Beneficial Bacteria and Antibiotics

Length: 40 minutes

Materials: Microphone, if available, computer and screen optional for PowerPoint slides and video, bingo cards, bingo questions, pens or markers for bingo, healthy living booklets and stickers. Prizes are optional.

Overview: Have participants sit in comfortable area where they can see and hear. Explain that there will be a discussion followed by a Bingo game. If there are students/volunteers, place one facilitator at each table for small group discussions. If there is one presenter, elicit group discussion.

1 **What do you know about bacteria and viruses?**

Bacteria and viruses are often grouped together as 'germs' because they are both microscopic, but they are very different. Both cause illnesses, but bacteria can replicate on their own and are bigger than viruses. Viruses must get into a host cell to replicate. Some bacteria are also good for you!

2 **What feelings do you have when you hear the word bacteria?**

Participants may talk about a fear of germs. Validate participants that some bacteria do cause infections, and we need to be careful to wash hands and promote health. Explain that even though there are harmful bacteria, there are also good bacteria in our bodies that help us digest food and stay healthy. Explain that there are different types of germs. Bacteria and viruses are different organisms that can make you sick. Washing our hands help protect against bad germs that could make us sick.

3 **Who can explain what an antibiotic is? Discuss as a group and review the information below.**

Antibiotics are a type of medicine to kill bacteria that cause infections. During World War II when antibiotics first started being used widely, they were seen as a miracle drug because they saved so many lives. Our medical system relies on antibiotics for treatments and surgeries. Joint replacements, caesarean sections, organ transplant, burn therapy, and cancer therapy all use antibiotics.

Antibiotics do not have any effect on viruses. Did you know that most colds and flus are viruses? Viral infections such as colds, influenza, and COVID-19 cannot be treated with antibiotics.

Beneficial Bacteria and Antibiotics (continued)

4 **Has anyone ever heard of beneficial (good) bacteria in their body? It is sometimes called the microbiome. Discuss with a partner or as a group first and review the information below.**

Beneficial bacteria are on your skin, in your mouth, nose, and digestive tract. They have many important benefits. One benefit is that they help digest your food. Another is that they crowd out infection causing bacteria to keep you healthy. When you take an antibiotic, it kills the good bacteria along with the infection causing bacteria. Without the good bacteria taking up space, there is opportunity for infection-causing bacteria to grow and take over. When antibiotics are needed, listen to your doctor and take them to kill the infection-causing bacteria. When antibiotics aren't needed, it is important to avoid them as they can disrupt your microbiome, or the good bacteria in your body.

Probiotics (live bacteria cultures) are not currently recommended after antibiotics, but it may help to eat yogurt with live cultures and eat fermented foods. It is also good to eat whole grains, fruit, vegetables, get outside and do activity you enjoy to stay healthy.

5 **Understanding antibiotic resistance**

Bacteria can mutate or change so they are no longer killed by an antibiotic. This is called **antibiotic resistance**. Antibiotic resistance is when the bacteria change and evolve to survive, even in the presence of antibiotic medicine. It has nothing to do with a person's immune system as it is the bacteria that are changing. Avoiding antibiotics unless they are needed helps to save them for us and for future generations.

Optional video: "The Evolution of Bacteria" (1:54 mins)

https://youtu.be/plVk4NVIUh8

6 **Why should people be careful when they take antibiotics? Ask for ideas from the group and review the points below.**

1. Antibiotics kill all the bacteria (good and bad) so antibiotics **disrupt your good bacteria** (microbiome).
2. Antibiotics have **side effects**, so you want to avoid side effects when possible. Some side effects are mild like loose stool and some are more serious, such as allergies or medical complications that can cause severe harm or death. One example of this is when an antibiotic kills the good bacteria, a bacteria called *C.difficile* that may be in small numbers in your body, can grow and cause a serious infection or even death. If you don't need an antibiotic, avoid it and the possible side effects! Listen to your health care provider and only take medication that is prescribed to you.
3. It is possible for the antibiotic to have **reactions with other medicine** you are taking. If you don't need the antibiotic, you can avoid the possible interactions too!
4. When bacteria develop **antibiotic resistance**, the antibiotic no longer works and you can have an infection that is more difficult, or impossible, to treat. When you save antibiotics for when they are needed, you help preserve antibiotics for future infections to treat yourself and the next generation.

Beneficial Bacteria and Antibiotics (continued)

7 **What are some times that antibiotics may not be needed? Discuss as a group and then review the points below.**

1. People should never take an antibiotic without a health care providers prescription. Do not take antibiotics prescribed to other people and discard any leftover unused antibiotics at the pharmacy.
2. No antibiotics are needed for viral infections – colds, influenza, and COVID-19 are all viral infections.
3. You don't need antibiotics if there is bacteria found in a urine sample when you are not sick. When you have bacteria in your urine without having signs of a sickness, it is called asymptomatic bacteriuria. Over age 80, 50% of women and 30% of men have bacteria in their urine but it is not causing an infection. Testing urine without a reason leads to unnecessary antibiotic use. When there are symptoms, try rehydration first. Only test urine when there is a medical reason.
4. In some cases, an antibiotic may be prescribed before dental treatment. However, most simple procedures don't need antibiotics. The best research shows that people with joint replacement do not need antibiotics before dental care. Some people with certain heart conditions may need antibiotics before dental work. Talk with your dentist and update them on any medical conditions, medications, recent surgeries, history of *C. difficile* infection, and/or changes to your health.

8 **What are some ways to stay healthy and protect your microbiome? Discuss as a group and then review the points below.**

1. Frequent hand hygiene with plain soap and water or hand sanitizer.
2. Cover your coughs and sneezes using proper etiquette with your inner elbow or use a tissue. Dispose of tissues in the garbage and perform hand hygiene after disposal.
3. Wear a mask and practice distancing when indicated.
4. Stay up to date with immunizations – vaccines protect against many bacterial infections as well as secondary bacterial infections that can happen after a viral infection. if you don't get sick, you don't need antibiotics.

9 **Activity: BINGO!**

See Bingo activity on the next page.

Beneficial Bacteria and Antibiotics (continued)

Bingo Activity

Length: 20 minutes

Materials: Microphone if available, BINGO cards for participants and BINGO questions for facilitator, prize for winner(s).

1. **Hand out bingo cards and pens/markers to participants.**
2. **Instruct participants to listen to the question and shout out the answer. Review the answer and correct icon with all participants. Have them "X" the box with the correct answer.**
3. **Whoever has a full house (all boxes checked) first and yells "bingo" is the winner.**
4. **Hand out a prize to the winner.**
5. **Ask: Who has questions? Who can share one new thing they learned today?**
6. **Put a sticker in participants' Health Journey Booklet as recognition of completion.**

BINGO Questions and Answers

✓	Question	Answer
☐	Do this before taking any new medicine.	Talk to a doctor 
☐	These injections help prevent sickness.	Vaccines 
☐	What to use when you cough or sneeze?	Tissue 
☐	Doing this can help for early signs of urinary tract infection.	Drink fluids 
☐	Wash your hands after touching these.	Door handles 
☐	What to do before you eat and after you use the washroom.	Handwashing 
☐	A possible side effect of antibiotics.	Upset stomach 
☐	These are not killed by antibiotics.	Viruses 
☐	A name for the good bacteria in your body.	Microbiome 
☐	This medicine kills bacteria but not viruses.	Antibiotics 
☐	Antibiotic resistant bacteria are also known as.	Superbugs 
☐	Where do you discard old/leftover antibiotics?	At the pharmacy 
☐	If you have a stomach sickness, use this instead of hand sanitizer.	Soap and water 
☐	A good way to clean your hands without soap and water.	Hand sanitizer 
☐	Bacteria and viruses cause different infections but sometimes we call them both by this name.	Germs 

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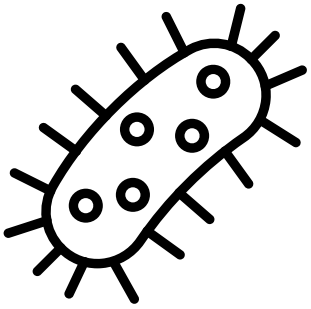
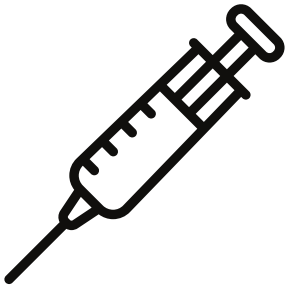
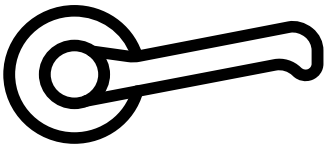
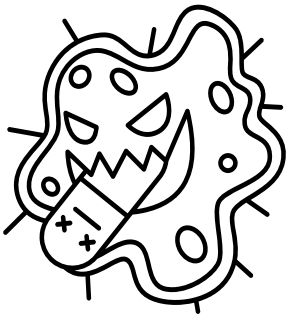
 At a pharmacy	 Microbiome	 Vaccines
 Upset stomach	 Talk to doctor	 Door handles
 Hand washing	 Superbugs	 Hand sanitizer

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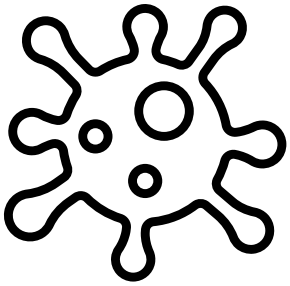
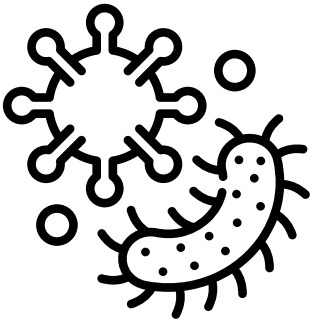
 Hand washing	 Use a tissue	 Upset stomach
 Soap and water	 Viruses	 Antibiotics
 Talk to doctor	 At a pharmacy	 Germs

Version: B

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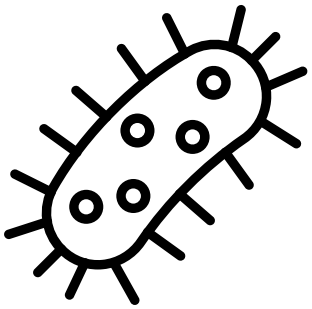
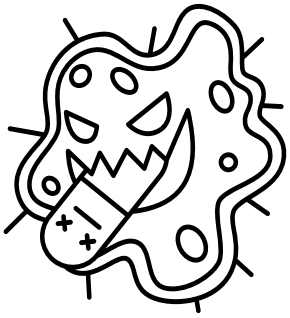
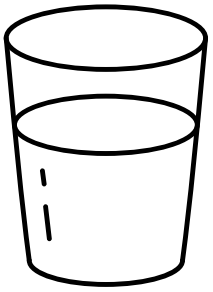
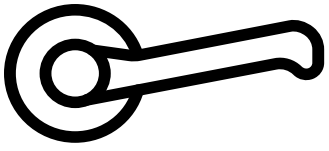
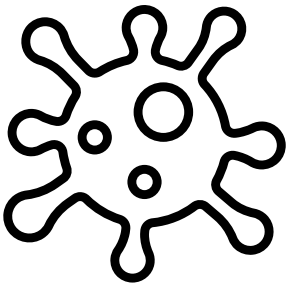
 Use a tissue	 Microbiome	 Talk to doctor
 Antibiotics	 Superbugs	 Drink fluids
 Hand sanitizer	 Door handles	 Viruses

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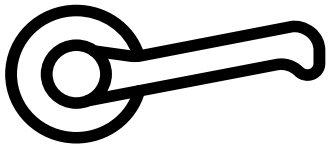
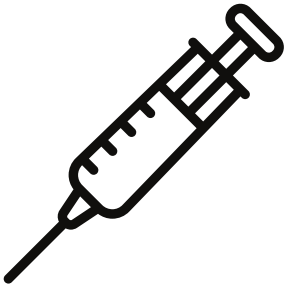
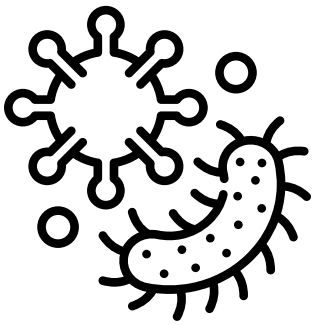
 Door handles	 Vaccines	 Antibiotics
 Talk to doctor	 Germs	 At a pharmacy
 Soap and water	 Hand washing	 Upset stomach

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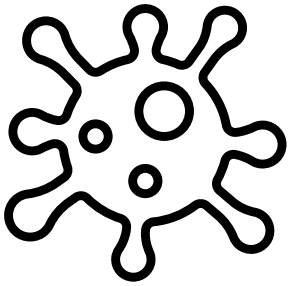
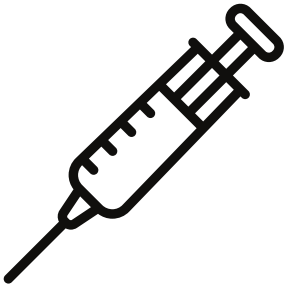
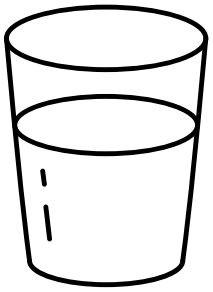
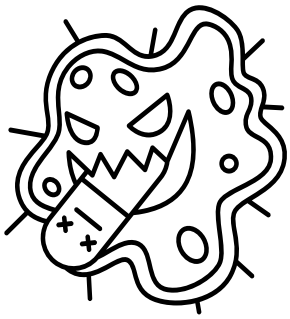
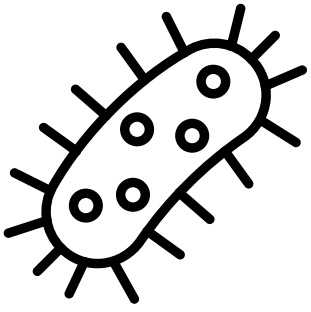
 Viruses	 Vaccines	 Hand sanitizer
 Antibiotics	 Talk to doctor	 Drink fluids
 Superbugs	 Microbiome	 Use a tissue

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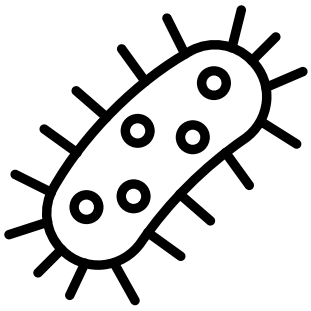
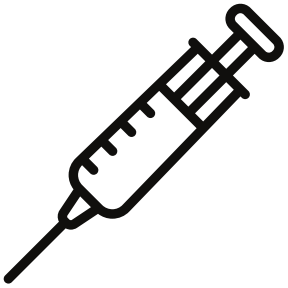
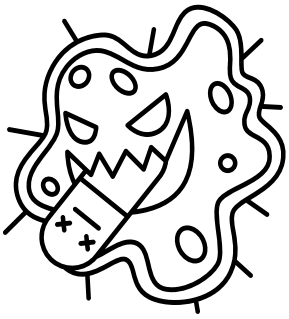
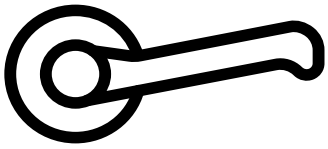
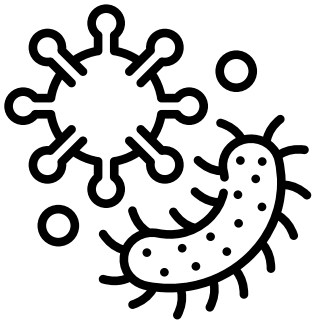
 Microbiome	 Vaccines	 Superbugs
 Door handles	 At a pharmacy	 Use a tissue
 Upset stomach	 Germs	 Soap and water

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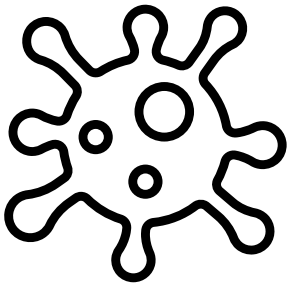
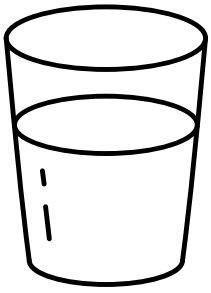
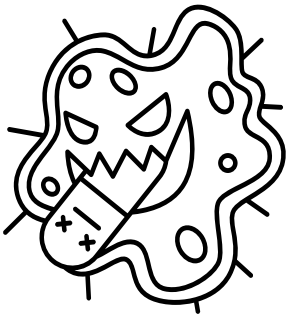
 Vaccines	 Upset stomach	 Hand washing
 Viruses	 Antibiotics	 Use a tissue
 Drink fluids	 Hand sanitizer	 Superbugs

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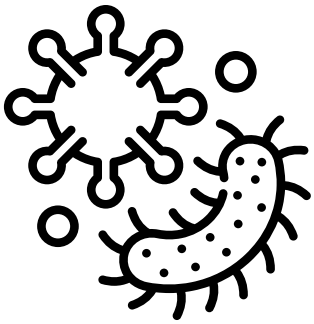
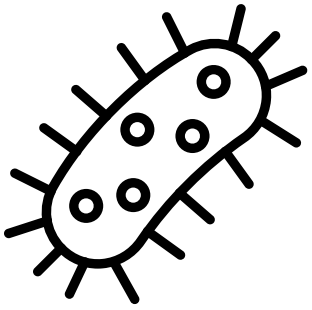
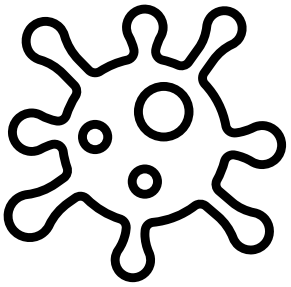
 Talk to doctor	 At a pharmacy	 Use a tissue
 Antibiotics	 Germs	 Soap and water
 Microbiome	 Hand washing	 Viruses

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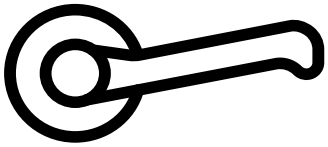
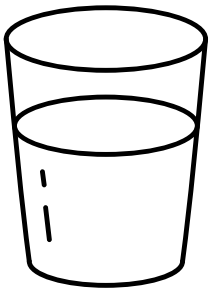
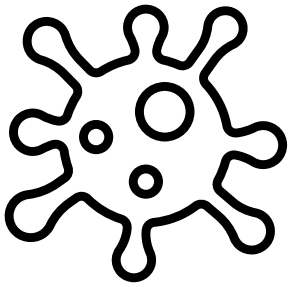
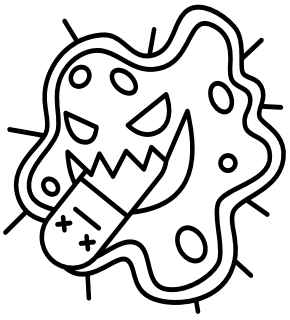
 Door handles	 Antibiotics	 Drink fluids
 Viruses	 Upset stomach	 Hand washing
 Hand sanitizer	 Superbugs	 Talk to doctor

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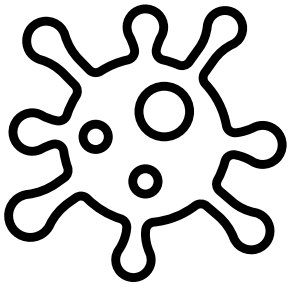
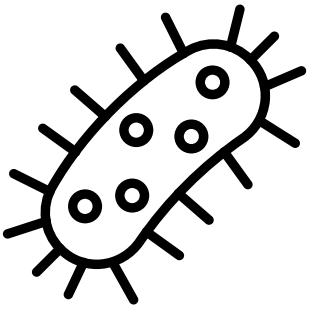
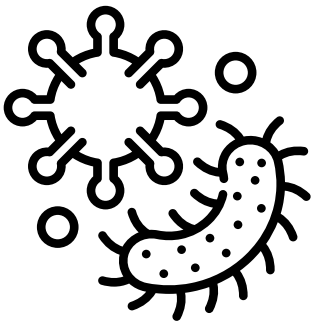
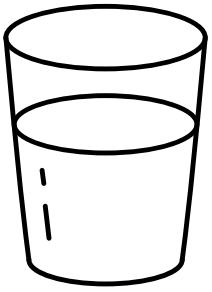
 Vaccines	 Viruses	 Hand washing
 At a pharmacy	 Soap and water	 Microbiome
 Germs	 Drink fluids	 Upset stomach

Version: J