

Antibiotic Resistance and Stewardship for Minnesota's Dental Professionals

Room for Improvement in Dental Antibiotic Prescribing

- Dentists prescribe approximately 10% of all antibiotics in U.S. outpatient settings¹.
- Dentists most commonly prescribe penicillins. This is consistent with dental prescribing guidelines². However, dentists also prescribe a large amount of more broad-spectrum antibiotics, including macrolides (e.g. azithromycin) and quinolones (e.g. ciprofloxacin). Some of these have limited indications in dental practice.
- A 2015 survey conducted in Minnesota revealed that dentists prescribe in more situations than recommended by professional practice guidelines³.

Antibiotic Resistance

- Antibiotic resistance is one of our most serious health threats.
- CDC estimates that each year in the U.S., 2 million people develop infections from antibiotic-resistant bacteria and 23,000 die from associated causes.
- The major driver of antibiotic resistance is our widespread antibiotic use.
- An essential part of modern medical care, antibiotics are used routinely to prevent and treat bacterial disease. However, the effectiveness of these important drugs is declining, as more bacteria develop resistance to antibiotics.

Other Consequences of Antibiotic Use

- Antibiotics have an effect on healthy gastrointestinal bacteria that can last after patients have finished the prescription. This leaves patients at risk for *Clostridium difficile* disease, a toxin-associated illness caused by the *C. difficile* bacterium which is able to thrive after antibiotic exposure.
- *C. difficile* can be acquired in health care settings and in the community.
- Antibiotics also carry a risk of side effects, including allergies and organ damage.
- Because of increasing resistance, some of the only antibiotics available to treat infections caused by resistant bacteria must be given intravenously and have a risk of toxic effects.



WORKING TOGETHER TO
**PROTECT HEALTH &
PRESERVE ANTIBIOTICS**

Antibiotic Stewardship

Antibiotic stewardship is the process of improving how we use antibiotics. Key elements of antibiotic stewardship include the five “D”s:

Diagnosis: using an antibiotic only when clinically indicated

Drug: choosing the right antibiotic for the infection and the patient

Dose: giving the right amount of antibiotic

Duration: giving the antibiotic for the right amount of time

De-escalation: switching to an antibiotic choice that is better-targeted to the infection when possible, and switching from intravenous to oral administration when possible.

Minnesota One Health Antibiotic Stewardship Collaborative

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



CDC's Core Elements of Outpatient Antibiotic Stewardship

The core elements can guide facility efforts to improve antibiotic use⁴.

- **Core Element 1: Commitment**
Demonstrate dedication to and accountability for optimizing antibiotic prescribing and patient safety.
- **Core Element 2: Action for policy and practice**
Implement at least one policy or practice to improve antibiotic prescribing, assess whether it is working, and modify as needed.
- **Core Element 3: Tracking and reporting**
Monitor antibiotic prescribing practices and offer regular feedback, or have clinicians assess their own antibiotic prescribing practices.
- **Core Element 4: Education and expertise**
Provide educational resources to clinicians and patients on antibiotic prescribing, and ensure access to needed expertise on optimizing antibiotic prescribing.

Antibiotic-Use Guidelines for Dentistry

- Prevention of infective endocarditis. J Am Dent Assoc 2008;139 Suppl:3s–24s.
- AHA/ACC focused Guideline for the Management of Patients With Valvular Heart Disease. Circulation 2017. Available online.
- Using prophylactic antibiotics prior to dental procedures in patients with prosthetic joints. J Am Dent Assoc 2015;146(1):11–16.e8.
- American Dental Association guidance for utilizing appropriate use criteria in the care of patients with orthopedic implants undergoing dental procedures. J Am Dent Assoc 2017;148(2):57-59.
- Guideline on antibiotic prophylaxis for dental patients at risk for infection. American Academy Pediatric Dentistry Reference Manual 2014;38(6):328–333. Available at <http://www.aapd.org/policies/>.
- Guideline on appropriate use of antibiotic therapy for pediatric dental patients. American Academy Pediatric Dentistry Reference Manual 2014;38(6):325–327. Available at: <http://www.aapd.org/policies/>.

References

1. US outpatient antibiotic prescribing variation according to geography, patient population, and provider specialty in 2011. CID 2015;60:1308–1316.
2. Antibiotic prescribing by general dentists in the United States. J Am Dent Assoc 2017;148(3):172–178.
3. Antibiotic stewardship opportunities in dentistry: survey on knowledge of antibiotic use among dentists. J Pub Health Dent 2017. Publication pending.
4. Core elements of outpatient antibiotic stewardship. CDC 2017. Available at: <https://www.cdc.gov/getsmart/community/improving-prescribing/core-elements/core-outpatient-stewardship.html>.

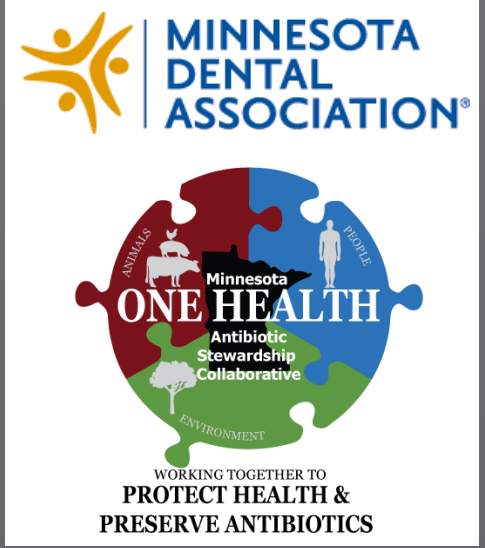
Other Resources

American Dental Association
Antibiotic Prophylaxis Prior to Dental Procedures
<http://www.ada.org/en/member-center/oral-health-topics/antibiotic-prophylaxis>

Minnesota One Health Antibiotic Stewardship Collaborative
Statewide effort to improve antibiotic use and decrease antibiotic resistance in human, animal, and environmental health.
<http://www.health.state.mn.us/onehealth/bx>

CDC's Get Smart: Know When Antibiotics Work in Doctor's Offices
<https://www.cdc.gov/getsmart/community/index.html>

This fact sheet was created in collaboration between the Minnesota Department of Health, Minnesota Board of Dentistry, and the Minnesota Dental Association.



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