

Teacher Activity Resource Sheet
Indiana AWARE
(Alliance Working for Antibiotic Resistance Education)
High School Biology/Health Curriculum

Hands-On Activities/Experiments (instructors will assist during the lesson)

1) **Balloon Popping Exercise**: Demonstrate germ transmission with an uncovered sneeze.

Required experiment tools: balloons, water

Instructions:

The instructor will put a small amount of water into a balloon(s) (a few drops is all that is needed). Blow up the balloon and tie it off. Gather some of the students into a circle; hold the balloon above their heads, count to three and pop the balloon. Water droplets will disperse through the air, just like an uncovered sneeze.

2) **Glo Germ Activity**: Demonstrate proper hand washing technique.

Required experiment tools: Glo Germ lotion, black light

Instructions:

The instructor will put Glo Germ lotion on his/her hand while discussing the slide, "Spread of Bacteria," then will shake one of the student's hands. That student will be asked to shake the hands of a couple nearby students, with those students repeating this process. (Alternatively, some students can be asked to touch their pen or a cell phone, and then pass the object to another person to handle.) After several transfers, the instructor will explain the experiment, and turn off the lights in the room. A handheld black light will be used over the students' hands to illuminate the white lotion. This will illustrate how, just like germs, the lotion is spread by direct and indirect contact transmission.

Supplemental Videos (teachers: we encourage you to watch these short videos with your students during a separate class—either right before or after the designated lecture, as time allows)

1) Flu Attack! How A Virus Invades Your Body

This 3 ½ minute animated video from NPR shows how viruses in your body can multiply and make you sick. Note that although this is depicting the spread of a virus, the same mode of transportation occurs with bacteria as well (see lecture slide, "Spread of Bacteria; Respiratory contact" and its examples.)

<https://www.youtube.com/watch?v=Rpj0emEGShQ>

2) What causes antibiotic resistance? – This 4 ½ minute video describes the trillions of microorganisms in and on our bodies and the few strains of 'super bacteria' and how they are growing resistant to our antibiotics. Kevin Wu details the evolution of this problem that presents a big challenge for the future of medicine.

<https://www.youtube.com/watch?v=znnp-lvj2ek>

3) What does antibiotic resistance look like? / The Evolution of Bacteria on a "Mega-Plate" Petri Dish

This 2 minute video from Harvard Medical School provides the first large-scale glimpse of the maneuvers of bacteria as they encounter increasingly higher doses of antibiotics and adapt to survive - and thrive - in them.

<https://www.youtube.com/watch?v=bDa4-nSc7J8>