



High School Science Virtual Learning

**Applied Biological Science**

**Bacterial Death**

April 14, 2020



# High School Applied Biological Science

## Lesson: April 14, 2020

### **Objective/Learning Target:**

Describe the importance of antimicrobials and determine the effectiveness of different antimicrobials.



## Let's Get Started:

1. Watch this [video](#) to learn about what an antimicrobial is.
2. Why do we need to use antimicrobials?
3. What antimicrobials have you used?



## Let's Get Started: **Answers**

1. Watch this [video](#) to learn about what an antimicrobial is.
2. Why do we need to use antimicrobials?
  - a. They act to kill bacteria to prevent sickness
3. What antimicrobials have you used?
  - a. Antibiotics, sanitizer, antibacterial soap, cleaning products, etc.



## Lesson Activity:

Click on the link to [this virtual lab](#) and follow the instructions on the left side of the screen to complete the lab to test the following antimicrobials for how effective they are at killing bacteria:

- Antibacterial soap
- Household bleach
- Household disinfectant
- Penicillin
- Amoxicillin
- Erythromycin

Lesson Activity: Answer showing Zones of inhibition (larger # means more effective)

Bacteria Species	Sterile Filter Paper (Control)	Anti-Bacterial Soap	Household Bleach	Household Disinfectant
Hemophilus influenzae	0	17	31	21
Staphylococcus aureus	0	14	30	20
Streptococcus pneumoniae	0	15	29	22

Bacteria Species	Penicillin	Amoxicillin	Erythromycin
Hemophilus influenzae	29	27	16
Staphylococcus aureus	10	12	25
Streptococcus pneumoniae	33	35	14



# Practice Questions

1. Describe the effects of the various antibiotic drugs you used. Were they all equally effective at controlling bacterial growth? How do you know?
2. Describe the effects of various chemical disinfectants you used. Were they all equally effective at controlling bacterial growth? Would you use them to halt the growth of bacteria in your home or on your body?
3. Compare the effectiveness of the different antibiotic drugs and chemical disinfectants. Which seem to be better at controlling bacterial growth? Why do you think this is so?
4. If you were a doctor treating a patient infected with *Staphylococcus aureus*, a bacterium that causes mild to moderate skin infections, which antibiotic would you prescribe? Why?
5. Can you think of any limitations of this technique of testing the effectiveness of antimicrobial agents? If a real person were involved, what other tests might give you more confidence in your results?



## Answer Key

Once you have completed the practice questions check with the work.

1. No; some were more effective with certain types of bacteria with different zones of inhibition
2. No; bleach was very effective but antibacterial soap was the least effective
3. Antibiotics generally were more effective than disinfectants
4. Erythromycin; it had the largest zone/most effective at killing bacteria
5. Limitations could be number of different types of bacteria, how long the incubation lasts, contamination, differing concentrations, etc.

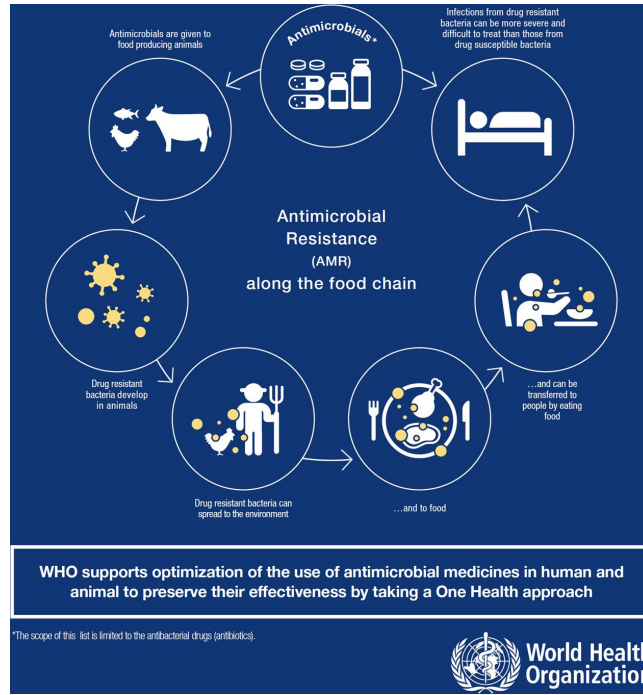




## Additional Practice Questions

- Research what is happening with antimicrobial resistance (AMR) by reading [this article](#).
- Create a visual factsheet on a sheet of paper that explains why AMR is on the rise.

# Additional Practice Questions - Answer



## Additional Practice

- View this [video](#) for more information on how researchers can test the effectiveness of different antibiotics.
- Check your understanding by completing this [quiz](#) on antimicrobials.