COSTA RICA KEY

Controlling the Pandemic: Public Health Focus

HIV/AIDS continues to be a global problem, especially in the world's low income countries. Various public health measures, including safe sex practices and needle sharing prevention, are effective ways to control the spread of the disease. Individuals infected with HIV use antiretroviral therapy to control the disease in their body. After watching the video discussing control measures for HIV/AIDS, you will evaluate epidemiological information to determine factors contributing to the spread of HIV/AIDS around the world. You will compare the data for different countries to answer the following question:

If you were hired as part of a team to control the spread of HIV/AIDS in a certain country, how would you use statistical data to help determine the most effective regional public health plan?

After gathering information about the state of the HIV/AIDS epidemic in your assigned country, you will share the results with your classmates. You will have an opportunity to compare the situation in different countries and regions of the world, including the United States. Be sure to study your results carefully and closely to ensure that you make appropriate correlations between the numbers. Keep in mind that statistics are not always as clean cut and easy to compare as you may think!

Pre-Viewing Questions

1. What is public health?

Public health is the study of how diseases spread in a population and the measures used to control them.

2. How is HIV spread between individuals?

HIV can be spread by sharing needles, through semen and vaginal fluids during intercourse, and from mothers to children in the uterus, and through breastfeeding and birth.

3. What regions of the world are most affected by the HIV pandemic?

Developing countries are most impacted, especially sub-Saharan Africa.

4. What are some different control methods used to limit the spread of HIV (medical and public health related)?

Different control methods are:

a) Education and training about HIV (how HIV leads to AIDS, how HIV is spread and how to effectively prevent transmission, and how HIV can be treated);

b) specific and culturally relevant instructions on the use, and availability, of condoms and clean needles, targeted to high risk groups such as commercial sex workers and IV drug users (in places where HIV is concentrated in these populations);

c) ensuring safe, HIV-free blood products (for transfusion) supply;

d) access to HIV testing, with protection from discrimination;

e) diagnosis of HIV infection in pregnant women, and timely access to anti-HIV ART drugs by pregnant women to decrease mother to child transmission of HIV;

f) male circumcision;

g) possibly, treatment of other STDs;

h) and, possibly, widespread anti-HIV ART treatment which may decrease the infectiousness of persons living with HIV (as well as potentially decreasing stigma associated with HIV).

After Viewing the Video
Revisit the questions above and add any details that you may have missed before, then answer the questions below.

5. What risk does the limited availability of Antiretroviral therapy (ART) medicine in low income countries pose to individuals with HIV/AIDS? What can happen to the virus?

The HIV virus mutates very quickly and therefore can develop resistance to medication if the use of medication is not continuous. ART medication is crucial in slowing down the progression from HIV to AIDS and limiting the spread of the virus in the body. ART leads to a decrease in the level of HIV in the blood, and it may decrease person-to-person transmission (although this is currently under study).

6. Pick one of the countries highlighted in the video and describe a specific program established there that has helped reduce the spread of HIV/AIDS.

Botswana established routine HIV testing in medical clinics as part of blood screening for all ailments. Intensive national campaigns to eliminate mother-to-child transmission have also been instituted.

Thailand incorporated a nation-wide campaign among sex-workers where it mandated condom use, lowering the transmission of HIV among the Thai Army.

In Uganda, where roughly 1/3 of the army was once HIV-positive, government distribution of 160 million condoms per year has virtually halted the sexual spread of HIV in many areas.

Evaluating the Data

In small groups, you will be evaluating data provided by the World Health Organization (WHO). From this data, you will determine the extent of the HIV/AIDS threat in different countries and regions, as well as possible ways to control the spread of the disease. You will present your results to the class and compare data from different countries to understand regional and international risk factors and variations. First, complete the following questions and data tables by doing some research as a team.

Assigned Country *Costa Rica*

- Go to http://www.who.int/globalatlas/predefinedReports/default.asp. Follow the link to the *Epidemiological Fact Sheets* and print the copy of the report relevant to your country.
- Go to http://www.who.int/hiv/epiupdates/en/index.html. Follow the link to the most recent *Report on Global AIDS Epidemic* and print the report for global information to use in your evaluation.
- Go to http://www.who.int/hiv/countries/en/index.html and print the relevant *Profile on HIV/AIDS treatment scale-up* sheet for your country.

Complete the data tables below by using relevant information from the previous databases. If the information is not available, indicate that with an N/A in the appropriate box. Blackened cells indicate that there is no data available for the majority of the countries or regions for that year.

Data Table 1: Country Specific (unless otherwise indicated)

	2003	Most Recent Year with Data (2005)
Estimated Number of cases for adults and children	6400	7400
Estimated Number of cases for adults (ages 15+ only)	6300	7300
Estimated Number of cases for Children (ages 0-14)	N/A	N/A
Estimated prevalence of HIV among adults and children **regionally**		0.5%

Table 2: Country Specific (unless otherwise indicated)

	2003	Most Recent Year with Data (2005)
Estimated number of deaths from AIDS among adults and children	<100	<100
Estimated number of deaths from AIDS among adults and children **regionally**		59,000

Table 3: Country Specific (unless otherwise indicated)

	2003	Most Recent Year with Data (2005)
Total population in Country	4,176,372	4,327,000
Per capita national Income		$9,530
Per capita total expenditure on health	$616	N/A
General government expenditure on health as a % of total expenditure on health	21%	N/A
Total number of adults needing ART	800	1400
Total number of adults receiving ART	<1000	2500
ART Coverage for adults in your country	80%	100%
ART Coverage in your region		68%

Respond to the following questions based on the data you have collected above.

1. Calculate the prevalence (percentage of sick individuals in an entire population) for children and adults with HIV combined for 2003 and the most recent year with data.

2003 Adult & children prevalence: (6400/4,155,651)*100 = 0.15%
2005 Adult & children prevalence: (7400/4327000)*100 = 0.17%
2005 Adult & children prevalence Latin America: 0.5%

2. The cause-specific mortality rate is the percentage of deaths in a country due to a specific cause or disease. Calculate the percentage of deaths due to AIDS in your country to find the cause-specific mortality rates due to AIDS for 2003 and the most recent year with data. Calculate the same for your region for the most recent year with data.

AIDS mortality rates in adults and children cannot be calculated for Costa Rica since the numbers are not absolute for 2003 and 2005. The numbers provided are inconclusive.

AIDS mortality in adults & kids 2005 in Latin America: (59000/548,948,000)*100 = 0.01%.

3. Use your *Global Facts and Figures* sheet to determine the percentage of total deaths due to AIDS for people in your region.

(59,000/2,800,000)*100 = 2%

4. Produce a graph for the following results for your country and region for 2003 and the most recent year with data:
   - HIV prevalence (%) for children and adults combined for your country and adults alone in your region
   - Cause-specific mortality rates (%) due to AIDS for adults and children combined in your country and region
   - ART coverage (%) for adults in your country and region

Please see attached graphs.

5. Has the total number of HIV cases increased or decreased since 2003 in the country you are studying? How does the prevalence of HIV differ between your country and the region it is in? Explain your response by providing data from your calculations and data tables.

The total number of HIV cases have increased by 1,000 in Costa Rica from 2003-2005 in both adults and children. Costa Rica has 0.17% prevalence, while Latin America has 0.5% prevalence. As shown by the numbers, Costa Rica has a lower HIV prevalence that that of Latin America as a whole. This indicates that HIV is a growing problem in Costa Rica since the prevalence increased from 0.15% to 0.17% in 2003 to 2005 respectively.

6. Has the total number of AIDS related deaths increased or decreased since 2003 in the country you are studying? How do the cause-specific mortality rates due to AIDS in your country compare to those of the region it is in? Explain your response by providing data from your calculations and data tables.

The total number of AIDS related deaths has remained about the same in Costa Rica, less than 100, between 2003 and 2005. Costa Rica has a much lower cause-specific mortality rate than the rest of Latin America, which is also a positive indicator.

7. What are some of the possible factors that are contributing to changes in HIV prevalence and AIDS related deaths?

Costa Rica is the only country in Latin America with universal access to ART for anyone living with HIV/AIDS. This is one of the main contributing factors for the low AIDS-related death numbers. The country has a high rate of male-to-male HIV transmission which is the most attributable cause of the high HIV cases. Most of the HIV cases in the country are caused by sexual transmission due to increases in sex tourism, among other factors.

8. Compare the ART coverage in your country and region. How do you think this is impacting the spread of HIV in your country?

In 2003 the ART coverage was 80% and increased to 100% in 2005. This indicates an increase in efforts within the country make ART available to all infected individuals free of charge.

9. Providing national access to HIV testing and screening centers, as well as ART distribution centers, may have an impact on management. In your opinion, how effectively is your country addressing this issue? (*Hint*: Look at the method of HIV screening and number of individuals being screened for HIV. Do you think there are sufficient ART distribution centers and testing and screening centers available?)?

The prevalence of HIV as calculated above is 0.17%. Costa Rica has taken steps to test 100% of all blood samples that are collected for HIV. While this is a very effective step, it does not mean that everyone who needs to is being tested. Costa Rica has implemented major programs for ART distribution free of charge; however, it needs to raise more awareness among the population about proper prevention methods.

10. Read through the profile on HIV Prevention/Treatment Scale-up for your country. Given your understanding of how HIV spreads, discuss some of the obstacles faced by your country in establishing total prevention of the spread of HIV. Be detailed and specific, offering relevant suggestions where you see feasible.

Costa Rica is an upper-middle income country with an average annual per capita income of about $9,530. Of that, $616 is typically spent per year on health related costs, which is about 6% of their income. The government covers about 21% of total national health expenditure, a portion of which has gone into HIV awareness and health care, and has helped cut down the numbers of HIV infections a great deal. The largest problem is the spread of HIV among individuals involved with sex workers and through male-to-male transmission. As a result of grass roots efforts to raise awareness, the government has implemented large scale effective measures to provide ART and testing to all individuals in need of it. However, as the prevalence of HIV continues to increase in Costa Rica, there is a need for grass roots and governmental efforts to increase in raising general awareness about various prevention methods, especially among the most at risk groups.

***Students can offer a number of suggestions here based on their understandings which include instituting programs encouraging people to join the medical profession, encourage more volunteers, use funding to build more facilities across the country, and many others. ***

Post-Class Discussion

11. How does your country compare to the rest of the countries being evaluated in terms of HIV prevalence and prevention measures? What social, economic, and political factors in these countries have led to these different variations? Refer to the graphs containing class data and your classmates' presentations to help you answer this question.

HIV in Costa Rica is increasing in prevalence, as are most other countries reviewed in the class, but its rates are still among the lowest. The mortality rate is very low, and equaled those of China during 2005. Costa Rica is the only country with 100% ART coverage. Countries such as Costa Rica, with limited/circumscribed HIV epidemics, should intensively try to prevent further spread of disease—using some of the prevention measures mentioned above, focusing on the epidemiology in-country, such as spread through male-to-male transmission.

12. Look at the data your teacher provided about HIV/AIDS in the U.S. How does the country you studied compare to the U.S. in terms of prevalence and mortality rates? Does the data surprise you? Why or why not?

Costa Rica has surpassed the U.S. in providing its residents with appropriate coverage for ART. It has lower prevalence and mortality rates, although prevalence is slightly increasing.

* Students responses will vary based on their own interpretations.