Lesson Plan

Solutions or Impossibilities? HIV Prevention for African Children

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Grades: 6-12

Subjects: Social Studies, Current Events, Global History
Interdisciplinary Connections

Overview of Lesson Plan: Students analyze maps for clues as to why children and mothers in both urban and rural areas of Africa may not be able to fight HIV the same way as those in wealthier countries could. Based on their knowledge of effective programs for HIV awareness, prevention, and treatment in the United States, students then develop an essay detailing possible solutions to curbing the HIV/AIDS epidemic in Africa.
Review the Academic Content Standards related to this lesson.

Suggested Time Allowance: 45 minutes to 1 hour

Objectives:

Students will:
1. Analyze and interpret three maps accompanying the article; evaluate trends; compare and contrast data provided by the maps.
2. Read and discuss the article "Breast-Feeding and HIV: Weighing Health Risks and Treatment Costs."
3. Brainstorm HIV/AIDS awareness, prevention, and treatment programs implemented in the United States.
4. Write a persuasive essay applying these programs to possible solutions to curbing the HIV/AIDS epidemic in Africa.

Resources / Materials:

copies of "Breast Feeding and HIV: Weighing Health Risks and Treatment Costs" (one copy per student- include all three maps)
paper
pens and pencils

An enormous amount of background information on HIV/AIDS prevention and treatment programs in the United States can be found on-line at the websites for AIDS Education Global Information System (AEGIS) and the JAMA HIV/AIDS Information Center. URLs for both sites are found in the "Other Useful Information on the Web" section below.

Activities / Procedures:

1. WARM-UP/DO NOW: Look at the maps that accompany the article as a whole class (older or more advanced students can complete this activity in small groups and discuss their answers once all students finish.) First, read the caption at the top of the map section. Then, discuss the following questions:
a. Which countries have the highest numbers of children under 14 living with HIV or AIDS at the end of 1997? Which countries have the lowest numbers? How might a young child contract HIV? What would prevent him or her obtaining proper medical treatment?
b. Which countries have the highest percentage of pregnant mothers in rural areas with HIV or AIDS who visit clinics? Which countries have the lowest percentage?
c. Which countries have the highest percentage of pregnant mothers in urban areas with HIV or AIDS who visit clinics? Which countries have the lowest percentage?
d. Compare the maps about rural and urban mothers. Why might a country have a higher percentage of mothers visiting clinics in urban areas than in rural areas? (Example: Sudan) Why might a country have a higher percentage of mothers visiting clinics in rural areas than in urban areas? (Example: Mozambique)
e. Compare all three maps. How are they interrelated? What assumptions could be made about the "mothers" maps by looking at the "children" map? What assumptions could be made about the "children" map by looking at the "mothers" map?

2. Read "Breast Feeding and HIV: Weighing Health Risks and Treatment Costs" as a class. The article is divided into four sections: an introduction, a case study of a young mother, an analysis of why poor countries have such a widespread problem, and a discussion of children who receive prenatal care often become orphaned by outliving their parents. After reading each of these sections, discuss the questions below:
* Introduction: What are the conditions in Kakulu that may contribute to health risks in the area? Why would the United Nations announce that mothers with HIV should feed their children formula instead of breast milk? How might using formula and AZT treatments alter the number of babies infected with HIV? Why might these "solutions" be problematic for women in areas such as Kakulu? Why is "prevention the only hope" for Africa?
* "A Young Mother": For the young mother in the article, why are formula and AZT treatments unrealistic or impossible? What concerns does she have? Why doesn't she, like over 95% of other village women in Uganda, know whether or not she is infected with HIV?
* "A Poor Country": Explain what Dr. Miro means when he says, "'I would love to (counsel all HIV-positive mothers.) But then I wouldn't be living in Uganda and I wouldn't be talking to my own people. I would be living in America and I would be talking to your people.'" What examples of life in Kakulu are given that demonstrate that the village has many health risks? What finding about AZT treatment could drastically alter the number of babies and children infected with HIV? How are the United Nations AIDS program and the World Health Organization helping with the cost? What issue does this raise as far as children outliving their mothers?
* "A Tough Decision": How does the African village view of children, according to Eelin Berdall, differ from the Western view of children? Discuss the statement made by Sophia Mukasa Monico: "'What we are really asking many women is do you want your baby to die of a horrible disease or do you want him to starve to

death?'" Does this statement surprise you? What do her statements in the final paragraph of the article mean?

3. Brainstorm services and programs in the United States that help people become more aware of the risk factors and behaviors for HIV, prevent HIV infection, and receive HIV/AIDS counseling and treatments.

4. WRAP-UP/HOMEWORK: Students write a brief persuasive essay (1 to 2 pages) offering possible solutions to curbing the HIV/AIDS epidemic in Africa (and world-wide.) Students should use their class brainstorm on services and programs implemented in the United States as an idea-generator for the solutions they offer.

Further Questions for Discussion:

--How is the HIV virus contracted and spread in humans?
--What recent medical developments are helping prevent the transmission of HIV from mothers to their unborn children?
--What medical treatment is available to offset the development of full-blown AIDS?
--What effects does HIV/AIDS have on the human body?
--What factors in society contribute to a higher number of HIV/AIDS victims?
--How might a village that has poor resources and little or no funding for education or prevention programs realistically control the spread of HIV in their community?

Evaluation / Assessment:

Students will be evaluated based on participation in classroom discussion and persuasive essay proposing solutions to curbing the HIV/AIDS epidemic in Africa.

Vocabulary:

rural, urban, cultivate, epidemic, uncontaminated, prenatal, sterile, malarial, rancor, transmission, plague, unconventional, routine, ethical

Extension Activities:

1. Invite a medical professional or AIDS counselor to visit your class and discuss the issues raised in the article as well as prevention and treatment programs in the U.S., includng locally.

2. Students can research HIV/AIDS prevention methods and treatment programs to present to their class. They can also create informational posters to display around the school.

3. Many cities have HIV/AIDS peer education programs (such as Project Reach Youth in Brooklyn, NY) that can train students to become peer educators.

4. Teachers or students can contact the NAMES Foundation, known for their AIDS Memorial Quilt, to bring pieces of the quilt to your school and work with students on the topic of HIV/AIDS prevention. (http://www.aidsquilt.org)

Interdisciplinary Connections:

Math - Students can create graphs illustrating the statistics provided by the article and the maps. They can also find data from other countries to include in their graphs.

Science - Students can research HIV/AIDS from a biological standpoint, studying how the disease affects the human body, why it can be transferred easily through body fluids, and how AZT and other medications slow the effects of the disease.

Language Arts - Students can write a poem or monologue as if written from the perspective of one of the people mentioned in the article and present it to the class.

Art- Students can design tiles for the AIDS quilt. They may also start up a school-wide AIDS Quilt project for which students can design tiles and add them in a visible area of the school.

There are thousands of HIV/AIDS awareness, prevention, and treatment program sites on the Web that are useful for background information and program and lesson ideas. Two sites that incorporate all of this information are:
AIDS Education Global Information System (AEGIS) at (http://www.aegis.com)
Journal of American Medical Association's HIV/AIDS Information Center at (http://www.ama-assn.org/special/hiv/hivhome.htm)

Academic Content Standards:

This lesson plan may be used to address the academic standards listed below. These standards are drawn from Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education: 2nd Edition and have been provided courtesy of the Mid-continent Research for Education and Learning in Aurora, Colorado.

In addition, this lesson plan may be used to address the academic standards of a specific state. Links are provided where available from each McREL standard to the Achieve website containing state standards for over 40 states. The state standards are from Achieve's National Standards Clearinghouse and have been provided courtesy of Achieve, Inc. in Cambridge Massachusetts and Washington, DC.

Grades 6-8
Geography Standard 1- Understands the characteristics and uses of maps, globes, and other geographic tools and technologies. Benchmark: Uses thematic maps
Geography Standard 15- Understands how physical systems affect human systems. Benchmark: Knows the ways in which human systems develop in response to conditions in the physical environment; Knows how the physical environment affects life in different regions; Understands relationships between population density and environmental quality; Knows the effects of natural hazards on human systems in different regions of the United States and the world
Health Standard 1- Knows the availability and effective use of health services, products, and information. Benchmarks: Knows the costs and validity of common health products, services, and information; Knows how to locate and use community health information, products, and services that provide valid health information; Knows community health consumer organizations and the advocacy services they provide; Knows situations that require professional health services
Health Standard 2- Knows environmental and external factors that affect individual and community health. Benchmark: Knows cultural beliefs, socioeconomic considerations, and other environmental factors within a community that influence the health of its members
Health Standard 8- Knows essential concepts about the prevention and control of

disease. Benchmark: Understands how lifestyle, pathogens, family history, and other risk factors are related to the cause or prevention of disease and other health problems

Grades 9-12
Geography Standard 15- Understands how physical systems affect human systems. Benchmarks: Knows changes in the physical environment that have reduced the capacity of the environment to support human activity; Knows factors that affect people's attitudes, perceptions, and responses toward natural hazards
Health Standard 1- Knows the availability and effective use of health services, products, and information. Benchmark: Knows factors that influence personal selection of health care resources, products, and services
Health 2- Knows environmental and external factors that affect individual and community health. Benchmarks: Understands how the environment influences the health of the community; Understands how the prevention and control of health problems are influenced by research and medical advances; Understands how cultural diversity enriches and challenges health behaviors
Health 8- Knows essential concepts about the prevention and control of disease. Benchmarks: Understands how the immune system functions to prevent or combat disease; Understands the importance of prenatal and perinatal care to both the mother and the child; Understands the social, economic, and political effects of disease on individuals, families, and communities

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Breast-Feeding and H.I.V.: Weighing Health Risks and Treatment Costs

By MICHAEL SPECTER

AKULU, Uganda -- This village is really just a muddy patch of ground in the tall trees near where the Nile flows out of Lake Victoria. The men work on coffee plantations. The women bear children, fetch water from the well about a mile away and cultivate cassava, potatoes and bananas.

There is no running water, no electricity, no telephone. When the long rains come each year, they wash out the dirt road for weeks at a time. This is -- and has always been -- a place where people who reach the age of 50 are old, and those who have seen a doctor or swallowed a pill are rare.

The basic rules of public health are clear in Kakulu: only drink water from the well, not from the polluted Nile; and breastfeeding is the best way to nourish an infant.

At least those were the rules until a few weeks ago, when the United Nations, struggling desperately to find a way to cope with Africa's AIDS epidemic, took a giant step toward reversing them.

After long deliberation, U.N. AIDS officials announced that women infected with HIV should consider feeding formula instead of breast milk to their babies.

Even discussing such a fundamental shift in public health policy has been agonizing for people who once staged protests in the United States and Western Europe

warning using infant formula in the Third World -- where dirty water is often lethal -- would kill thousands of children each year.

Switching to formula would affect the basic behavior of millions of women, and in theory at least, it makes sense. Three million children have died from AIDS since the epidemic began, and last year alone there were more than 600,000 new cases among babies, many of whom received the virus from the milk in their mother's breast. Had they been drinking uncontaminated formula instead -- or had their mothers taken a short course of AZT to protect them just before delivery -- more than a third might have been saved.

But here, where theory quickly fades into the harsh reality of the jungle, the math never seems to add up the right way. In African villages there is no debate between breast and bottle and no talk of using a drug like AZT.

Instead, there has been a simple discussion about who will live and who will die. Scarce funds make drug treatments that have become routine in the United States almost impossible to contemplate here. So people infected with the virus die, and usually they die quickly. That makes prevention the only hope for this continent -- where 30 million people have already been infected and 10 million have died.

Feeding formula to babies whose mothers have HIV could save tens of thousands of children each year. So could providing a short course of AZT, which prevents the AIDS virus from multiplying rapidly in cells, to a woman in her final stages of pregnancy.

It may sound simple. But nothing about AIDS here ever is.

"I would never be able to feed my baby with formula," said Margaret Birungi Nannyongoi, a slightly overwhelmed 20-year-old woman who sat on the mud floor of her home, nursing her three-day old child, Dorothy Nalule.

Dorothy is her third daughter - the first died, the next is a listless, underweight two-year-old with flat, black eyes and a constant cough. Dorothy, frail and pretty in a tiny cotton baby dress, was delivered with the help of friends, on the only mattress in the house.

Like at least 95 percent of Uganda's village women, Mrs. Nannyongoi has no idea whether she is infected with HIV. She has never had prenatal care, nor has she ever taken a blood test. She only knows about HIV because it killed two of her brothers. The cost of formula for one child -- when it's available in Uganda and when there is clean water to mix with it -- is on average 1.5 times what a village family earns each year. Mrs. Nannyongoi said she has never seen anyone use it.

"It seems so difficult to handle," she said, after hearing what is necessary to keep formula safe for babies. "How would I have the time?" She is currently feeding her baby 10 times a day, and each of those days is filled with essential chores.

Even if the formula were donated and delivered to her home, as U.N. officials hope it would be, she says it would be difficult to find a way to fetch the water, boil it and prepare the meals for her infant while also working in the garden and cooking for her husband, herself and her other daughter.

But when she was asked if she would use formula if it meant giving her child a better start in life, she said yes.

That's because formula holds promise -- unfortunately its a promise that is rarely realized in this part of the world.

"Oh sure, it could be great," said Dr. Francis Miro, the chief of obstetrics and gynecology at Makerere University Medical School in Kampala, the Ugandan capital.

Makerere is Africa's oldest university, and it was from here nearly 20 years ago that the first vague reports of "slim disease" -- as AIDS was called here before it had a name -- started making their way to America. Since then, more than 2 million Ugandans -- nearly 15 percent of the nation -- have become infected, and of those, 1 million have died in this country where many researchers think the AIDS epidemic may have begun.

"Do you know what I would love to be able to do all day?" Miro asked rhetorically. "I would love to counsel every HIV positive mother about her choices in life. I would love to tell her about breast milk and about formula. Then I would love to have a conversation with her about what would happen to her in her village if she stopped breastfeeding. What would her mother in law say? What would her husband do? And of course I would love to make sure she understood the rules for keeping formula sterile and that she complied with them.

"I would love to do all that," he concluded wearily. "But then I wouldn't be living in Uganda and I wouldn't be talking to my own people. I would be living in America and I would be talking to your people."

Asked if he thought it was always foolish to recommend formula to women living in villages, he closed his eyes and reeled off the numbers: "Twenty seven percent of babies born to infected mothers become infected from breastfeeding," he said. "In rural areas 85 percent of babies will die from dirty water used in formula. I know what they are trying to do, and I applaud the effort. But you don't need a medical degree to figure out which of those odds to take."

All you really have to do is take a walk down the red dust roads near Kakulu. There are no toilets and few outhouses. People live literally from day to day. Water from still pools, the birthplace of malarial mosquitoes, is often used to drink because its so far to walk to the well.

"The temptation is great sometimes," Mrs. Nannyongoi acknowledged. "We try to boil the water, but sometimes we don't."

Outside, a man is raking about 50 pounds of coffee for bad beans. Nearly a dozen children, mostly naked, play in the yard. In a shack across the way, Halimah Namtovu, a 30-year-old woman wrapped in black scarves, sits beneath a picture of Mohammed. Two months ago she gave birth to the ninth of her children, all of whom are still alive. She said she thought formula would be a good idea, but she has trouble affording soy milk to give her older children. A kilogram costs about a dollar and lasts less than week.

"We all do what our mothers did," she said without any rancor. "If there is a better way, I have never seen one."

Despite the habits of millennia, Miro and countless colleagues agree that something fairly drastic must be done to help protect children from HIV. If mothers who are infected with the virus do not breastfeed, their children will have a far better chance of survival.

What is more, AIDS experts now know that if a pregnant woman is treated with a very inexpensive course of AZT during the final stages of her pregnancy, during birth and for a few days after her child is born, the chance of transmission of the virus to the child is reduced by half. The cost of such a course of treatment was until recently $200 per person, but with the help of the UN AIDS program and the World Health Organization, the price is now $50.

"This is the best life-saving program we have in the developing world," said Dr. Joseph Saba, a clinical research specialist with UNAIDS, who has coordinated the attempt to make drugs more accessible to people in Africa.

"You cannot just say to these people you are too poor to live. You have to say we are trying everything on earth to stop this plague. They have to know that we are not condemning them to death."

Saba comes often to Uganda to mediate between drug companies, health officials and aid agencies in an effort to bring drug prices down so that local governments and at least some people can afford them. He knows as well as anyone that, as is the case with formula, making AZT available to pregnant mothers raises almost as many terrible new questions as it answers.

And the biggest one is obvious: will AZT encourage women to have children who will all either die or become orphans?

As soon as the mother delivers, she will stop taking AZT; almost no African women can afford to stay on it for long. That means she will die, probably within two or three years, sometimes much sooner. Her child will then almost certainly join the almost unimaginably vast army -- in Africa alone the number is now past 8 million -- of orphans that the AIDS epidemic has unleashed upon the world.

"What is worse?" asks Dr. Edward Mbidde, the chief of Uganda's Cancer Institute, and one of the countries medical leaders, "to let a baby die of AIDS when we can save it, or to let the baby into the world just to become an orphan in a society that has been overwhelmed with death? I have not yet run into anyone who is qualified to answer that question."

Nobody has. But like everywhere else, people in African villages don't normally choose death when life is even remotely possible.

Many rural families are large -- the birth rate here is still higher than in most other places in the world -- and the concept of family is defined very broadly.

"Children is what villages in Africa are for," said Eelin Berdall, the mother superior of the St. James School, a rural private school deep in the bush of western

Zimbabwe. "When people start asking questions about whether it's right to have children under certain circumstances, they are just thinking Western. Nobody here would ever think that way. Here, if somebody is going to die, then their mother, father sister or brother will want children to remember them."

Mrs. Berdall, an Anglican, has been a leader in trying to help get AIDS drugs to pregnant mothers and in trying to help people think of families in unconventional ways.

"Here the child belongs to the family, it is the vehicle of the tribe" she said. "If we can save a child, we have to save a child. And with some very strong effort, we can save millions."

Dozens of youngsters are playing behind her in the baking midday sun. Some of them walk barefoot distances up to 10 miles a day just to attend the school. Their brown cotton uniforms are donated by a variety of groups. The vaccines they receive are donated by the government and by the World Health Organization. Their food is brought by concerned friends and neighbors. Mrs. Berdall summons a teacher to join her.

"This woman's sister just died of AIDS," the mother superior said matter of factly. "She left five children."

Sulfina Dube, 39, nods slowly. Her sister was one of the few women in this part of the world who could afford formula, and who lived in circumstances where it could be prepared properly and regularly. "My sister understood that it was her only chance to save her baby," said Miss Dube, who now looks after Celie, the youngest of the five children orphaned when her sister died of AIDS this year.

"There was never a minute when any of us wondered whether it was right for Celie to be born, or to survive. How could you even ask something like that?"

Others wonder how you cannot.

"What we are really asking many women is do you want your baby to die of a horrible disease or do you want him to starve to death?" said Sophia Mukasa Monico, the head of TAOS, Uganda's unique AIDS support organization. TAOS has 27,000 clients and not one of them receives drugs that are considered routine in the West.

"Is it ethical to bring a baby into this world in that way? Nobody will ever answer that question. We certainly are not going to stop people from having babies. And it's wonderful that there are ways to treat those children and protect them. But let's not look at formula or a few AZT pills as an answer. It's really just a question: Do women who don't breastfeeed want to bring orphans into this world? Or do they want to risk killing their children by caring for them? We're used to death around here. But this is a choice only Idi Amin could have made."