Epidemic activity Instructor directions:

Supplies.

24 clean vials with caps that hold 1-15 ml of fluid
Distilled water
Acetic acid or white vinegar
Phenol red
Sharpie pen

Number the vials with the sharpie.

Fill all the vials except one, half full of distilled water
Fill the remaining vial half full with vinegar

See student activity which follows for the activity instructions.
Take time prior to activity to discuss with students the concepts of epidemiology, epidemics, contagion, virulence, morbidity, mortality and any other related terms you feel appropriate.

Epidemic activity student instructions:

24 vials of fluid are prepared by your instructor prior to the lab. The contents are common household substances and are harmless to the students.

Each vial represents a person and the fluid represents some bodily fluid (blood, urine, saliva etc…). One of these vials has an ingredient that will react with phenol red resulting in a color change.

Each student will be given a vial of fluid. Some students may have more than one vial depending on the number in the course. The instructor may participate as if needed.

Students will take the numbered vials and will "share bodily fluids" by mixing their fluid with the fluid in another vial. This may be achieved by pouring the fluids back and forth a couple of times between the two vials. Once mixed the fluids from container A and container B are equally distributed back to the two vials.

This sharing of fluids is the equivalent of a kiss, a shared needle, a sexual contact, drinking out of the same glass, sharing a sandwich, toothbrush, or any other activity where people mutually contaminate one another.

This is repeated for three rounds. Each round a student must combine the fluids in their vial with fluid in a different vial. Each round represents a different incident in which fluids could be exchanged. Each student records who they mixed fluids with on each round.

After three rounds the instructor will put a drop of phenol red in each vial. This step represents a lab test performed at a Dr's office. If the phenol red changes color, that vial/person has the disease.

Looking at those who have the disease and those who do not we begin a epidemiologic study. We interview who has the disease and see who they exchanged fluids with and when (round 1, 2, 3,). Students then take this information and try to ascertain who originally had the disease.

How this is done: If person A has this disease and in the first round they met person B. Then in the second round they met person person C and in the third round person D. If persons B and C do not have the disease but D

does then A did not originally have the disease or persons B and C would have it as well. So person A got the disease from Person D. Then we see who Person D was with in Round two? In round one? Do those people have the disease?

Depending on the nature of the disease spread can be rapid or slow. A disease that can only be passed by sexual contact is going to take longer to spread than a disease that only requires you touch someone. You do not usually see just one person per day so it is possible for a disease to travel very fast.

There is a concept called the six degrees of separation. The idea is that you know enough people, and the people you know, know enough different people that by going through a friend of a friend of a friend, who has an aunt, that knows a pilot, that eats at this restaurant where ….. You can connect yourself to any other person in the world in about six steps.

Terms:

Epidemic
Cross Contaminate
Blood Born Pathogen
Bodily Fluid
Contagious
Epidemiology

EPIDEMIC: Student name: _____

Vial #	Name	First person	Second Person	Third Person	Sick or Well
1	Daphne				
2	Scooby				
3	Shaggy				
4	Fred				
5	Velma				
6	Malory				
7	Sterling				
8	Pam				
9	Gillette				
10	Lana				
11	Krieger				
12	Cheryl				
13	Cyril				
14	Woodhouse				
15	Betty				
16	Veronica				
17	Joe				
18	Brian				
19	Peter				
20	Cleveland				
21	Quagmire				
22	Stewie				
23	Lois				
24	Meg				

1. Did you have the disease at the end of this exercise?_____
2. Did the person you met in round two have the disease? _____
3. Did the person you met in round one have the disease _____

4. How many people should have been infected after round 1? _____
5. How many people could (maximum) be infected after round two? _____
6. How many people could be infected (maximum) after round three? _____
7. Was there a difference in the number that could be infected and the number that actually were infected? _____
8. If there was a difference, what is one possible explanation?

   _____

   _____

9. What percentage of the population has the disease after 3 rounds.

   _____

10. How many more rounds before the whole population (24) would be infected?

    _____

11. The population of the Ky. is around 4,000,000. If each round represents a day and each sick person got one other person ill each day, how many days before every person in the state could have the disease. _____
12. If on the first day you get one person sick then day two and so on. Assuming a population in the U.S. of 300 million. How long is it before Kevin Bacon gets sick? _____
13. Who do you believe is the person that introduced this disease to this population? You should be able to narrow your suspects down to at most two people.

    _____

14. What evidence supports this conclusion?

    _____

    _____

    _____