

RET Molecular Biology Session
An Evaluation of “What is An Epidemic and How Does Infection Spread”
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Distributed by Edvotek - \$49



Purpose of the Lab

- This lab tracks how an infection transmitted through the exchange of body fluids spreads through a population
- Educators may choose any specific disease or leave it open ended and discuss the results with students after the lab is completed

Objectives

- Students will learn and implement simple lab techniques
- Students will keep accurate records
- Students will collaborate to determine with whom the disease originated

Materials Needed

- One data table
- One numbered test tube with 5ml of “body fluid” solution (one or two should have the “infectious agent” – this can be any solution that works with an indicator)
- Three empty test tubes
- One pipette
- Indicator solution
- Sharpies
- Test tube rack

Procedure

- Label the numbered test tube “self” - This represents your body fluid such as blood or saliva
- Carefully pipette one mL of solution from the “self” test tube into each of the three other tubes
- Randomly choose another student and “exchange fluids” – each person will transfer solution from one of their extra tubes into the other person’s “self” tube
- Record the name of the person and the number on their “self” tube in the data table
- Repeat this procedure with two other students
- An indicator will be added to the “self” tube to determine who has been infected
- If your solution turns pink you ARE infected

Data Analysis

- Using the data that has been collected determine the following:
 - How many were originally infected?
 - Who is/are the student(s) who introduced the disease into the population?

Possible Discussion Questions

- How many students became infected?
- What implications do these results have for students? Teachers? Healthcare or other service industry professionals? (ie who is at risk)
- Why are some ethnicities at higher risk? (can talk about lifestyle, genetic “immunity” in some groups etc.)
- How can transmission be prevented?
- What other diseases are transmitted through body fluids?
- What is the mode of transmission for other diseases?
- How is prevention different for various types of disease transmission? Is one type easier to prevent?

Evaluation of the Kit

Positives:

- Good introduction to immune system/ health issues
- Short, simple activity
- Gets students on their feet & moving around
- Have to communicate/create graphic organizer to determine “patient zero”
- Easily reproducible
- Do not HAVE to buy in order to do the activity

Negatives:

- Lab protocol includes materials for only 8-10 students (class sample instead of entire class)
- Would need replenishing kit (or an extra supply of the chemicals) for each class
- A lot of test tubes to track; cumbersome for the students

Final Thoughts

- Use with entire class instead of just a small sample
- Use only one test tube instead four and have students use pipette to “exchange fluids” directly from “self” test tube – this is a truer representation of how an infection spreads
- Overall I like the kit. It is simple, requires minimal prep time and there is a lot of great discussion that can branch from the activity. There was also good background information that can be used in lecture before or after the activity.

