

# Guidelines for Implementing Antibiotic Stewardship in Dental Industry

Clinicians as effective communicators of evidence

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# Conflict of interest

- Senior Director, ADA Evidence Synthesis and Translation Research
- Member/close collaborator:

## Cochrane review and methods groups:

- Oral Health
  - Wounds
  - GRADEing (Applicability and recommendation methods)
  - Patient reported outcomes
- Member of the GRADE working group
  - **No financial conflict of interest**

## Objectives

- Describe current trends for antibiotic use in dentistry
- Describe most important challenges preventing the dental community from implementing appropriate antibiotic stewardship
- Highlight current efforts to facilitate the implementation of antibiotic stewardship in dentistry

# About the American Dental Association



- Advocates for public health and promotes the art and science of dentistry
- Together with our 163,000+ members, driving dentistry forward for 160 years.

## Mission

Empowering the dental profession to achieve optimal health for all.

# Antibiotic overprescription

JAMA Network | **Open**™



Original Investigation | Infectious Diseases

## Assessment of the Appropriateness of Antibiotic Prescriptions for Infection Prophylaxis Before Dental Procedures, 2011 to 2015

Katie J. Suda, PharmD, MS; Gregory S. Calip, PharmD, MPH, PhD; Jifang Zhou, MD, MPH; Susan Rowan, DDS; Alan E. Gross, PharmD, BCPS, BCIDP; Ronald C. Hershov, MD; Rose I. Perez, BS; Jessina C. McGregor, PhD; Charlesnika T. Evans, MPH, PhD

**OBJECTIVE** To assess the appropriateness of antibiotic prophylaxis before dental procedures using Truven, a national integrated health claims database.



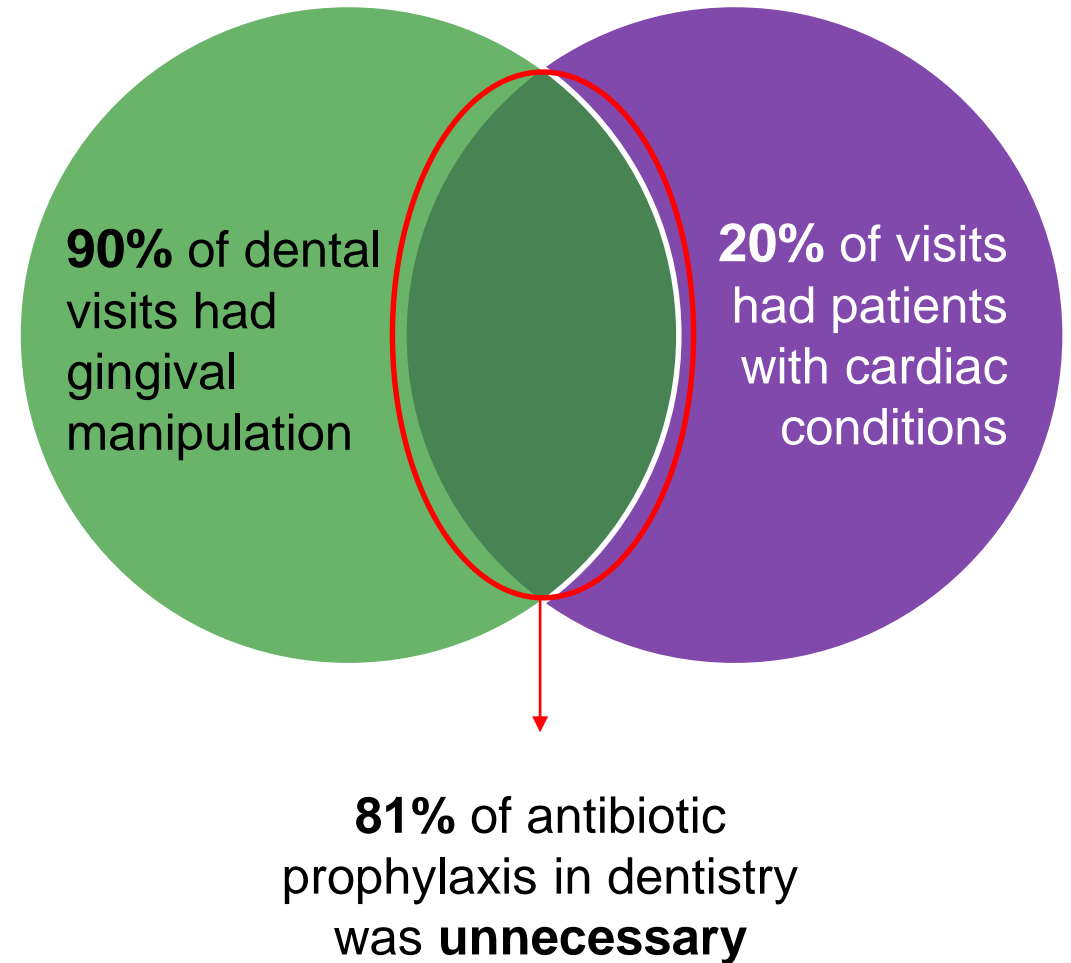
10%



91,438



168,420



- Suda KJ, et al. Assessment of the Appropriateness of Antibiotic Prescriptions for Infection Prophylaxis Before Dental Procedures, 2011 to 2015. JAMA Netw Open. 2019 May 3;2(5):e193909.

- Slide from Suda K. 2019 IADR Annual Conference , Vancouver

# Core elements of outpatient antibiotic stewardship



**Commitment:** demonstrated dedication to and accountability for optimizing antibiotic prescribing and patient safety



**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



**Tracking and reporting:** monitor antibiotic prescribing practices and offer regular feedback to clinicians or have clinicians assess their own antibiotic use



**Education and expertise:** provide educational resources to clinicians and patients on antibiotic prescribing and ensure access to needed expertise on antibiotic prescribing

- Limited tools are available for general and specialty dental practitioners

# FDI - Antibiotic stewardship in dentistry

STEWARDSHIP

## The need for global guidance on antibiotic stewardship in dentistry

Susan Sanderson, OBE, (left), President, British Dental Association and Professor David M Williams (right), Professor of Global Oral Health, Queen Mary University of London, UK



Almost 10% of antibiotics are prescribed by dentists, who should therefore be involved in the development and implementation of national action plans to counter antibiotic resistance. Prescribing decisions are normally made by dentists without restriction or prescribing guidance, which can lead to over-prescribing. Optimizing the use of antibiotics in dentistry therefore requires global attention to achievable and consistently disseminated stewardship policies. The FDI World Dental Federation is active in raising awareness of the need for effective stewardship by dentists and it acts as a resource for National Dental Associations in the implementation of guidelines on appropriate prescribing by dentists.

It is estimated that up to 10% of antibiotics are prescribed in primary care dentistry. Consequently, dentistry must be taken into account in the development of any policy relating to antibiotic resistance and dentists must be involved in the development and implementation of national action plans. Indeed, dentists and their teams are a valuable resource – the daily provision of dental services presents opportunities where dentists not only improve their own prescribing, but also assist the wider health community to educate and advise patients and the public about the risks of inappropriate use of antibiotics and prevention of oral disease (1). Adopting such an approach is in line with the WHO Global Action Plan. Objective 4: Optimize the use of antimicrobial medicines in human and animal health includes the implementation of Antibiotic Stewardship (ABS) programmes in all settings (2).

Optimizing the use of antibiotics in dentistry requires global attention to achievable and consistently disseminated stewardship policies. The principles of effective stewardship are laid out in Table 1. Primary care dentists are largely independent prescribers and their prescribing decisions are normally made without restriction and supervision. Furthermore, prescribing guidance, if it exists, varies from country to country. Over-prescribing of antibiotics in dental practice remains to be confronted in some countries although, in others, good progress is being made. For example, it has been estimated that 81% of prescriptions were issued

used as first-line treatments rather than the prescription of antibiotics.

- Dental pain is primarily an inflammatory condition which can be managed by the appropriate use of analgesics and local measures to the site of pain.
- It is important to educate and communicate with patients about the choices made for management of dental pain.

The occasions where antibiotics are genuinely needed in a dental care situation are relatively rare. Therefore, engaging effective stewardship measures should lead dentists to be more confident in their prudent use of antibiotics. Indeed, there is evidence that this is so. For example, in England, there was a 24.8% reduction in antimicrobial prescriptions between 2013 and 2017, with an 8.3% decrease from 2016 to 2017 (5). However, there are challenges in implementing good prescribing practices in primary care dentistry. Patients who suffer dental pain, whether from an inflammatory source or an infection, invariably present unscheduled and distressed. Point-of-care tests, making a diagnosis, presenting treatment options, achieving valid consent and carrying out treatment all take significant time within an already busy appointment book. These hurdles are often compounded by the anxiety and distress of the patient who, understandably, believes that antibiotics will solve their problem and would certainly prefer tablets to a more appropriate clinical intervention

Table 1: Stewardship in dental practice

### Guidelines

- Establish national ABS guidelines for dentistry – international ones can be adapted
- Make available updated evidence-based guidelines on infection management in dental practice (prevention, diagnosis, treatment) (7, 8, 9)

### Education of dental teams

- Best if associated with other ABS interventions

There should be:

- Consistency of AMR teaching in undergraduate curricula
- CPD available throughout professional life in contextualised infection management to include antibiotic prescribing, stewardship, feedback mechanisms

Communication skills must be taught to achieve:

- Management of patients' perceptions, concerns, beliefs and expectations
- Management of clinicians' own behavioural tendencies

### Audit and feedback

- Clinicians benefit from quantitative and qualitative data on own prescribing practices

Monitoring in several ways:

- Automated surveillance and feedback via electronic data (10)
- Manual data collection by dental teams via clinical record card review (11, 12)

### Education material for patients

- As members of wider healthcare community, dentists can assist in delivering AMR messages

Messaging specific to oral health should include (13)

- "Antibiotics don't cure toothache"
- Pain relief often best achieved with analgesia. Dentists are first line of care for dental problems
- Prevention of oral disease reduces the likelihood of oral infections



**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

#### COVER STORY

### The use of prophylactic antibiotics prior to dental procedures in patients with prosthetic joints

Evidence-based clinical practice guideline for dental practitioners—a report of the American Dental Association Council on Scientific Affairs

Thomas P. Sollecito, DMD, FDS RCSEd; Elliot Abt, DDS, MS, MSc; Peter B. Lockhart, DDS, FDS RCSEd, FDS RCPS; Edmond Truelove, DDS, MSD; Thomas M. Paumier, DDS; Sharon L. Tracy, PhD; Malavika Tampl, MPH; Eugenio D. Beltrán-Aguilar, DMD, MPH, MS, DrPH; Julie Frantsve-Hawley, PhD

#### ABSTRACT

**Background.** A panel of experts (the 2014 Panel) convened by the American Dental Association Council on Scientific Affairs developed an evidence-based clinical practice guideline (CPG) on the use of prophylactic antibiotics in patients with prosthetic joints who are undergoing dental procedures. This CPG is intended to clarify the “Prevention of Orthopaedic Implant Infection in Patients Undergoing Dental Procedures: Evidence-based Guideline and Evidence Report,” which was developed and published by the American Academy of Orthopaedic Surgeons and the American Dental Association (the 2012 Panel).

**Types of Studies Reviewed.** The 2014 Panel based the current CPG on literature search results and direct evidence contained in the comprehensive systematic review published by the 2012 Panel, as well as the results from an updated literature search. The 2014 Panel identified 4 case-control studies.

**Results.** The 2014 Panel judged that the current best evidence failed to demonstrate an association between dental procedures and prosthetic joint infection (PJI). The 2014 Panel also presented information about antibiotic resistance, adverse drug reactions, and costs associated with prescribing antibiotics for PJI prophylaxis.

**Practical Implications and Conclusions.** The 2014 Panel made the following clinical recommendation: In general, for patients with prosthetic joint implants, prophylactic antibiotics are not recommended prior to dental procedures to prevent prosthetic joint infection. The practitioner and patient should consider possible clinical circumstances that may suggest the presence of a significant medical risk in providing dental care without antibiotic prophylaxis, as well as the known risks of frequent or widespread antibiotic use. As part of the evidence-based approach to care, this clinical recommendation should be integrated with the practitioner’s professional judgment and the patient’s needs and preferences.

**Key Words.** Antibiotic prophylaxis; evidence-based dentistry; practice guidelines; prostheses; joint replacement.

JADA 2015;146(1):11-16

<http://dx.doi.org/10.1016/j.adaj.2014.11.012>

**Evidence-based clinical practice guideline on the use of antibiotics for the emergency management of symptomatic irreversible pulpitis, symptomatic apical periodontitis, and localized acute apical abscess:**

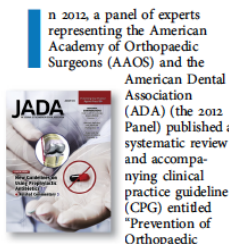
A report from the American Dental Association

November 2019  
JADA

**Evidence-based clinical practice guideline on the use of antibiotics for the emergency management of dental pain and swelling:**

A report from the American Dental Association

2019  
Emergency medicine Journal



This article has an accompanying online continuing education activity available at <http://jada.ada.org/ce/home>. Copyright © 2015 American Dental Association. All rights reserved.



**Table 2.** Summary of clinical recommendations for the urgent management of symptomatic irreversible pulpitis with or without symptomatic apical periodontitis, pulp necrosis and symptomatic apical periodontitis, and pulp necrosis and localized acute apical abscess.

Setting	Clinical questions	Expert panel recommendations and good practice statements
Emergent situations in dental settings where pulpotomy, pulpectomy, root canal debridement, non-surgical root canal treatment, or incision for drainage of abscess are <b>not</b> an immediate option (same visit).	1. For immunocompetent <sup>†</sup> adults with <b>symptomatic irreversible pulpitis<sup>†</sup> with or without symptomatic apical periodontitis<sup>‡</sup></b> , should we recommend the use of oral systemic antibiotics compared with the non-use of oral systemic antibiotics to improve health outcomes?	<b>Recommendation 1:</b> The expert panel recommends dentists <b>do not prescribe oral systemic antibiotics for immunocompetent<sup>†</sup> adults with symptomatic irreversible pulpitis<sup>†</sup> with or without symptomatic apical periodontitis<sup>‡</sup></b> (Strong recommendation, low certainty in the evidence). Clinicians should refer <sup>§</sup> patients for definitive, conservative dental treatment while providing interim monitoring. <sup>¶</sup>
	2. For immunocompetent <sup>†</sup> adults with <b>pulp necrosis and symptomatic apical periodontitis<sup>‡</sup> or localized acute apical abscess<sup>#</sup></b> , should we recommend the use of oral systemic antibiotics compared with the non-use of oral systemic antibiotics to improve health outcomes?	<b>Recommendation 2A:</b> The expert panel suggests dentists <b>do not prescribe oral systemic antibiotics for immunocompetent<sup>†</sup> adults with pulp necrosis and symptomatic apical periodontitis<sup>‡</sup></b> (Conditional recommendation, very low certainty in the evidence). Clinicians should refer <sup>§</sup> patients for definitive, conservative dental treatment while providing interim monitoring. <sup>¶</sup> If definitive, conservative dental treatment is not feasible, a delayed prescription <sup>**</sup> for oral amoxicillin (500 milligrams, three times a day, 3-7d) or oral penicillin VK (500 milligrams, four times a day, 3-7d) <sup>††</sup> should be provided.  <b>Recommendation 2B:</b> The expert panel suggests dentists <b>prescribe oral amoxicillin (500 milligrams, three times a day, 3-7d) or oral penicillin VK (500 milligrams, four times a day, 3-7d)<sup>††</sup></b> for immunocompetent <sup>†</sup> adults with <b>pulp necrosis and localized acute apical abscess<sup>#</sup></b> (Conditional recommendation, very low certainty in the evidence). Clinicians should additionally provide urgent referral <sup>§</sup> as definitive, conservative dental treatment should not be delayed. <sup>¶</sup>
	No corresponding clinical question	<b>Good practice statement:</b> The expert panel suggests dentists <b>prescribe oral amoxicillin (500 milligrams, three times a day, 3-7d) or oral penicillin VK (500 milligrams, four times a day, 3-7d)<sup>††</sup></b> for immunocompetent <sup>†</sup> adults with <b>pulp necrosis and acute apical abscess with systemic involvement<sup>##</sup></b> . Clinicians should additionally provide urgent referral <sup>§</sup> as definitive, conservative dental treatment should not be delayed. <sup>¶</sup> If the clinical condition worsens or if there is concern for deeper space infection or immediate threat to life, refer patient for emergent evaluation. <sup>†††</sup>
Emergent situations in dental settings and pulpotomy, pulpectomy, or root canal debridement, non-surgical root canal treatment, or incision for drainage of abscess are an immediate option (same visit).	3. For immunocompetent <sup>†</sup> adults with <b>pulp necrosis and symptomatic apical periodontitis<sup>‡</sup> or localized acute apical abscess<sup>#</sup></b> , should we recommend the use of oral systemic antibiotics compared with the non-use of oral systemic antibiotics as adjuncts to definitive, conservative dental treatment <sup>†††</sup> to improve health outcomes?	<b>Recommendation 3:</b> The expert panel recommends dentists <b>do not prescribe oral systemic antibiotics as an adjunct to definitive, conservative dental treatment<sup>†††</sup> for immunocompetent<sup>†</sup> adults with pulp necrosis and symptomatic apical periodontitis<sup>‡</sup> or localized acute apical abscess<sup>#</sup></b> (Strong recommendation, very low certainty in the evidence).
	4. For immunocompetent <sup>†</sup> adults with <b>symptomatic irreversible pulpitis<sup>†</sup> with or without symptomatic apical periodontitis<sup>‡</sup></b> , should we recommend the use of oral systemic antibiotics compared with the non-use of oral systemic antibiotics as adjuncts to definitive, conservative dental treatment <sup>†††</sup> to improve health outcomes?	<b>Recommendation 4:</b> The expert panel suggests dentists <b>do not prescribe oral systemic antibiotics as an adjunct to definitive, conservative dental treatment<sup>†††</sup> for immunocompetent<sup>†</sup> adults with symptomatic irreversible pulpitis<sup>†</sup> with or without symptomatic apical periodontitis<sup>‡</sup></b> (Conditional recommendation, very low certainty in the evidence).
	No corresponding clinical question	<b>Good practice statement:</b> The expert panel suggests dentists <b>perform urgent definitive, conservative dental treatment<sup>†††</sup> in conjunction with prescribing oral amoxicillin (500 milligrams, three times a day, 3-7d) or oral penicillin VK (500 milligrams, four times a day, 3-7d)<sup>††</sup></b> for immunocompetent <sup>†</sup> adults with <b>pulp necrosis and acute apical abscess with systemic involvement<sup>##</sup></b> . If the clinical condition worsens or if there is concern for deeper space infection or immediate threat to life, refer for emergent evaluation. <sup>†††</sup>

Footnotes

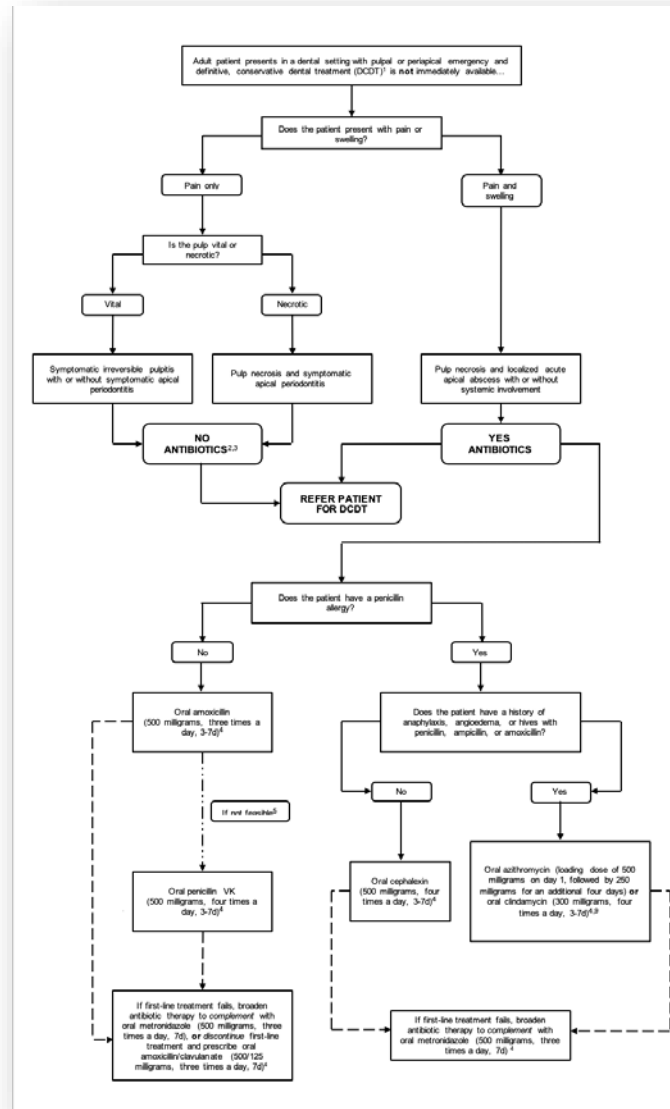
# Key recommendations

- Multidisciplinary expert panel
- Supported by a systematic review of the literature including patient-important outcomes
- Systematic review on patients' values, preferences, perceptions and expectations
- Algorithms to facilitate the implementation of recommendations
- Accompanying material: "For the patient" page

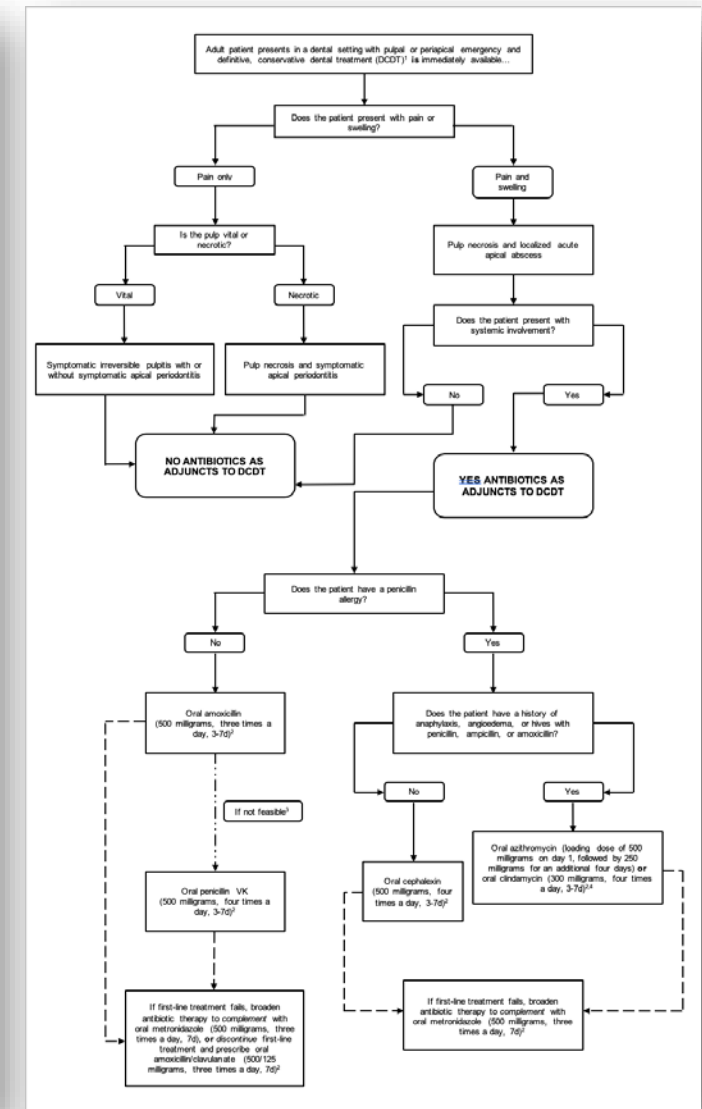
# Clinical pathways for the treatment of immunocompetent adults presenting with dental pain and swelling

\* 2019 Evidence-based clinical practice guideline on the use of antibiotics for the emergency management of symptomatic irreversible pulpitis, symptomatic apical periodontitis, and localized acute apical abscess: A report from the American Dental Association

MANUSCRIPT ON PREPARATION



Dental treatment is **NOT** immediately available



Dental treatment is **IS** immediately available

While in medicine...

Viral  
infection = Antibiotic



in dentistry...

Dental  
infection ~~=~~ Antibiotic

... almost all are caused by bacteria



**Education and expertise:** provide educational resources to clinicians and patients on antibiotic prescribing and ensure access to needed expertise on antibiotic prescribing

“Antibiotics don’t cure toothache”



Adopting specific messaging for dentistry



**NSAIDs**

Enhancing alternative messages

Implementation of shared decision-making



Desirable and undesirable consequences clearly defined



Clinicians and patients partnering to achieve better outcomes

Coordination with other health professionals



Better referral system for dental emergencies



Collaboration with medical specialties

## In summary

- Dentists - 10% of total antibiotics prescriptions
- 81% of antibiotic prophylaxis in dentistry (2011-2015) was unnecessary
- Dentists need tools to effectively implement stewardship initiatives in practice
- The ADA is focusing efforts on:
  - Evidence-based clinical practice guidelines
  - Appropriate messaging for patients and clinicians
  - Implementation of shared decision-making
  - Better coordination with other health professionals