument or defense of a claim by critiquing the relationship between generalizations and evidence, the comprehensiveness of evidence, and the way in which the author's intent affects the structure and tone of the text (e.g., in professional journals, editorials, political speeches, primary source material).

#### Writing

- 1.1 Establish a controlling impression or coherent thesis that conveys a clear and distinctive perspective on the subject and maintain a consistent tone and focus throughout the piece of writing.
- 1.2 Use precise language, action verbs, sensory details, appropriate modifiers, and the active rather than the passive voice.
- 1.3 Use clear research questions and suitable research methods (e.g., library, electronic media, personal interview) to elicit and present evidence from primary and secondary sources.
- 1.4 Develop the main ideas within the body of the composition through supporting evidence (e.g., scenarios, commonly held beliefs, hypotheses, definitions).
- 1.5 Synthesize information from multiple sources and identify complexities and discrepancies in the information and the different perspectives found in each medium (e.g., almanacs, microfiche, news sources, in-depth field studies, speeches, journals, technical documents).
- 1.6 Integrate quotations and citations into a written text while maintaining the flow of ideas.
- 1.7 Use appropriate conventions for documentation in the text, notes, and bibliographies by adhering to those in style manuals (e.g., *Modern Language Association Handbook*, *The Chicago Manual of Style*).
- 1.8 Design and publish documents by using advanced publishing software and graphic programs.
- 1.9 Revise writing to improve the logic and coherence of the organization and controlling perspective, the precision of word choice, and the tone by taking into consideration the audience, purpose, and formality of the context.

Subunit 3—Finding the Right Solution  
**Summit Presentations**

LESSON 3.3

**CALIFORNIA—continued**

*Listening and Speaking*

- 1.1 Choose logical patterns of organization (e.g., chronological, topical, cause and effect) to inform and to persuade, by soliciting agreement or action, or to unite audiences behind a common belief or cause.
- 1.4 Choose appropriate techniques for developing the introduction and conclusion (e.g., by using literary quotations, anecdotes, references to authoritative sources).
- 1.5 Recognize and use elements of classical speech forms (e.g., introduction, first and second transitions, body, conclusion) in formulating rational arguments and applying the art of persuasion and debate.
- 1.6 Present and advance a clear thesis statement and choose appropriate types of proof (e.g., statistics, testimony, specific instances) that meet standard tests for evidence, including credibility, validity, and relevance.
- 1.7 Use props, visual aids, graphs, and electronic media to enhance the appeal and accuracy of presentations.
- 1.8 Produce concise notes for extemporaneous delivery.
- 1.9 Analyze the occasion and the interests of the audience and choose effective verbal and nonverbal techniques (e.g., voice, gestures, eye contact) for presentations.
- 2.2 Deliver expository presentations:
  - a. Marshal evidence in support of a thesis and related claims, including information on all relevant perspectives.
  - b. Convey information and ideas from primary and secondary sources accurately and coherently.
  - c. Make distinctions between the relative value and significance of specific data, facts, and ideas.
  - d. Include visual aids by employing appropriate technology to organize and display information on charts, maps, and graphs.
  - e. Anticipate and address the listener's potential misunderstandings, biases, and expectations.
  - f. Use technical terms and notations accurately.



Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## Summit Presentation Assignment

Due Date: \_\_\_\_\_

Assume that the international community has convened a summit of world leaders to talk about solutions to the HIV/AIDS problem. Your country has asked your group to come up with the best HIV/AIDS program possible to deal with the specific characteristics and concerns of the nation. What is the most effective way to spend resources, and what would those programs look like? If the international community could offer more money and support, what would be done differently?

Your group presentation will include the following:

- A written report
- A PowerPoint presentation
- A sample one-page pamphlet or flyer from one of the proposed programs

### Written Report

(approximate length: 8–10 pages)

Most of the research for the written report has already been done, and just needs to be revised into a final product. Some new information is also required, however. The report should include the following elements:

- *General background and statistics of your country*
  - At least one graph to illustrate data
  - Map of country with HIV/AIDS hotspots and bordering nations
- *Current national statistics on the HIV/AIDS pandemic*
  - At least one graph to illustrate data
- *Most prevalent paths of HIV transmission, and, if possible, reasons why they are prevalent*
- *Detailed descriptions of existing programs related to HIV/AIDS*
- *Amount and type of assistance currently received by international community and NGOs*
- *A personal account of someone in the country affected by HIV/AIDS*
- *An ideal national HIV/AIDS program*
  - Address stigma/discrimination, testing, prevention, and treatment.
  - Tailor your plan to the country in terms of its cultural and religious sensitivity, prevalent modes of transmission, current infection rate, government structure, etc.
  - Assume the international community is willing to offer more money and support if the plan is effective enough. Create the best program possible without wasting money.
  - Consider a proper balance between long-term and immediate results.
  - Include reasons why the program is better than the current one (other than it having more resources).
  - A mixture of strategies used in other countries can be used, but new and creative strategies are encouraged!

**Note:** Pay attention to proper citations.

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

**PowerPoint Presentation**

(approximate length: 10–15 minutes)

- All group members must speak.
- Typical music, photographs, or other interesting artifacts from your country are encouraged.
- A video or audio clip of an AIDS victim from your country is a plus.
- *Focus the majority of the time (75%) on presenting your ideal program* and explaining the reasons why it best serves your country. Remember, you have already presented the existing program to the class.
- Can include a question-and-answer session (after at least 10 minutes of the presentation).

**Sample Pamphlet or Flyer**

Choose one of the proposals that your group would like to implement and create a one-page pamphlet or flyer that would be distributed by that program. For example, if you propose an HIV/AIDS education program geared at teenagers 12 to 15 years old, create an appropriate pamphlet that the education program would distribute to that population.

- Must include color and images.
- Extra credit if it is translated into a language spoken in your country (other than English).

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## Oral Presentation Rubric: HIV/AIDS Summit Presentation (SAMPLE)

CATEGORY	4	3	2	1
Proposal Content	Thoughtful, thorough, well-reasoned, and creative. The proposal addresses all aspects of the HIV/AIDS problem in the country. It is tailored specifically to the country's needs and is sensitive to the cultural and religious beliefs of its inhabitants. All parts of the plan are explained and defended by solid evidence. Some new strategies are introduced.	Thorough and well-reasoned. The proposal addresses all aspects of the HIV/AIDS problem in the country. It gives some consideration to cultural and religious beliefs. Evidence is used to explain and defend most proposals.	Well-reasoned, but incomplete or lacking research. Different aspects of the problem are addressed, but lacks in-depth knowledge of issues specific to the country. General or vague solutions that are not backed up by evidence from the country.	The proposal shows no evidence of research or thoughtful consideration of issues specific to the country. Explanations are overly vague and/or don't make sense. Focuses on only one or two aspects of the HIV/AIDS problem.
Preparedness and Organization	The group is completely prepared and has obviously rehearsed. PowerPoint slides are well-organized and smoothly highlight main points of the presentation. All members of the group have an important speaking role.	The group seems pretty prepared but might have needed a couple more rehearsals. PowerPoint slides match the oral presentation. All members have an important speaking role.	The group is somewhat prepared, but it is clear that rehearsal was lacking. PowerPoint slides are on topic but not an integral part of the presentation. Some members seem unprepared or do not speak.	The group does not seem at all prepared to present. PowerPoint slides are disorganized and distract from the presentation. Some members do not speak. The presentation is confusing to the audience.
Clear Communication	Presenters speak clearly and distinctly all (100–95%) of the time, make no grammatical mistakes, and do not mispronounce any words.	Presenters speak clearly and distinctly all (100–95%) of the time, but mispronounce a word or make one grammatical mistake.	Presenters speak clearly and distinctly most (94–85%) of the time. They mispronounce words or make a few grammatical mistakes.	Presenters often mumble or cannot be understood or make several grammatical mistakes that distract from the presentation.
Emotional Impact	Use of sound, visual images, video clips, or other effects add emotional impact to key parts of the presentation. Audience is persuaded emotionally without feeling manipulated.	Use of images and other effects add emotional weight to the presentation but are not specifically linked to key parts of the presentation.	Overly dramatic emotional arguments replace a reasoned proposal as the main thrust of the presentation. Or attempts at emotional impact do not support the arguments in the presentation or seem like an afterthought.	Emotional impact is missing from the presentation.

