MUCUS SWAP – Participant Guide

LEARNING OBJECTIVES

- Explain who is at highest risk for becoming ill from a disease.
- Explain ways zoonotic diseases might be spread to you or your animals on the farm and at exhibitions.
- Describe measures to prevent zoonotic disease spread to you and your animals on the farm and at exhibitions.
- Practice basic epidemiologic methods to solve the outbreak.

EXPLANATION OF ACTIVITY

Some people are carriers of disease. Initially, these carriers may appear healthy or show only mild signs of disease. At some point they may eventually get sick, but they may not be recognized as having the disease until they've exposed and infected others. This is one reason why some pathogens can spread so quickly.

This activity is designed to simulate the uncontrolled spread of a disease through a population. Cups have been half-filled with water, except for one or two which contain baking soda water. The one or two people with the baking soda cups will be the original carriers of the "disease," but they will carry this disease in a cup rather than in their body—and appear healthy on the outside. The original carrier(s) will make contact with other participants who will then make contact with others. At the end of the activity, everyone will be tested to see who has become infected, and we'll discuss how to trace the infection back to its source.

NOTE: We will be wearing nitrile gloves for this activity, but you still need to be careful with your cup and solution as we work through this portion of the activity. If you spill any on yourself, immediately go to a bathroom to wash it off. It may stain clothing.

INSTRUCTIONS

1) Pick up and put on a pair of gloves.
2) Pick up a cup containing a clear liquid, a behavior card, and a number sticker. The cup represents your (or your animal's) body and the liquid your bodily fluids. One or two of you has a cup that has been "infected" with an infectious disease.
3) Put on your numbered sticker and review your behavior card.
4) The instructor will announce when to start the activity. You will swap fluids as outlined on your behavior card.
    a. To exchange fluids, one person will dump all of the contents of their cup into the other person's cup.
    b. Return half of the solution back to the empty cup.
    c. Record the number of the person you exchanged with on the table on the next page of this packet.
5) Repeat step 3 as many times as specified on your behavior card. Each swap should be with someone you haven't already swapped with. You should only swap as many times as your behavior card indicates.
6) When you have finished swapping, return to your seat with your cup. Remember to be careful and not spill any liquid.
7) The instructor will come around and add "testing" drops to your cup.
    a. A color change to pink (either bright or faint) indicates a positive result – you are considered "infected." No color change is "uninfected."
8) **Record your results: _____**
9) Return your cup to the instructor to be disposed of.

FLUID SWAP RECORD

Record the participants' names/numbers you exchanged fluids with.

Exchange #	Partner's Name/Number
1	
2	
3	

OUTBREAK INVESTIGATION & ADDITIONAL DISCUSSION

Work with the group to fill out following table and discuss any apparent risk factors.

	Infected *Yes*	**Infected** *No*	**Total**
Exposure *Participated in county fair only*			
Exposure *Participated in county and state fair only*			
Exposure *Participated in multiple open shows, county fair, and state fair*			
Total			

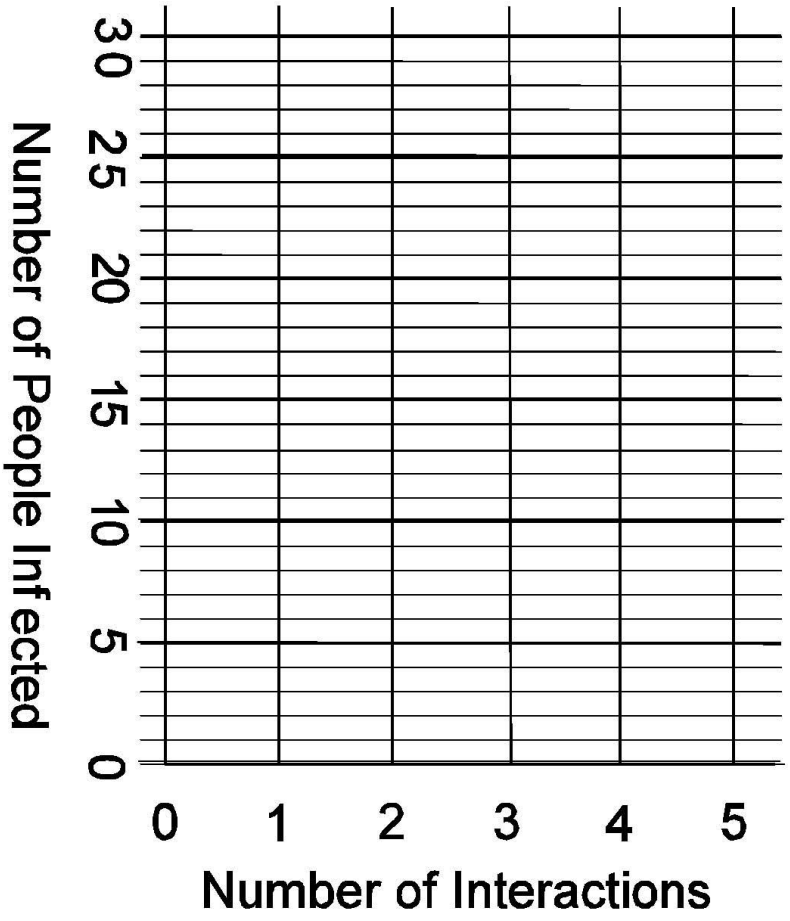
- Did any of the exposures lead to greater risk of becoming infected?

- How does this translate to the increased risk of infection for you and your animals based upon the shows you attend, and number of animals commingled in real life?

How did the number of people infected increase with each round of interactions?

- Assuming one person was initially infected, fill out the following table and graph

Number of interactions	**Previously Infected**	**Newly Infected**	**Total # of Infections**
0	Student #1	0	1
1	Student #1	Student #2	2
2			
3			
4			
5			



- What do you notice about the rate of increase in the number of infections? Does the graph show linear or exponential growth?

- If we did this activity long enough, would everyone become infected? Why or why not?

How can we determine who was the original source of infection?

How would this investigation be different if you hadn't kept notes about whom you swapped fluids with and in what order?

- Do you think you would have remembered clearly after the activity was over? How well do you think you'd remember tomorrow or in a week from now? A month?

What preventative measures could have been taken to avoid exposure to the disease?

How would an airborne disease spread differently? Why?

This document was adapted from an activity guide developed by the Center for Food Security and Public Health at the Iowa State University College of Veterinary Medicine in collaboration with the Iowa Department of Public Health, and originally based on an activity developed by the Indiana State Department of Health and from the following resources:
- http://seplessons.ucsf.edu/node/226
- http://www.cpet.ufl.edu/wp-content/uploads/2013/03/Epidemic-lab-with-bodily-fluid-cups.pdf
- http://lpsl.coe.uga.edu/mile3/resa/gpsinaction/lessonplans/Virus.pdf
- http://www.accessexcellence.org/AE/AEC/AEF/1996/good_virus.php
- http://www.plymouth.edu/eportfolio/view/artefact.php?artefact=86147&view=19172
Funding for this project was made possible through a joint organizational partnership between the Council for State and Territorial Epidemiologists and the Centers for Disease Control and Prevention.

Instructions: Complete this "tree" to trace back the path of transmission of the disease. Write your cup number and the cup numbers of the people that you exchanged fluids with. Depending on your behavior card, you may have swapped with less than six people. Find out which of your partners had a positive test (were infected). Highlight their cup numbers. Talk to each of the people you swapped with and find out if they had interactions with infected people before they interacted with you. Circle the cup number of the partner that infected you. Draw a box around the cup numbers of the people that you infected (directly or indirectly).