

HIV/AIDS: A Touch of Reality for Young Adults

Sherin Philip

University City High School/ Bodine High School

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Overview

The purpose of this curriculum unit is to increase people's awareness, especially the younger generations, of the realities of HIV/AIDS. Today's young people are aware of the problems that can come about with contracting the disease. However, they are not honestly aware of the harsh realities of living with the virus. Celebrities and media portray an illusory picture of what it is really like to live with the virus. As a result, young people feel that they too can live a full and enriching life after contracting HIV/AIDS, without realizing that money, and lots of it, plays a key role in survival.

While abstinence is the best answer to preventing the spread of the disease, the reality is that children are engaging the sexual activities and drugs at a much earlier age than they once were. The prevalence of HIV/AIDS is on a rise all over the world (www.globalhealt.org). It is no different in Philadelphia. Students need to understand that it is not only a global problem. Often times, people, especially young people, feel that problems cannot affect them. One of the goals of this unit will be to open the eyes of young people to the reality and immediacy of the disease. Even with everything they know about the seriousness of the disease, people are not taking heed of prevention messages. Many young people are not able to put aside the myths about transmission and correctly identify proper ways of preventing HIV transmission.

This unit will cover general information about the virus, the prevalence of the virus in the world vs. in their own backyards, modes of contracting the virus, preventions and treatments of the virus, testing, the effects of the virus on the body, and the effects of the virus on the entire human population. Since the curriculum covers a large amount of information, the unit will take approximately ten to fifteen days to complete. The ultimate goal of this unit is to cause students to become citizens who are able to make wise choices about their lives and the lives of those around them. By educating every

mind to make conscientious choices and decisions, we can challenge younger generations to take the initiative in creating an HIV-free society.

Rationale

The School District of Philadelphia aims to promote a healthy and safe culture. Unfortunately, the stories that you hear on a daily basis at the schools about students having unprotected sex in school itself are demoralizing. I chose to do this topic because I want students to fully understand what happens to people with HIV/AIDS. I want them to be aware of the social, behavioral, and physical consequences of having the virus. I am hoping to increase the knowledge base of the younger generations so that they can go out into the surrounding neighborhoods and spread the information they have learned in school. Often times adults simply assume that children know and understand HIV/AIDS. It is not always so. This fact was made apparent to me when Magic Johnson visited our school. The quality and carelessness of questions that were asked proved to me that students do not really understand about the virus, including prevention strategies and treatments.

HIV stands for human immunodeficiency virus, and it causes AIDS. HIV attacks the human immune system which helps our bodies fight off infections. HIV destroys T cells or CD4 cells in the body, therefore decreasing the immune system to fight off disease. AIDS stands for acquired immunodeficiency syndrome. It is the final stage of HIV infection. By the time HIV has reached the level of AIDS the body's ability to fight diseases has weakened, and now the body is susceptible to numerous infections.

The white blood cells, called CD4 lymphocytes, and antibodies attack and destroy foreign organisms in the body. HIV attacks these white blood cells. Once the virus enters inside, it inserts its own genetic material into the lymphocytes and uses them to make copies of itself. The new copies then break free from the host cells, killing them, and enter into the bloodstream. They look for other cells to attack, repeating this process over and over again (www.mayoclinic.com).

HIV/AIDS is increasingly prevalent in our society. Even with all the information that we currently have about the dangers of the disease, people are not utilizing their knowledge or common sense prevent transmission of the disease. There are approximately 1.2 million people living with HIV/AIDS in the United States (www.amfar.org).

Unfortunately, many of these people do not know that they are living with the virus. If people are not even aware that they are living with the disease, they cannot treat the disease and prolong their life. In the United States, more than 530,000 people have died of AIDS since the epidemic began (www.amfar.org). One of the reasons why this number is so large is due to the fact that people did not find out about the disease until it was too late. Even with everything we now know, about 40,000 people are infected each year (www.amfar.org). Abstinence is not a realistic solution to the problem of

contracting HIV. Practical and realistic solutions need to be offered to people. In Philadelphia HIV continues to have a growing impact on people, especially in communities of color and impoverished communities. In heterosexuals alone, the numbers are startling in Philadelphia. Seventy five percent of the African American population in the city has the virus, compared to only nineteen percent of Caucasians. It is much lower in Asians, with only 0.5%. The proportion of females to males continues to grow despite the availability of effective treatments and outreach programs available. The number of death of people with AIDS is declining due to the recent medical advancements. However, more and more people are becoming HIV positive. The problem is becoming so widespread that the United States Centers for Disease Control and Prevention have published new recommendations designed to make HIV screening a routine part of medical care for all patients aged 13 to 64.

Prevalence in Philadelphia

The prevalence rate of people contracting the disease is growing in number as the years pass. In the city of Philadelphia, this fact is no different. More and more people are contracting the disease, especially teenagers and women. It is even more prevalent in young African Americans, especially young African American women. Based on data, HIV continues to have a growing disproportionate impact on communities of color in Philadelphia, particularly hitting the African American and Latino populations in Kensington, Center City, North, West and South Philadelphia (www.phila.gov). African Americans account for 50% of new HIV infections in Philadelphia. This is a startling fact because African Americans only make up 12% of the population in the United States (www.amfar.org). Through December 2000, thirteen thousand six hundred and ninety four city residents were reported with AIDS; 6,225 (45%) of them are known to have died. The remaining 7,069 are presumed living with AIDS. This represents the first time that the cumulative number of living has exceeded dead (www.phila.gov). The following figure shows the increase in the number of people living with HIV/AIDS in Philadelphia. (www.phila.gov).



John F. Street, Mayor
Pedro A. Ramos, Managing Director
Julia Danzy, Director of Social Services
Carmen I. Paris, MPH, Health Commissioner

Cases Reported through June 30, 2006

Philadelphia AIDS Statistical Update

Living with AIDS (LWA) Cases and Frequency of AIDS Diagnoses January 1, 1985 through December 31, 2005

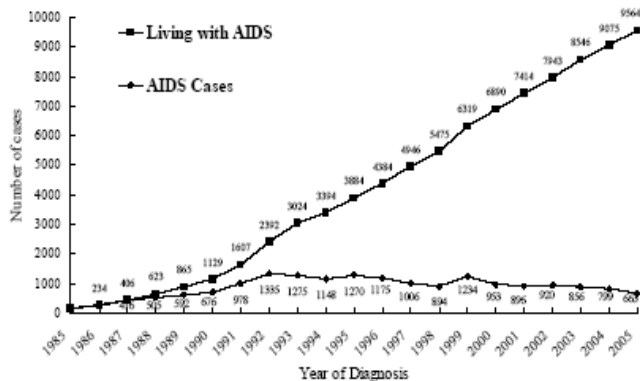


Figure 1. Increasing number of Living with AIDS (LWA) cases and declining AIDS diagnoses over time. In 2006 to-date, there are 246 newly reported AIDS cases and a total of 9,722 LWA cases. CDC changes of AIDS definition occurred in 1985, 1987 & 1993. Laboratory based surveillance was implemented in 1990. CD4 results became reportable from laboratories in 1999.

Prevalence in Young People

Unfortunately, in the society that we live in today it is commonplace to have sexual relations at a young age. As a matter of fact, children are having sex at a younger age than ever before. To add to this, children are having unprotected sex, creating the pandemic that is happening today. People under the age of 25 make up half of all new HIV infections every year. In the United States at least two teenagers and young adults are infected with HIV every hour or every day. In 2004, teen girls represented 43% of AIDS cases.

Prevalence in Women

Globally, women make up almost half of all people living with HIV/AIDS. Women are more likely to contract HIV from men than vice versa. In the United States, women account for more than one in four new HIV/AIDS diagnoses. The rate of HIV/AIDS diagnoses is much higher in African American women than in Caucasian women. African Americans made up 67% of women diagnosed with AIDS in 2005. In 2002, AIDS was the leading cause of death for African American women ages 25 to 34. The

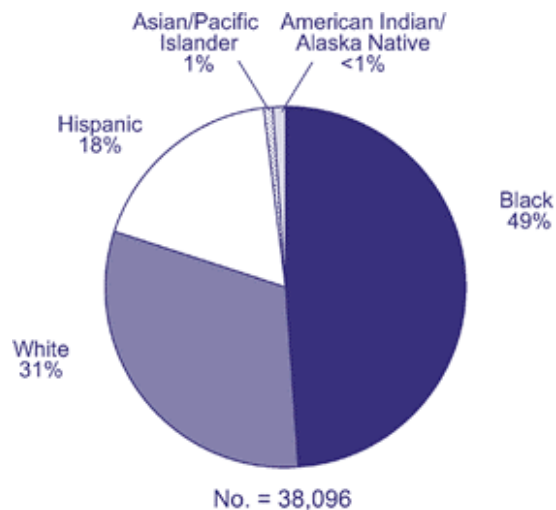
number of women living with HIV has tripled in the last two decades. Contrary to popular myths, 78% of newly diagnosed HIV-positive women acquired the disease from heterosexual sex (www.amfar.org).

African Americans and HIV/AIDS

Of all the racial and ethnic groups in the United States, HIV/AIDS is most prevalent in African Americans. Some reasons for this can include poverty, high rates of sexually transmitted diseases, and stigma. Stigma can include things like negative attitudes, beliefs, and actions by that group of people. Twenty-five percent of the African American population in the United States live in poverty. It is the leading cause of death in African Americans. Even though African Americans only make up about 12% of the United States population, they make up about 50% of the people with HIV/AIDS. In addition, African American people with HIV/AIDS do not live as long as people of other races.

The following pie graph given by the Center for Disease Control shows the prevalence of HIV/AIDS by race/ethnicity.

Race/ethnicity of persons (including children) with HIV/AIDS diagnosed during 2005



Modes of Transmission

There are many modes for transmission of the virus. HIV is found in the blood, semen, vaginal secretions, breast milk and during pregnancy or delivery. The virus can be

transmitted by unprotected sex and by sharing needles. Sharing of needles includes drug use, body piercings, accidental needle sticks in hospitals, or tattooing. A person may become infected if he/she has vaginal, anal or oral sex with an infected partner whose blood, semen or vaginal secretions enter the body. HIV can also be transmitted from shared sexual devices if not washed or covered with a condom. A person is at a higher risk if he or she also has another sexually transmitted diseases.

HIV can also be transmitted from an infected mother to her child during pregnancy, birth, or breastfeeding. Each year, nearly 600,000 infants are infected with HIV, either during pregnancy, through delivery, or through breast-feeding. The rate of mother-to-child transmission in resource-poor countries is as much as 40 percent higher than it is in the developed world. But if women receive treatment for HIV infection during pregnancy, the risk to their babies is significantly reduced. Combinations of HIV drugs may reduce the risk of mother-to-child transmission even more. In the United States, most pregnant women are pre-screened for HIV, and anti-retroviral drugs are readily available. Not so in developing nations, where women seldom know their HIV status, and treatment is often limited or nonexistent. When medications are not available, Caesarean section is sometimes recommended instead of vaginal delivery, but this isn't a good option for women in resource-poor countries, where it poses additional risks for both mother and child. Other options, such as vaginal disinfection, have not proved effective (www.ucsfhealth.org).

Although very rare, it can also be transmitted through transfusions of infected blood or blood clotting factors. In rare cases, the virus may be transmitted through organ or tissue transplants or unsterilized dental or surgical equipment (www.mayoclinic.com). HIV cannot be transmitted by insects. Coughs, sneezes, sweats, tears, sharing utensils, hugging, shaking hands, and casual contact are not modes of transmission.

Signs and Symptoms and Diagnosis

Once the virus is transmitted, it continues to multiply inside the body, destroying the cells in the immune system. At first, some people experience flu-like symptoms a month or so after exposure. Symptoms may include diarrhea, enlarged liver or spleen, fever, enlarged or swollen lymph nodes, headache, muscle pain, nausea and vomiting, neurological symptoms, rash on the abdomen, arms, legs, face, and a sore throat. Severe symptoms may not exist for up to 10 years. This time period is known as the asymptomatic period. Once the immune system weakens, other symptoms persist. These symptoms include fever, sweats, herpes infections, lack of energy, pelvic inflammatory disease, persistent skin rashes, shingles, short-term memory loss, and weight loss (www.ucsfhealth.org).

Blood tests are the most common way to diagnose HIV. The test checks for antibodies to the virus that our body creates to fight off the virus. Because it can take the body six weeks to a year to develop antibodies for the virus, follow-up tests may be needed. As

with any disease or infection, early testing is necessary. Early testing can also help prevent the spread of the virus by avoiding high-risk behaviors.

The following information, from www.lifebeats.org, lists the types of tests available for HIV:

- *ELISA (Enzyme-Linked Immuno-Sorbent Assay)*: This is the initial HIV-antibody blood test. If a person gets a *positive* result, an additional ELISA test will be taken. If the initial test comes back *negative*, the person will return for a 6-month test after the window period. If this returns *negative*, no further testing will be done at this time. Results are available in approximately 10 days.
- *Western Blot Test*: If the second ELISA test comes back *positive*, the Western Blot test will be performed to learn more about the infection. The Western Blot is a more detailed HIV-antibody test. Results are available in approximately 10 days.
- *OraSure*: This HIV-antibody test involves collection of cells between the cheek and the gums. This is the least intrusive and does not require a blood sample. Results are available in approximately 10 days.
- *OraQuick Rapid HIV-1 Antibody Test for blood*: This test, administered by finger prick, gives results of HIV-1 antibody detection in about twenty minutes. The test is about 97% accurate but a confirmatory standard test, such as the Western Blot, must be administered prior to delivering an absolute positive result.
- *OraQuick Advance Rapid HIV 1/2 Antibody Test for oral fluid*: this test collects oral fluid through an oral swab and can give results in 20 minutes, and it is 99.3-99.8% accurate. As with the Rapid HIV-1 Antibody Test, a confirmatory blood test must be administered before giving a positive result. This test can detect both HIV-1 and HIV-2 (*see Glossary*). Though HIV-2 is rare in the United States, it is prevalent in parts of Africa.
- *RNA Testing*: RNA testing looks for the RNA of the virus itself, not antibodies to the virus. RNA testing is currently only available in North Carolina and San Francisco. Though results take about a week, this test can detect the RNA of HIV within ten days of infection. The cons of this test are that people may not return for their results, and it is a costly test. Ideally, testing sites would conduct a rapid HIV-antibody test as well as an RNA test, but due to funding limitations, this is not currently possible.

Treatment

Although there is no cure for HIV/AIDS, currently there are 26 antiretroviral drugs approved by the Food and Drug Administration to treat HIV. These drugs are divided into three classes. Reverse transcriptase inhibitors inhibit the conversion of HIV RNA to HIV DNA. Protease inhibitors interfere with the enzyme that HIV uses to produce

infectious viral particles. Finally, fusion inhibitors interferes with the virus' ability to fuse with the cell membrane, which blocks the entry of the virus into a host cell (www.niaid.nih.gov).

Objectives

Many students, by the time they have reached high school, are aware of many STD's including but no limited to HIV/AIDS. They have heard of the dangers of contracting a host of STD's. However, if placed in a difficult situation, many of these same students do not hesitate before making a reckless decision. They do not think about the long-term consequences of their actions. Instead, they are living for the pleasures of that single moment, reflecting society's focus on instant gratification. After this lesson, I want the students to take a moment to think about the real consequences of the choices they make when it comes to this disease. Abstinence, in this day and age, is not a realistic goal. For that reason, it is important for us to present the younger generations with practical ways of circumventing from the problem. I want the students to have a coherent understanding of the disease, how the disease can be contracted, consequences of the disease, and ways to cope with the disease if, unfortunately, someone has contracted it.

Students will first learn about what STD's are. Since many students are already familiar with STD's, not much time will be spend on this topic. We will then discuss viruses and how a virus affects the human body. Once the students have a basic grasp on how a virus works, HIV/AIDS will be introduced. Discussions on HIV/AIDS, internet research, and group work will culminate into the production of a pamphlet. The students will work together in pairs to make the pamphlet for the entire school as well as for the surrounding community. The pamphlet will be displayed in the Health Resource Room for the use of the student body. It will also be delivered to area clinics and hospitals.

Many standards from the Biology curriculum unit will be covered by this topic. This is a good topic to discuss in several areas of study. When studying viruses, this topic can be introduced. It can further be explored when learning about diseases and about the human body.

Strategies

The topic will first be introduced to the class by having the students do a survey consisting of several questions to find out what they truly know regarding the topic. The students will then complete five to ten surveys by peers, relatives, or guardians as a homework assignment. This will give students an idea of what they actually know about the topic, in addition to what those around them know about the topic. The students will then research the topic using different sources on the internet. They will work individually to gather as much information as they can about HIV/AIDS. Once the information has been gathered individually, students will work in groups of three on a

particular concept having to do with HIV/AIDS. For example, one group will research the symptoms, while another group researchers the treatments.

A guest speaker will be invited to come and talk to the class. The culmination of the project will be the production of a pamphlet by student pairs to provide in the Health Resource Room at the high school along with other community organizations. The students will also have to give a two to three minute presentation at the end of the curriculum unit describing what they have learned throughout the process.

Classroom Activities

There are four Biology classes and one AP Biology class that will participate in this unit. Since the unit can fit into many parts of the Philadelphia curriculum, I will try to adjust the timing of the lesson to different times for each of the classes.

Lesson One

Objective: To introduce the unit in a manner that will increase student interest. Since many students are already familiar with the topic, it will have to be introduced in a very creative manner. As a classroom, sexually transmitted diseases will also be discussed.

Activities: Students will fill out a survey to see what they actually know about HIV/AIDS, including prevalence in the area that they are living in, and in their schools. The survey will begin with demographic questions, including but not limited to age, ethnicity, and gender. It will further include questions on personal beliefs, prevention methods of individuals, and prior knowledge regarding different facets of the disease. The students will have to complete a homework assignment having friends/family members fill out the same surveys. They will have to complete up to ten surveys. A sample copy of a survey can be found in the Appendix. Once the surveys are completed, a classroom discussion will take place on sexually transmitted diseases, focusing on what the students actually know. We will continue with the classroom discussion focusing on the myths and realities of STD's.

Lesson Two

Objective: The students should understand what a virus is, how it is contracted, and how it works.

Activities: Students will be given five minutes to write down what they know about viruses. Each student will share one thing they know about viruses with the class. Once this is completed, students will be given some notes on viruses using the overhead projector. The notes will be discussed as a class, focusing on answering any student questions. For homework, students will be asked to write down five things they know about HIV/AIDS.

Lesson Three

Objectives: The students will get an introduction to HIV/AIDS.

Activities: The students will watch the movie *Time Out: The Truth About HIV, AIDS, and You*. Often times, students have a misconception of the realities of living with the disease. They see movie stars and basketball players that are living a full life. Often times, students forget that these people have a large amount of dispensable income that allows them to stay healthy and alive. The movie will show students that this is not always the case. While watching the movie, the students will be asked to write down five things that really stood out in the movie. Once the movie is completed, we will have a classroom discussion using student facts from the movie.

Lesson Four

Objectives: The students will learn about the modes of contracting the disease, along with symptoms that arise once the disease has been contracted. Students will also learn about the prevalence of the disease around the world as compared to their neighborhood.

Activities: Students will be given overhead notes about modes of contraction and symptoms of the disease. The notes will be discussed as a class. Students will then be taken to the computer lab to research the prevalence of the disease. They will need to gather information for a global level as well as in the neighborhood. Students will then be asked to make a poster board comparing and contrasting the rates of HIV globally as compared to the United States, and then to their neighborhoods. Students will also compare the risk factors and prevalence of contracting the disease in men vs. women. Students will have the option of completing this assignment as graphs, charts, tables, etc.

Lesson Five

Objectives: The students will learn about prevention strategies.

Activities: Students will work in groups consisting of three to four people. They will work both in the library and using the computer to gather information regarding prevention strategies utilized in the United States and the world. Students will find prevention strategies, the success rate of each strategy, and how each individual country goes about implementing these strategies. The groups will then be asked to share this information with their peers as a two to five minute presentation to the class.

Lesson Six

Objectives: The students will learn about treatments and medications available for the disease. They will also be introduced to different local clinics that service patients with HIV/AIDS. Students will also be introduced to the financial aspects of the disease.

Activities: A doctor from the surrounding area that treats HIV/AIDS patient will be invited to speak in the classroom. The doctor will lecture about the different treatment options available. In addition, he/she will talk about the different services available to patients with HIV/AIDS, like counseling. The different types of medications available will also be discussed. Cost of medications, health care services, and hospital time will also be discussed with the students. Students will be expected to take notes during the lecture.

Lesson Seven

Objectives: Students will get experience using the computer/internet to research on coping with the disease.

Activities: Students will work in pairs to find out research about how to cope with the disease. They will locate clinics, counseling, and other things available for people living with the disease. Students will then have to write a journal imagining that they just found out that they contracted the disease. They have to talk about their feelings, the plan of action for the future, and things they can do differently in their lives to make sure that this illusion never becomes a reality.

Lesson Eight

Objectives: Students will familiarize themselves with what is available at the school for their help if they or someone they love were ever to contract the virus.

Activities: The Health Resource Center will do a presentation to the classes regarding HIV/AIDS. They will discuss the services provided by them for students. They will discuss the prevalence of the disease in the neighborhood, in the United States, and in the world, along with rates in school.

Lessons Nine & Ten

Objectives: Students will gather information about HIV/AIDS in order to prepare to do a pamphlet and presentation on the disease. Both aspects should include valuable information on how to avoid getting the disease, in addition to coping with the disease.

Activities: Students will do internet research on HIV/AIDS. They will find research on the topic. They will be paired up, and will begin to brainstorm ideas on making a pamphlet for the Health Resource Room.

Lessons Eleven & Twelve

Objectives: Student will complete pamphlet about HIV/AIDS to place in the Health Resource Room as a guide for all students.

Activities: Students will put together a pamphlet for the health resource room. The pamphlet will show everything they have now learned about HIV/AIDS, the modes of transmission, prevention, symptoms, treatments, etc.

Lessons Thirteen & Fourteen

Objective: Students will share what they have learned with their peers.

Activities: Students will make a five minute presentation in their pairs discussing what they learned throughout this unit. They will use their individual pamphlets as a visual for the class. Once the presentations are completed, students will make copies of their pamphlets, and leave them in the Resource Room for other students to learn, and make themselves more aware of the harsh realities of living with the HIV/AIDS virus.

Annotated Bibliography for Teachers

Greenberg, L. (1992). *AIDS: How It Works in the Body*. New York: Franklin Watts. This book provides a comprehensive study on the biology of AIDS.

Schoub, B. D. (1994). *AIDS & HIV in perspective : a guide to understanding the virus and its consequences* . New York: Cambridge University Press. This book details the effects of a virus. It then discusses the HIV/AIDS virus and about its consequences.

[Sustaining Safe Practice: Twenty Years On](#) 

Social Science & Medicine 2003;57(1):1-12.

[Human Immunodeficiency Virus Infection Prevention: Strategies for Clinicians](#) 

Clinical Infectious Diseases 2003 May 1;36(9):1171-6.

[New Challenges in HIV Care: Prevention Among HIV-Infected Patients](#) 

Topics in HIV Medicine 2003 July/August;11(4):140-4.

American Journal of Public Health, June 2007, Vol. 97 No. 6

Research Summary: Racial/Ethnic and Age Disparities in HIV Prevalence and Disease Progression among Men Who Have Sex with Men in the United States

<http://en.wikipedia.org/wiki/HIV>

www.mayoclinic.com

www.phila.gov

<http://www.cdc.gov/hiv/default.htm>

Annotated Bibliography for Students/Resources

Movie: Time Out: The Truth About HIV, AIDS, and You

Computers with Internet Access

Overhead Projectors/Screens

www.cdc.gov

www.mayoclinic.com

www.lifebeat.org (This is a website that reaches out to young adults through the use of music. It uses music to relay HIV/AIDS prevention strategies.)

Appendix

Pennsylvania's Department of Education Academic Standards

The School District of Philadelphia's Core Curriculum Standards are aligned with the Pennsylvania Department of Education Standards.

Standards:

A. Explain the structural and functional similarities and differences found among living things.

- Identify and characterize major life forms according to their placement in existing classification groups.
- Explain the relationship between structure and function at the molecular and cellular levels.
- Describe organizing schemes of classification keys.
- Identify and characterize major life forms by kingdom, phyla, class and order.

B. Describe and explain the chemical and structural basis of living organisms.

- Describe the relationship between the structure of organic molecules and the function they serve in living organisms.

- Identify the specialized structures and regions of the cell and the functions of each.
- Explain how cells store and use information to guide their functions.
- Explain cell functions and processes in terms of chemical reactions and energy changes.

C. Describe how genetic information is inherited and expressed.

- Compare and contrast the function of mitosis and meiosis.
- Describe mutations' effects on a trait's expression.
- Distinguish different reproductive patterns in living things (e.g., budding, spores, fission).
- Compare random and selective breeding practices and their results (e.g., antibiotic resistant bacteria).
- Explain the relationship among DNA, genes and chromosomes.
- Explain different types of inheritance (e.g., multiple allele, sex-influenced traits).
- Describe the role of DNA in protein synthesis as it relates to gene expression.