

Guiding Questions

How does HIV attack the human immune system?

What are some of the challenges that scientists face in developing a cure for AIDS?

Is it possible to “see” who has HIV or AIDS?

Why is HIV prevention important for everybody?



Content: Knowledge, Attitudes

Recommended Grade Level: 5-9

Correlation to Standards: Health Education: 1-7; Science Education: A, C, E, F, G

Estimated Time: 15 minutes excluding Lesson Extension & Assessment

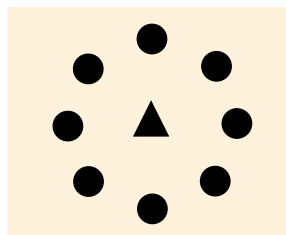
Materials: Four pennies

Set Up: Create a large open space. (If time and/or space are limited, students can be seated during this activity.)

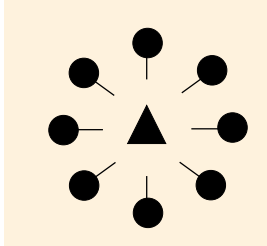
Part 1: Class Discussion

- 1 What is HIV?
- 2 What is the human immune system?
- 3 What are white blood cells?
- 4 Why is it important to have a healthy immune system?
Without a healthy immune system, a person could get very sick from many kinds of infections that would not otherwise be dangerous.
- 5 What are some examples of common infections that the human immune system can successfully fight off?
Examples include the flu, common cold, chicken pox etc.
- 6 Students move away from tables or desks and form a circle by standing shoulder to shoulder and facing inward.

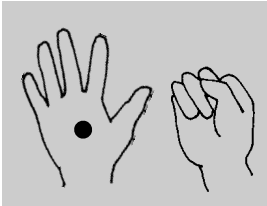
● = STUDENTS
▲ = TEACHER



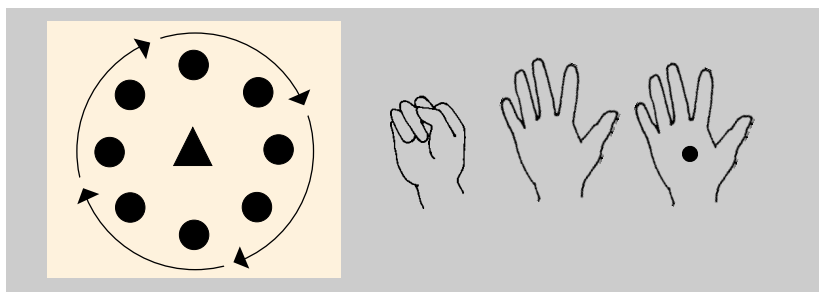
- 7 The teacher stands in the middle of the circle.
- 8 Mention that there are a few pennies in your hand which represent HIV. Students' hands represent white blood cells.
- 9 Students turn to face the outside of the circle so that their backs are towards you. Students put one hand out behind them (toward the center of the circle) with the palm facing up.



- 10 Walk around the inside of the circle and distribute the pennies into different students' hands.
- 11 Students close their hands (to make fists), whether or not they are holding pennies.



- 12 Students turn to face the inside of the circle.
- 13 Can the students tell which of the cells (fists) are infected with HIV (pennies) simply by looking at each other's hands?
No.
- 14 As a class, imagine that the students are scientists who are trying to find a way to get rid of the HIV inside a person's body.
- 15 How can the scientists see which cells are HIV infected?
They can "open up" the cells one by one.
- 16 What will "opening up" the cells do to the body?
"Opening up" the cells will kill both the HIV and the cells.
- 17 Demonstrate the process of "opening up the cells." Going around the circle, each student opens his/her fist one at a time.



- 18 Should the class keep searching for more HIV in the circle after discovering the first penny?
Yes. There could be more hidden HIV (pennies).
- 19 Students continue opening their hands (killing healthy cells and HIV infected cells) until all of the pennies (viruses) are discovered and all the cells are dead.
- 20 What were the main points to this activity?
- HIV can hide inside human white blood **cells** just as the pennies could hide in the students' fists. Simply put, most substances that kill viruses in infected cells also kill healthy cells. There is still no cure for HIV.
 - HIV hides inside an infected person's **body** in the same way that the virus hides inside white blood cells: HIV is not visible from the outside. You can not tell who has HIV by looking at a person's appearance.
 - HIV can circulate freely in blood and infectious body fluids before entering cells, just like the teacher was able to hold the pennies and place them in students' hands.
- 21 Why is HIV prevention important for everybody?

Lesson Extension & Assessment

- 1 In small groups, students brainstorm possible ideas about getting HIV out of the body without killing all the cells. Then, students research different strategies that today's scientists are currently exploring to treat HIV infection and AIDS. Groups present their research to the class.
- 2 Students repeat the Pennies Activity at home with their families and write up their experiences teaching about HIV prevention.
- 3 In small groups, students consider the difference between private information and public information. What do people learn about each other through casual experience? What are the kinds of things that are kept personal? How does this relate to health? Do people have the right to know if someone has an infectious disease that is transmitted through casual contact, such as by a sneeze or cough? How about a disease like HIV that is transmitted in very specific ways that are not casual? Groups create suggested guidelines for what kind of health information could be public v. private. Each group presents its guidelines to the class.