

# **Weiler Health Education Center**

Who Do You Trust?  
Growth and Development  
Grades 8-10

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## Program Objectives

### Program Description:

This hard facts presentation highlights HIV/AIDS as a sexually transmitted infection and reviews other commonly occurring STI's. Modes of transmission, risk behaviors and health consequences of sexual contact are presented as well as strategies for avoiding sexually transmitted infections.

### Standards:

**PA** 1.6.8A; 1.6.11A; 1.6.8D; 1.6.11D; 10.1.9A; 10.1.12B; 10.1.9E

**NJ** 2.1.8.A.2; 2.1.8.D.2; 2.1.8.D.3; 2.1.12.A.2; 2.1.12.B.1; 2.1.12.D.2; 2.2.8.B.5; 2.2.12.B.3;  
2.4.12.B.2

### Objectives:

*Upon completion of the program, students will:*

1. Identify HIV as the virus that may lead to AIDS.
2. List 2 risk behaviors for HIV transmission.
3. Compare HIV infection to other sexually transmitted infections in two ways.
4. Discuss three possible consequences of sexual contact.
5. Name three avoidance techniques for sexually transmitted infections.

### Terms:

abstinence – refraining from

acute – at a heightened point of seriousness

AIDS – acronym for “acquired immune deficiency syndrome”; a disease of the immune system characterized by increased susceptibility to opportunistic infections

CDC – Center for Disease Control; government agency providing information on disease and illness

chronic – ongoing

communicable disease – a disease which is able to be passed from person to person

condom - thin sheath, usually of very thin rubber, worn over the penis during sexual intercourse to contribute to the prevention of conception or the spread of sexually transmitted disease

disease – condition of sickness, illness or abnormal condition



HIV - acronym for "human immunodeficiency virus"

immune system - a system of interacting cells, cell products and tissues that protects the body from pathogens, foreign substances

monogamous – having only one partner

opportunistic infection – infection allowed by a weakened immune system, probably one that is fought off with a healthy immune system

red blood cell - one of the cells of the blood which carries oxygen and carbon dioxide throughout the body

semen – male reproductive fluid

STI – acronym for "sexually transmitted infection"; an infection transmitted through sexual contact

transmission – process of passing along

vaginal secretions – fluids in the vagina

virus - an ultramicroscopic, infectious agent that replicates only within the cells of living hosts

white blood cell – one of the cells of the blood that reacts to invading microorganisms or foreign particles; includes B cells, T cells, macrophages, monocytes, and granulocytes.

window of time - time period of opportunity



## Word Search

Directions: Find the words from the list in a horizontal, vertical or diagonal arrangement. Also, look for an important statement to fill in the spaces at the bottom.

H I V D O E S N O T D I S C R I M I N A T E C V B G E I Y V C X M K D K Y V L C  
C X U H W Q T L U A M X P J J T U T K Y J O U H O W L L M P F O J A E V K H J S  
Q F Y W A W K C V D T U Q I R S Z C I G M L Y F O X R B I W T Y V M I G C B N C  
Q Q I E W E V O H O Y W Z A B J Y T J M H D U O C Y Q B R H V K T C K L T V E H  
R Z M O T W L L E C T N W U H I D S U F O T P X E O W Y E U F N R U V D N E X E  
W G V G H K H J Z J G V D R N V Q N S T B I T R J C N R N G G Z F W Q G E T V K  
Q W E O X V D I G M U R R F P L I X Y I P R G Y N V N D I H B Y K G V Y G D B O  
V Q G F J M K Z V T V L C U O C V J F F L C N T S C J E O T A F B A L L F F K L  
W Q B V U T I N I T V I Q N A X K T K V B X Y Q R E U D N M L N K Q X I N Z D W  
L W U M E M E O I I E Y Z B G L H F X P R L C J M G P Q Q I E V D U X D Y N J B  
J U E D M Y U H S U X S L C Z G B M O P C J Z F S K S X H W T D M G X B O S B K  
N Z U U X E T P L Z I E T D I C L C S Y I L Z S O M W D G R U S H I A C J G C V  
Q G N V P O A Z V E P M F O T D A H J P R L W L J F L M K S G I B F P W R Q E B  
Q E N O Z X R G S R V W Y F R Z U E U I Z M F L L V J O Q C H L V A Z V W X P P  
A I B L F A N Q B I S C T M B G X H Y P Z B J K I Q B N V Z O V Y R K R I E I C  
N B J E F R Q E W Y L E E X V Y E K G Y J A Y M H E D S G O E F H F F S H P B O  
Z T B I M W G O S Q U T M Z U R S A O Z O N Y K W Y V U D I H I Z J I D F P D H  
V R K G V B D R C B Z V S E E A W K C R V Z B X D J F O R D M O S C S I V I G K  
T V E R S R Q Q J M D N T U N K J J I O Y B L U O K X M I S Y P M K J A C E E A  
U K X T T F O W R X I J B I S O Q N P R C R M B D H B A J K K E Y A G K S U G V  
E M H P Y N N F J R C Q S W U A Q G T X L H C R J N Y G Y F A K F V A R L K K B  
Z N M T K D N G B V M M R U S P S K U U H O Z P X T M O D Q W R N D M W Z N D Y  
F A Q T U C U E E J I Z V W F G X B W G O M K E L B G N H B I H K K M B G Q P V  
D S I R P O M J G T O N X Q U L P M R S I Z N K R W L O K C X X I W E D L F E H  
Y D Q N S W P G Q W Q O X N E M T K N U F K S V I L V M A Z N F O U H J W Y B S  
A A I X A U Z D W S B L M O Q U T J V T Q R H J V Z W G M L M T F U E S I O Q F  
L P T R D Q M D A J C W B Q N H Z T Y W A L S P D M M M B H R K X Z A G Y J N D  
N Q U M B S G B R A A U L A T H N Y W B M J T J W K I V G J N F N M N M F K C X  
Q I D B R R D A L R K L J N S L Y V G A U S B Q D I O I T T J P B S B A J B R X  
A N K I A R W I V Z D H W G O B N N I S X U Q R K J W F D C B A B V T I B H G K  
F W R S B X X G M M D E H U H J H W L H K J A X K L S C D N E E U G G L W J W U

ABSTINENCE

AFRICA

AIDS

BLOOD

COMMUNICABLE

CONDOM

HIV

HOST

IMMUNE

MONOGAMOUS

MOTHER

SEMEN

SEXUAL

SKIN

TCELL

HIVTESTORG

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## Math Worksheet

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Directions: Calculate the HIV and AIDS problems below.

1. Red blood cells (RBC'S) live for approximately four months in the bloodstream. Enter today's date and a date at which you will have all new red blood cells.

Today's Date \_\_\_\_\_

Date at which all RBC's will be new \_\_\_\_\_

2. Use the information above (A red blood cell lives four months.) to write the math problem and solution to show how many days a red blood cell will live.

\_\_\_\_\_

3. The body makes about two million red blood cells every second. How many red blood cells are made in an hour and how many are made in a day?

Red blood cells made in an hour \_\_\_\_\_

Write the number in scientific notation. \_\_\_\_\_

Red blood cells made in a day \_\_\_\_\_

Write the number in scientific notation. \_\_\_\_\_

4. In one liter of blood, the body has a range of  $4.2 - 5.9 \times 10^{12}$  new red blood cells. Write this range in standard numbers.

\_\_\_\_\_

5. The number of white blood cells in a volume of blood is generally between 4,300 and 10,800 cells per cubic millimeter or  $4.3 - 10.8 \times 10^9$  cells per liter.  
(\*One cubic millimeter is equal to 0.001 ml). Write this range in standard form per liter.

\_\_\_\_\_



6. In a liter of blood are there a greater number of red blood cells or white blood cells?

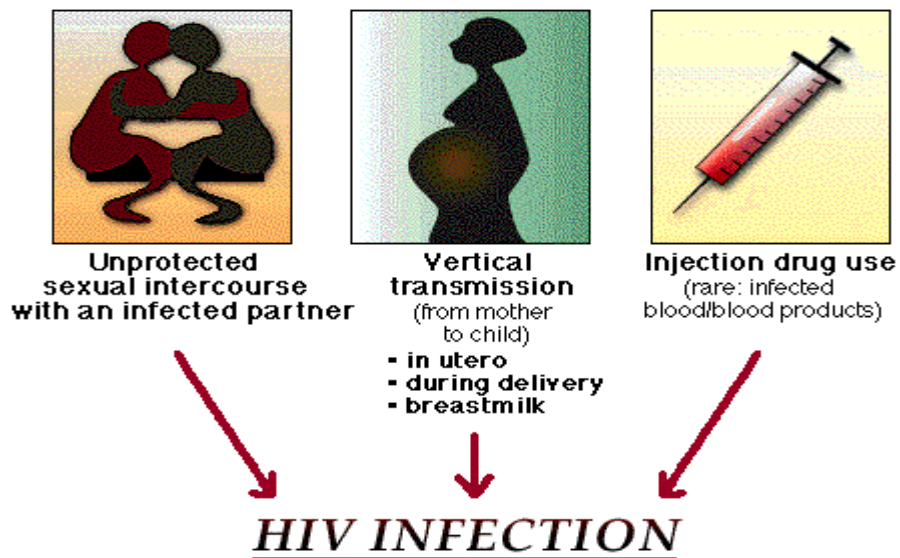
\_\_\_\_\_

7. Conditions or medications that weaken the immune system, such as HIV infection cause a decrease in white blood cells. In HIV infection, the white blood cells called T-Cells, specifically CD4 cells will drop in number. A CD4 cell count of less than 200 (normal is 500 – 1500 in a ml of blood) indicates that HIV has progressed into AIDS.

What percentage of CD4 cells is lost if an HIV infected persons count drops from 500 to 200? What if the count drops from a normal of 1000 down to 200?

Percentage change in drop from 500 to 200 \_\_\_\_\_

Percentage change in drop from 1000 to 200 \_\_\_\_\_





# How Viruses Travel

## Objectives

1. Students will understand how certain viruses travel through a population by simulating the transmission of a communicable disease.
2. Students will analyze data to identify the originally infected person and calculate the percent of the infection after the simulated transmission process.

## Materials per Student

1. one film canister for each student labeled 1 – 4 (Teacher will place a “virus” [baking soda] into one of the numbered containers; place flour into the others.)
2. flour
3. baking soda
4. vinegar
5. paper for note taking
6. dry-erase markers for discussion

## Procedure

1. Teacher should place class names on board. Each student should select two names, write those names down and remove the names from the blackboard list. (Teacher directs taking turns.)
2. Students are to select a canister and return to their seat.
3. Students then go to each of their two students and exchange powders by pouring all the powder into one canister; then shake and divide the powder evenly back into the two canisters.
4. Write down the order of students with whom you have exchanged powders.
5. Once everyone has exchanged powders the instructor will pour vinegar into each canister.  
*\* If baking soda is present, the powder will foam, if flour is the only powder in the canister the vinegar will sit on top of the flour and not the foam\**



### Discussion and Evaluation

1. What was the total number of students participating in the activity? \_\_\_\_\_
2. What was the total number of containers that started out with the virus? \_\_\_\_\_
3. What was the total number of containers that ended up with the virus? \_\_\_\_\_
4. What percentage of containers ended up with the virus? \_\_\_\_\_
5. What could have allowed the virus to spread more quickly than it did?

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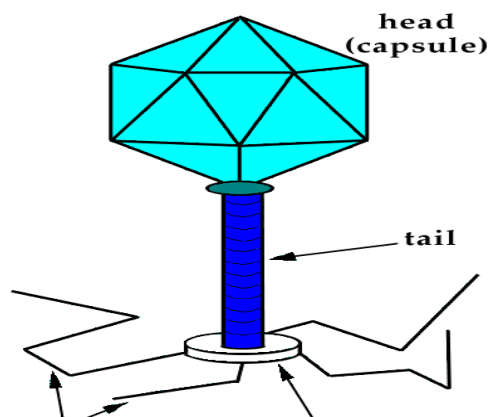
6. What could have prevented the virus from spreading?

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7. Write a paragraph describing how HIV can be transmitted unknowingly and how quickly HIV can be spread in a population.

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## Word Search Answer Key

H I V D O E S N O T D I S C R I M I N A T E C V B G E I Y V C X M K D K Y V L C  
C X U H W Q T L U A M X P J J T U T K Y J O U H O W L L M P F O J A E V K H J S  
Q F Y W A W K C V D T U Q I R S Z C I G M L Y F O X R B I W T Y V M I G C B N C  
Q Q I E W E V O H O Y W Z A B J Y T J M H D U O C Y Q B R H V K T C K L T V E H  
R Z M O T W L L E C T N W U H I D S U F O T P X E O W Y E U F N R U V D N E X E  
W G V G H K H J Z J G V D R N V Q N S T B I T R J C N R N G G Z F W Q G E T V K  
Q W E O X V D I G M U R R F P L I X Y I P R G Y N V N D I H B Y K G V Y G D B O  
V Q G F J M K Z V T V L C U O C V J F F L C N T S C J E O T A F B A L L F F K L  
W Q B V U T I N I T V I Q N A X K T K V B X Y Q R E U D N M L N K Q X I N Z D W  
L W U M E M E O I I E Y Z B G L H F X P R L C J M G P Q Q I E V D U X D Y N J B  
J U E D M Y U H S U X S L C Z G B M O P C J Z F S K S X H W T D M G X B O S B K  
N Z U U X E T P L Z I E T D I C L C S Y I L Z S O M W D G R U S H I A C J G C V  
Q G N V P O A Z V E P M F O T D A H J P R L W L J F L M K S G I B F P W R Q E B  
Q E N O Z X R G S R V W Y F R Z U E U I Z M F L L V J O Q C H L V A Z V W X P P  
A I B L F A N Q B I S C T M B G X H Y P Z B J K I Q B N V Z O V Y R K R I E I C  
N B J E F R Q E W Y L E E X V Y E K G Y J A Y M H E D S G O E F H F F S H P B O  
Z T B I M W G O S Q U T M Z U R S A O Z O N Y K W Y V U D I H I Z J I D F P D H  
V R K G V B D R C B Z V S E E A W K C R V Z B X D J F O R D M O S C S I V I G K  
T V E R S R Q Q J M D N T U N K J J I O Y B L U O K X M I S Y P M K J A C E E A  
U K X T T F O W R X I J B I S O Q N P R C R M B D H B A J K K E Y A G K S U G V  
E M H P Y N N F J R C Q S W U A Q G T X L H C R J N Y G Y F A K F V A R L K K B  
Z N M T K D N G B V M M R U S P S K U U H O Z P X T M O D Q W R N D M W Z N D Y  
F A Q T U C U E E J I Z V W F G X B W G O M K E L B G N H B I H K K M B G Q P V  
D S I R P O M J G T O N X Q U L P M R S I Z N K R W L O K C X X I W E D L F E H  
Y D Q N S W P G Q W Q O X N E M T K N U F K S V I L V M A Z N F O U H J W Y B S  
A A I X A U Z D W S B L M O Q U T J V T Q R H J V Z W G M L M T F U E S I O Q F  
L P T R D Q M D A J C W B Q N H Z T Y W A L S P D M M M B H R K X Z A G Y J N D  
N Q U M B S G B R A A U L A T H N Y W B M J T J W K I V G J N F N M N M F K C X  
Q I D B R R D A L R K L J N S L Y V G A U S B Q D I O I T T J P B S B A J B R X  
A N K I A R W I V Z D H W G O B N N I S X U Q R K J W F D C B A B V T I B H G K  
F W R S B X X G M M D E H U H J H W L H K J A X K L S C D N E E U G G L W J W U

ABSTINENCE  
AFRICA  
AIDS  
BLOOD  
COMMUNICABLE  
CONDOM  
HIV  
HOST

IMMUNE  
MONOGAMOUS  
MOTHER  
SEMEN  
SEXUAL  
SKIN  
TCELL  
HIVTESTORG

**HIV DOES NOT DISCRIMINATE!**



## Math Worksheet Answer Key

1. Red blood cells (RBC'S) live for approximately four months in the bloodstream. Enter today's date and a date at which you will have all new red blood cells.

Today's Date: **(Day Month Year)**

Date at which all RBC's will be new: **(Four months later)**

2. Use the information above (A red blood cell lives four months.) to write the math problem and solution to show how many days a red blood cell will live.

$$30 \text{ days/month} \times 4 \text{ months} = 120 \text{ days}$$

3. The body makes about two million red blood cells every second. How many red blood cells are made in an hour and how many are made in a day?

Red blood cells made in an hour

$$2,000,000\text{RBC/sec} \times 60 \text{ sec/minute} \times 60 \text{ minutes/hr} = 7,200,000,000\text{RBC/hr}$$

Write the number in scientific notation.  **$7.2 \times 10^9$**

Red blood cells made in a day

$$2,000,000\text{RBC/sec} \times 60\text{sec/min} \times 60\text{min/hr} \times 24\text{hrs/day} = 172,800,000,000$$

Write the number in scientific notation.  **$1.728 \times 10^{11}$**

4. In one liter of blood, the body has a range of  $4.2 - 5.9 \times 10^{12}$  new red blood cells. Write this range in standard numbers.

$$4,200,000,000,000 - 5,900,000,000,000$$

5. The number of white blood cells in a volume of blood is generally between 4,300 and 10,800 cells per cubic millimeter or  $4.3 - 10.8 \times 10^9$  cells per liter.  
(\*One cubic millimeter is equal to 0.001 ml). Write this range in standard form per liter.



**4,300,000,000 - 10,800,000,000**

6. In a liter of blood are there a greater number of red blood cells or white blood cells?

**Red blood cells**

7. Conditions or medications that weaken the immune system, such as HIV infection cause a decrease in white blood cells. In HIV infection, the white blood cells called T-Cells, specifically CD4 cells will drop in number. A CD4 cell count of less than 200 (normal is 500 – 1500 in a ml of blood) indicates that HIV has progressed into AIDS.

What percentage of CD4 cells is lost if an HIV infected persons count drops from 500 to 200? What if the count drops from a normal of 1000 down to 200?

Percentage change in drop from 500 to 200

**200 CD4 cells/500 CD4 cells = .40 or 40% CD4 cells left, a 60% drop in CD4 cells**

Percentage change in drop from 1000 to 200

**200 CD4 cells/1000 CD4 cells = .20 or 20% CD4 cells left, an 80% drop in CD4 cells**

Note to teacher- the following letter is intended for your students to take home as a follow-up for the days program. Please copy and distribute as you see fit in order to enable caregivers of students to reinforce the lesson of this program effectively.



# Weller Health Education Center

Dear Caregiver,

Your student has participated in a program called “Who Do You Trust?” that was presented by the Weller Health Education Center. This program teaches students about the transmission, progression, and health consequences related to Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS.) The Weller Health Education Center emphasizes knowledge of healthy behaviors and good personal decision-making related to all aspects of our lives, including sexual health, as strategies to prevent contracting HIV/AIDS are explored. “Who Do You Trust?” is an abstinence-based program and significant time is spent discussing avoidance of sexual contact until finding a long-term mutually-monogamous partner. Additionally, avoidance of IV drug use and other needle based transmissions are explored as best practices for prevention of HIV and AIDS. Guidelines for effective condom use are addressed as well and students are also made aware of the limitations of these preventative measures. Ultimately, the focus is on student choices and who they’d choose to trust for intimate contact, tattooing, piercing and other potentially infectious contacts.

Though there are treatments for HIV and AIDS, presently there are no vaccines or cures for them. Only the avoidance of high risk behaviors can decrease the likelihood of contracting HIV/AIDS. Among U.S. teens and adults, HIV transmission is almost always the result of sexual contact with an infected person or sharing contaminated needles. As difficult as it can be for parents to discuss intimate topics with your student, these are important topics for their future health. Data from KIDSHEALTH states that avoidance of alcohol and drugs is strategic in preventing the spread of HIV. Not because a person can contract HIV directly from drinking and doing drugs, but because drinking and drug use often leads to risky behaviors that are associated with an increased risk of infection (such as having unprotected sex and sharing needles.) The easiest way to avoid HIV/AIDS is to be educated of the risks and make good behavioral choices. For parents, that education can start at home.

Below you will find some suggestions to guide you in taking steps to improve your family’s health. These activities can help to continue the message started today in our program. For additional resources you are welcome to utilize the parent, teacher and student resource links found on our website at [www.wellercenter.org](http://www.wellercenter.org)

#### Sample Suggestions:

- 1) Familiarize yourself with current information on HIV/AIDS or any health topic of interest by reviewing resources on [www.wellercenter.org](http://www.wellercenter.org) and clicking on TeensHealth.
- 2) Become comfortable discussing sex and other difficult topics early on with your students.
  - a. Understanding the body and sexuality, adopting healthy behaviors, respecting others, and dealing with feelings are topics that have meaning at all ages
- 3) Share your feelings with your children about high risk behaviors
  - a. Encourage abstinence and/or safe sex; discourage drug-use, and other behaviors of concern.
- 4) Educate sons and daughters to be pro-active in their own sexual health by asking questions of their partners, help them understand that if engaging in intimate contact with another, protection in the form of approved latex barriers is encouraged.

Yours in Good Health,  
Weller Health Education Center