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Week 2: Microbiology Foundations

Module 2: Bacteria

Lesson: Should You Take Antibiotics? How Bacteria Shape Health Decisions

Lesson Overview	
Students learn how bacteria affect the body and how antibiotic use requires careful decision-making. They apply scientific evidence to determine when antibiotics are helpful and when they may cause harm.	
Learning Targets	Vocabulary
Explain why not all bacteria should be treated with antibiotics Use evidence to decide when antibiotics should be used Explain how bacterial behavior impacts health decisions	Antibiotics medicine that kills bacteria Pathogen bacteria that cause disease Resistance when bacteria are no longer affected by medicine Binary fission how bacteria reproduce quickly
Materials	Instructional Notes
Module Doctor evidence sheet (projected or printed) Paper or notebooks	This lesson builds on prior learning about bacteria vs. viruses and focuses on real-world decision-making. Students should understand that not all bacteria are harmful and that misuse of antibiotics can lead to resistance. Emphasize reasoning with evidence rather than guessing. Students may default to “medicine always helps”—this lesson challenges that misconception through structured decisions.



Learning Experience		
8 min	Opening	Display the scenario: “You have a sore throat and feel sick. Your friend says: ‘Just take antibiotics—you’ll get better faster.’” Present two choices: YES (take antibiotics) or NO (do not take antibiotics). Students: Decide YES or NO and write their choice (independent). Write one reason supporting their decision (individual output). Turn to a partner and compare responses. Share 1–2 claims and explanations with the class. Sentence frame: “I would choose ____ because antibiotics ____, which means ____.”
15 min	Module	Focus: How do bacteria behave, and how does that affect when we should treat them? Guiding Questions: • How do bacteria reproduce and spread? • What makes some bacteria harmful and others not? • When are antibiotics useful—and when are they not? Quick Checks: • Thumbs up/down: “Antibiotics work on all illnesses.” • Turn-and-talk: “When should antibiotics be used?” Sentence frame: “The most important idea is ____ because it helps decide ____.”
15 min	Application	Display or distribute four patient cases (A–D). Provide the “Doctor Evidence Sheet.” Explain: “You are doctors. Use evidence to decide if antibiotics should be used.” Students: Read assigned patient cases and highlight key symptoms. Review evidence statements and match evidence to each case. For each patient, decide whether to give antibiotics or do NOT give antibiotics. Write the decision and at least one piece of evidence. Choose one case to share. Patient Scenarios: A: Sore throat, mild fever, symptoms started yesterday B: High fever, severe throat pain, diagnosed bacterial infection C: Stomach cramps after undercooked food D: Runny nose, cough, no fever Sentence frame: “I would/would not give antibiotics because ____.” “Evidence: ____ shows that ____.”
2 min	Reflection	Why might taking antibiotics when you don’t need them be a problem? Sentence frame: “Taking antibiotics when not needed can ____, which leads to ____.”

2 min	Career Connections	Doctors, nurses, and pharmacists must decide when antibiotics are appropriate to protect both individual patients and the community. Incorrect use can lead to resistant bacteria that are harder to treat. Learning to use evidence in decision-making prepares students for real healthcare situations and responsible personal health choices.
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