Antibiotic Use and Antibiotic Resistance: Answers for Patients

Why are antibiotics used in health care?

- Antibiotics are used to treat bacterial infections by killing bacteria or by preventing bacteria from multiplying.
- Antibiotics do not work for viral infections, such as the common cold and influenza.
- Unfortunately, it is not uncommon for antibiotics to be prescribed when they aren't needed, especially for respiratory tract infections and urinary tract conditions.
- The Centers for Disease Control and Prevention (CDC) report that up to 50% of antibiotics in hospitals, clinics, and nursing homes are unnecessary or incorrectly prescribed.[1,2]

What is antibiotic resistance, and how does it happen?

- Bacteria that are not killed or controlled by antibiotics are considered "resistant."
- Antibiotic use, both appropriate and inappropriate, can contribute to antibiotic resistance.
- When antibiotics are used, bacteria develop defenses against them. Bacteria that can withstand antibiotic effects survive, multiply, and can be transferred among people.
- Resistance genes are sometimes shared among bacteria, providing instructions for withstanding antibiotics.

Why should we care about antibiotic resistance?

- The growing problem of antibiotic resistance means that more infections are difficult, and sometimes impossible, to treat.
- CDC estimates that 2 million people acquire resistant infections yearly in the U.S., and 23,000 die as a result.
- This problem impacts every area of health care, from general practice (e.g., routine outpatient infections) to advanced medical procedures, such as surgery and cancer treatment, in which patients are at high risk for infection.
- In addition to targeting bad bacteria, antibiotics can affect a person's helpful gut bacteria, leaving patients at risk for other serious infections, such as *Clostridium difficile* infection (CDI).

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Glossary of Terms

- **Antibiotics** are medicines used to treat infections caused by bacteria
- **Antibiotic resistance** is the ability of bacteria to withstand antibiotic effects
- **Antibiotic stewardship** is the process of improving antibiotic use
- **Common colds and influenza** are caused by viruses and cannot be treated with antibiotics.
- ***Clostridium difficile* infection (CDI)** is a gut bacterial infection that can cause symptoms from diarrhea to serious colon inflammation. Severe CDI can be fatal.
- **Infection surveillance.** Tracking of infections that occurs in health care facilities, state health departments, nationally, and globally.

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Minnesotans from animal, human, and environmental health are working together to be smart about antibiotic use and preventing antibiotic resistance!

www.health.state.mn.us/onehealthabx

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Is antibiotic resistance a problem in Minnesota?

- Minnesotans are not immune to the problems of antibiotic misuse and resistance.
- Methicillin-resistant *Staphylococcus aureus* (MRSA) infections can be acquired in Minnesota health care and community settings.
- CDI is also a problem in Minnesota, with many community infections occuring after outpatient antibiotic use (e.g., primary care or dental prescriptions).
- Minnesota Department of Health (MDH) tracks several types of resistant infections and CDI.[3]

How are health professionals fighting antibiotic resistance?

- CDC identifies key actions in the antibiotic resistance fight.[4]
- **Infection prevention.** Avoiding infections reduces use of antibiotics that might contribute to resistance.
- **Infection surveillance.** Collecting information about antibiotic-resistant infections and risk factors for these infections helps in development of prevention, control, and treatment strategies.
- **Antibiotic stewardship.** Improving the use of antibiotics is essential to prevent antibiotic resistance. Stewardship focuses on using antibiotics only when needed.
- **New ways to detect and treat bacterial infections.** Development of new approaches is ongoing by public and private entities.

What can you do to prevent antibiotic resistance?

- Wash your hands, cover your cough, and stay home when sick.
- Never pressure a health care provider to prescribe antibiotics.
- Ask your provider how to feel better without antibiotics
- Share concerns about antibiotic resistance with your provider.
- Take antibiotics exactly as prescribed.
- Never save antibiotics for the next time you become sick.
- Discard any leftover medication as directed (see side bar).
- Stay vaccinated to prevent illnesses treated with antibiotics.

References

1. CDC. Antibiotic Prescribing and Use in Hospitals and Long-Term care. https://www.cdc.gov/antibiotic-use/healthcare/index.html
2. CDC. Antibiotic Prescribing and Use in Doctor's Offices. https://www.cdc.gov/antibiotic-use/community/about/fast-facts.html
3. MDH. Healthcare-Associated Infections. https://www.health.state.mn.us/diseases/hai/haiarfaq.html#measure
4. CDC. About Antimicrobial Resistance. https://www.cdc.gov/drugresistance/about.html

Good to Know:

- Viral infections cannot be treated with antibiotics!
- Symptom relief is possible without antibiotics. Ask your health care provider.
- Your care provider might suggest "watchful waiting," where an antibiotic prescription is not filled right away. This helps ensure it is really needed.

Help to keep our lakes and streams free from contaminants!

Dispose of unused antibiotics and other pharmaceuticals properly:

- **DO** dispose medications at disposal sites or with approved mail-in disposal services.*
- **DON'T** put them down the drain or in the toilet.
- **DON'T** put them in the trash.

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*MPCA: Managing unwanted medications (www.pca.state.mn.us/living-green/managing-unwanted-medications)

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