SAFE OR SORRY™

Handwashing

Prevent Disease
&
Outbreak Intervention

Middle School and Junior High Ages

MINNESOTA MDH DEPARTMENT OF HEALTH

Be Safe – Not Sorry – Wash your Hands!

Handwashing is one of the most important things you can do to prevent illness.

Time	45 Minutes
Materials	Rubber chicken, other items to pass, *Glitter Bug* powder and potion, ultraviolet lightstick, extension cord, telephone, an apple or other fruit, dancing hamster, sterile petri dishes, sterile swabs or Q-tips, distilled water, masking tape, permanent markers, preservative-free bread (bakery), sandwich bags, access to warm water, soap, paper towels, a 20-second timer, and *Handwashing for Life* video
Part 1	**Do people really not wash their hands?**
	According to the American Society of Microbiology 97% of females and 92% of males say they wash but actually only 75% of females and 58% of males wash. Fifty percent of middle and high school students wash, and of these only 33% of females and eight percent of males use soap. The Minnesota Department of Health conducted three discreet observational studies and found: ▪ 2003 Back to 50's Car Show Event – 64% females and 30% males washed ▪ 2003 State Fair – 65% females and 39% males washed ▪ 2004 State Fair – 75% females and 51% males washed Based on the total of three MN studies, women wash more often than men: 68 % of women washed their hands compared to 40% of men. Note: The entire study is on the CD.
Part 2	**Why is handwashing important?**
	▪ 229,000 germs per square inch on frequently used faucet handles ▪ 21,000 germs per square inch on work desks about 400 times more than the average toilet seat ▪ More germs at the kitchen sink than at the toilet ▪ 1,500 on each square centimeter of hands ▪ Prevents spreading germs to food or to another person ▪ Germs are invisible on your hands ▪ Germs can make you very sick ▪ Hands are most exposed part of the body to germs ▪ Washing hands regularly can keep a person healthy ▪ A 1996 Wirthlin research study of 305 school students reported that students who washed their hands four times a day had 51% fewer lost days to stomach upset.

Part 3	**When is handwashing important?**
	Ask students to list things touched in one day, use any of the following to reinforce: ▪ Before eating, preparing or serving food ▪ Whenever hands look, feel, or smell dirty ▪ After using the toilet ▪ After handling raw meat, fish, poultry and before touching any other food ▪ After changing a diaper ▪ When sick, after blowing your nose ▪ Cough or sneeze: Germs get on hands from a sneeze (sneezing into the hands is not a good idea) – important to sneeze into sleeve ▪ After using common objects money, doorknobs, computer keyboard, telephone, lockers, keys ▪ After touching pets or any animals ▪ After taking out the trash
Part 4	**Four handwashing experiments** #1 Rubber Chicken and Blacklight #2 Growing Germs in Petri Dishes #3 Dirty Hands on Bread #4 Handwashing Under Blacklight

Handwashing Experiments
Growing Bacteria from Hands and Surfaces

Experiment #1:	**Rubber Chicken and Blacklight**
Materials:	Rubber chicken, other items to pass, *Glitter Bug* powder, blacklight stick, extension cord, telephone, an apple or other fruit and a sandwich
Procedure:	*Note: You may do this experiment before the start of the presentation.* 1. Prior to arriving, sprinkle *Glitter Bug Powder* on rubber chicken and other items including handouts. Rub on well so it is invisible. Pass items around the room for all to touch without telling them about the *Glitter Bug* powder. 2. After all have touched the items, tell them that the items had fake germs on them that will glow under blacklight. 3. Turn out lights and take ultraviolet light around room or have participants come forward to observe their hands under the blacklight. 4. Use the blacklight stick to trace the "germs" from the objects to their hands, face, tables etc. ***Script:*** Before the presentation started, I sprinkled a substance called *Glitter-Bug* powder around the room. Even though the powder is all over in the room, the only way we can see it is by using an ultraviolet light. Microorganisms are a lot like this powder. Microorganisms can be everywhere, even though we can't see them without the use of a microscope. Remember the rubber chicken? When you touch a real raw chicken, where do the germs go? How about picking up a sandwich after touching raw meat and not washing your hands – where do the germs go? (Using a real sandwich has a better effect.) What about cutting up a raw chicken on the counter (demonstrate with rubber chicken). Now I put my sandwich on the counter (where the chicken was) when I go to answer the phone. And how about the chicken juice on the phone? After using the toilet and toilet paper and then not washing hands, you may have microscopic bacteria on your hands. Then pick up a sandwich. Again, where do the germs go? You ingest them. That's what makes you sick – also touching your mouth, nose or eyes gives the germs a way to get inside your body. **How do hands get germs on them?** 1. Everyone had a chance to touch the "contaminated" rubber chicken. 2. If your hands were contaminated from the items you passed around, would you want to pick up an apple and eat it? (Demonstrate) 3. If your hands had really touched bacteria laden objects, not washed your hands and then ate an apple, you could have put bacteria in your mouth if you hadn't thoroughly washed your hands after touching the items.

Experiment #2:	**Growing Germs in Petri Dishes**
Materials:	Sterile petri dishes* s*ee notes, s*terile swabs or Q-tips, distilled water, masking tape and permanent markers
Procedure:	*Script:* Today we will each be selecting an object or surface to sample for microorganisms. We will be growing the microorganisms in containers called petri dishes. The red gelatin-like substance in the petri dishes is called agar. The agar provides nutrients or food to the microorganisms so that they can grow—they are used to test for strep throat. It will be interesting to see which objects or surfaces have the most microorganisms including our hands. 1. Give each person the following items or two can share a dish: 2. Instruct the participants to select one surface or object that they would like to test for the presence of microorganisms. 3. Each person should test a different surface or object, rather than several testing the same area. 4. Mark the bottom of the petri dish in half with permanent marker and test two sites or touch one side with their fingers. 5. Instruct the participants to hold the swab at one end, and rub it over the surface or object to be tested. ▪ If the object or surface is dry, the participants should wet the swab with distilled water and then rub the swab over the object or surface. ▪ If the object or surface is wet, the participants should use a dry swab to rub over the object or surface. 6. The participants should then gently rub the swab on the agar and touch part of the plate with their fingers, close the lid, and tape the dish shut around the edge. 7. Dishes should be labeled with the names, class period, and the name of the surfaces or objects tested if used in a classroom. 8. Label one clean, unused petri dish as the control. The control is used to show that a petri dish that was not opened would not have any microorganisms growing on it. Any growth on the petri dishes is coming from the surface or objects that they tested. 9. Place the dishes in a warm spot (such as on top of a refrigeration unit, wrapped in plastic in a sunny window, or by a heater) for three days. Store them upside down so there is no chance of anything leaking out of the dishes. 10. Without opening the dishes, the students should examine the petri dishes daily. ▪ ***Safety Note: Never open the dishes anytime after adding the contaminant. The dishes could contain harmful microorganisms, which could cause illness if people are exposed to them.*** 11. At the end of exercise, collect dishes for proper disposal. Check with the custodian or janitor. **Note:** Petri dishes can be obtained from a local hospital or clinic. If they have reached an expiration date, the facility cannot use them for tests. They still will work for this experiment. Red jell-o made with less water can be used for this experiment as well. Small sample plastic cups from a local deli will work well to hold the jell-o. Also, A cross-curricular activity suggested is to have students look at their plates under a microscope.

Experiment #3:	**Dirty Hands on Bread Slice**
Materials:	Preservative-free bread (bakery), sandwich bags, permanent markers and water
Procedure:	1. Ask students to touch their desks, hair, and faces to get their hands contaminated. 2. Give each student a piece of bread or a half piece and instruct them to touch it all over, keeping it flat. 3. Have students place bread slice in bag with two small drops of water. Seal shut. 4. Label with name and date. 5. Put all bread slices in a brown grocery bag and seal shut. Place in warm spot. 6. Have one piece of bread in a baggie that was untouched as a control. **Note:** Takes about five days for good mold growth

Experiment #4:	**Handwashing Under Blacklight**
Materials:	*Glitter Bug* potion (pump), ultraviolet light stick, access to warm water, soap, paper towels and a 20-second timer
Procedure:	Warning: People with skin allergies should not use this lotion. 1. Place one drop of *Glitter Bug Potion* in the palm of each student's hand; have them rub *Glitter Bug Potion* all over their hands and wrists as if they were applying hand lotion. 2. Students observe "contaminated" hands under UV light. 3. Instruct to wash hands without any hints as to correct technique. 4. Have all students check hands with UV light for any residual *Glitter Bug Potion.* 5. Point out areas commonly missed: cuticles, under nails, thumb and finger webs, wrists. 6. Use 20-second timer/hamster to demonstrate how long 20 seconds is. 7. Instruct as to correct handwashing procedure: ▪ Soap and warm running water ▪ Fingers pointing down ▪ Rub hands vigorously for 20 seconds ▪ Wash all surfaces including: ▪ Backs of hands ▪ Wrists ▪ Between fingers ▪ Tips of fingers ▪ Thumbs ▪ Under fingernails (nailbrush is best) ▪ Dry vigorously with paper or clean cloth towel. ▪ Turn off faucet with towel, ▪ Open door with towel. 8. Play *SOS Handwashing* video 9. Optional: Play *Handwashing for Life* video

Note: For a shorter presentation/lesson delete some of the script or experiments.