



Plain language summary for “Antibiotics for the urgent management of symptomatic irreversible pulpitis, symptomatic apical periodontitis, and localized acute apical abscess: systematic review and meta-analysis—a report of the American Dental Association”

Malavika P. Tampi, MPH; Lauren Pilcher, MSPH; Olivia Urquhart, MPH; Sarah C. Pahlke, MS; Kelly K. O’Brien, MLIS; Alonso Carrasco-Labra, DDS, MSc

JADA 2019;150(12):1048-1050
<https://doi.org/10.1016/j.adaj.2019.11.001>

PLAIN LANGUAGE SUMMARY

The American Dental Association’s Council on Scientific Affairs and Center for Evidence-Based Dentistry, in collaboration with a guideline panel of subject matter experts, published a clinical practice guideline in the November issue of *The Journal of the American Dental Association*. The guideline presents recommendations on the use of antibiotics for the urgent management of dental pain and intraoral swelling in adults who have the ability to fight a bacterial infection.¹ This systematic review and meta-analysis presents the evidence informing the effect (benefits and harms) of antibiotic use on this patient population and the certainty (quality) of this evidence.²

WHICH SPECIFIC ORAL CONDITIONS ARE BEING ADDRESSED IN THIS SYSTEMATIC REVIEW?

Caries can progress to inflammation of the pulp (called symptomatic irreversible pulpitis with or without symptomatic apical periodontitis) and further progress to a contained infection (called pulp necrosis and symptomatic apical periodontitis with or without localized acute apical abscess). These conditions cause severe pain and, sometimes, intraoral swelling. In this summary, these conditions are collectively referred to as pulpal- and periapical-related dental pain and associated intraoral swelling.

WHY IS THIS SYSTEMATIC REVIEW IMPORTANT?

Patients are often prescribed antibiotics alone or as an adjunct to definitive, conservative dental treatment (DCDT) or tooth-preserving treatments as a means to relieve dental pain and associated intraoral swelling. It is important for clinicians to prescribe antibiotics in clinical scenarios in which they are absolutely needed because their use, whether appropriate or inappropriate, can contribute to a future in which antibiotics are not effective at fighting bacterial infections.³ This systematic review was used to collect and synthesize evidence to inform the first comprehensive guideline on appropriate antibiotic prescribing for pulpal- and periapical-related dental pain and associated intraoral swelling for general dentists in the United States.¹

This information is important for dentists who prescribe antibiotics for these conditions, as well as for patients who seek care in settings in which DCDT, such as pulpectomy, pulpotomy, nonsurgical root canal therapy, and incision and drainage of abscess may not always be available (for example, hospital emergency departments). However, this information is also important for practitioners and patients in settings in which DCDT, with or without the additional use of antibiotics, can be delivered.

HOW WAS EVIDENCE COLLECTED?

In collaboration with the review authors, an informationist modified and updated 2 preexisting systematic review search strategies to identify relevant randomized controlled trials (RCTs) published from October 2013 through September 2019. In addition, we conducted a search of the literature to identify systematic reviews reporting on harms or undesirable effects of antibiotics published from June 2013 through September 2019, and we retrieved reports from relevant health agencies. We used the Grading of Recommendations, Assessment, Development and Evaluation approach to assess the certainty of the evidence on the benefits and harms of prescribing antibiotics for dental pain and associated intraoral swelling in adults who can fight a bacterial infection when DCDT is not available and when DCDT is available.

WHAT ARE THE RESULTS?

What new evidence did we find?

We found no new RCTs with data that could be added to the evidence from the 3 RCTs already reported in the 2 previously published systematic reviews. However, we identified 8 observational studies that provided evidence on outcomes of harm.

Does antibiotic use for dental pain and associated intraoral swelling provide a benefit?

We used RCT data to determine the magnitude of the potential benefits of antibiotics for dental pain and associated intraoral swelling when DCDT is and is not available. According to these data, antibiotics with or without DCDT may provide an increase or decrease in the relief of pain or intraoral swelling after 24 hours through 7 days follow-up (very low to low certainty).

Does antibiotic use for dental pain and associated intraoral swelling cause harm?

We used data from the same 3 RCTs and the 8 observational studies to determine the harms associated with antibiotic use. Data from the observational studies suggested that the use of antibiotics may cause harm, like *Clostridioides difficile* infections (overgrowth of a life-threatening bacteria after antibiotic use) and antibiotic-resistant infections (in which antibiotics become less effective at killing bacteria), while data from the RCTs suggested that the use of antibiotics may cause side effects like diarrhea and malaise. The available evidence suggests that antibiotic use probably contributes to both small to moderate individual-level harms (very low to low certainty) and potentially large population-level harms (very low to moderate certainty).

WHAT WERE THE LIMITATIONS OF THIS REVIEW AND HOW CAN FUTURE RESEARCH HELP?

This review was limited by a lack of large, well-done RCTs reporting individual- and population-level data regarding the benefits and harms associated with antibiotic use for dental pain and associated intraoral swelling.

WHAT DOES THIS MEAN FOR MY CLINICAL PRACTICE?

Evidence suggests that antibiotics, prescribed alone or as adjuncts to DCDT, can sometimes reduce, but can also not reduce, dental pain and associated intraoral swelling. The evidence also suggests that antibiotic use can contribute to serious potential harms, such as antibiotic-resistant infections and even death due to opportunistic infections. Clinical decision making is not limited to considering the benefits and harms of a treatment and should include additional factors such as patients' values and preferences, acceptability of a treatment by key stakeholders, and the feasibility of providing the treatment in a given setting.¹ ■

Ms. Tampi is a systematic review and guideline methodologist and manager, Center for Evidence-Based Dentistry, Science Institute, American Dental Association, Chicago, IL.

Ms. Pilcher is a systematic review and guideline methodologist and research assistant, Center for Evidence-Based Dentistry, Science Institute,

American Dental Association, Chicago, IL. Address correspondence to Ms. Pilcher, Center for Evidence-Based Dentistry, Science Institute, American Dental Association, 211 E. Chicago Ave, Chicago, IL 60611, e-mail pilcherl@ada.org.

Ms. Urquhart is a health data analyst, Evidence Synthesis and Translation Research, Science Institute, American Dental Association, Chicago, IL.

Ms. Pahlke is a research assistant, Center for Evidence-Based Dentistry, Science Institute, American Dental Association, Chicago, IL.

Ms. O'Brien is an informationist, Library & Archives, American Dental Association, Chicago, IL.

Dr. Carrasco-Labra is the senior director, Evidence Synthesis and Translation Research, Science Institute, American Dental Association, Chicago, IL; and an adjunct assistant professor, Department of Oral and Craniofacial Health Sciences, School of Dentistry, University of North Carolina at Chapel Hill, Chapel Hill, NC.

Disclosure. None of the authors reported any disclosures.

1. Lockhart P, Tampi M, Abt E, et al. Evidence-based clinical practice guideline on antibiotic use for the urgent management of pulpal- and periapical-related dental pain and intraoral swelling: a report of the American Dental Association. *JADA*. 2019; 150(11):906-921.e12.

2. Tampi M, Pilcher L, Urquhart O, et al. Antibiotics for the urgent management of symptomatic irreversible pulpitis, symptomatic apical periodontitis, and localized acute apical abscess: systematic review and meta-analysis—a report of the American Dental Association. *JADA*. 2019; 150(12):e179-e216.

3. Centers for Disease Control and Prevention. CDC Telebriefing on today's drug-resistant health threats. Available at: https://www.cdc.gov/media/releases/2013/t0916_health-threats.html. Accessed July 30, 2019.