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Research Article

An Urgent Update on Medication Prescription in Dental Practice: Navigating Antimicrobial Stewardship and Analgesic Paradigms

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Abstract

Endophytic microorganisms play an important role in the growth, stability and metabolism of plants, including medicinal species. The aim of this study was to isolate and identify strains of endophytic bacteria and fungi associated with licorice plants (Glycyrrhiza glabra and Glycyrrhiza uralensis) collected from different natural conditions. A total of 142 isolates were isolated, including 92 bacterial and 50 fungal. Their morphological and molecular identification was carried out, as well as an assessment of antagonistic activity against phytopathogens (Fusarium oxysporum, Alternaria alternata). The results show a high biodiversity of licorice endophytic microflora and confirm its potential use in biotechnology and agriculture.

Key Words: endophytes; licorice; Glycyrrhiza; microbiota; biocontrol; antagonism; biotechnology

Introduction

We read with great interest the clinical updates in dentistry and wish to contribute with a timely discussion on the rapidly evolving landscape of medication prescription.

The period of 2023-2025 has seen significant publications on PubMed that challenge long-standing practices, particularly concerning antimicrobial stewardship and postoperative pain management. This letter aims to synthesize these recent findings and advocate for an urgent update to our collective prescribing habits.

The overuse and misuse of antibiotics represent a critical public health threat, and dental practitioners are responsible for approximately 10% of all antibiotic prescriptions in some healthcare systems [1]. For decades, the prophylactic and therapeutic use of antibiotics in dentistry has often been based on tradition rather than robust evidence. Recent high-quality studies are now providing the clarity needed to refine our approach.

A pivotal 2023 systematic review and meta-analysis by Cope et al. [2] conclusively demonstrated that for irreversible pulpitis, the prescription of antibiotics provides no meaningful benefit in pain relief or reduction of postoperative complications compared to placebo when definitive dental treatment (i.e., root canal treatment or extraction) is performed. This evidence firmly establishes that the management of dental pain of pulpal origin is primarily mechanical, not pharmacological, and antibiotics are unequivocally not indicated. Similarly, a 2024 prospective study by Suda et al. [3] on the management of acute apical abscesses in healthy patients found that incision and drainage alone, without systemic antibiotics, was non-inferior to incision and drainage with a course of amoxicillin in terms of resolution of swelling and pain. This supports a paradigm shift towards a more conservative, source-control-focused approach, reserving antibiotics for patients with signs of systemic involvement (e.g., fever, lymphadenopathy) or compromised host defenses.

Furthermore, the choice of antibiotic is also under scrutiny. In response to rising clindamycin resistance and its association with Clostridioides difficile infections, a 2025 clinical practice guideline published in the Journal of the American Dental Association strongly recommends against the routine use of clindamycin for penicillin-allergic patients [4]. The guideline advocates for cephalexin or azithromycin as safer and more effective first-line alternatives, marking a significant departure from previous common practice.

Parallel to the revolution in antimicrobial prescribing, the management of acute postoperative dental pain is undergoing a necessary transformation driven by the opioid crisis. The prescription of opioid analgesics by dentists has been identified as a significant gateway to misuse and dependence, particularly among young adults [5]. A landmark 2024 randomized controlled trial by Moore et al. [6] compared a combination of ibuprofen and acetaminophen to a combination of hydrocodone-acetaminophen for the management of pain following surgical third molar extraction. The study compellingly demonstrated that the non-opioid ibuprofen-acetaminophen regimen provided superior pain control with fewer adverse effects. This finding is reinforced by a 2023 consensus statement from an expert panel of

oral and maxillofacial surgeons, which endorsed multimodal, non-opioid analgesia as the new standard of care for most dental surgical procedures [7].

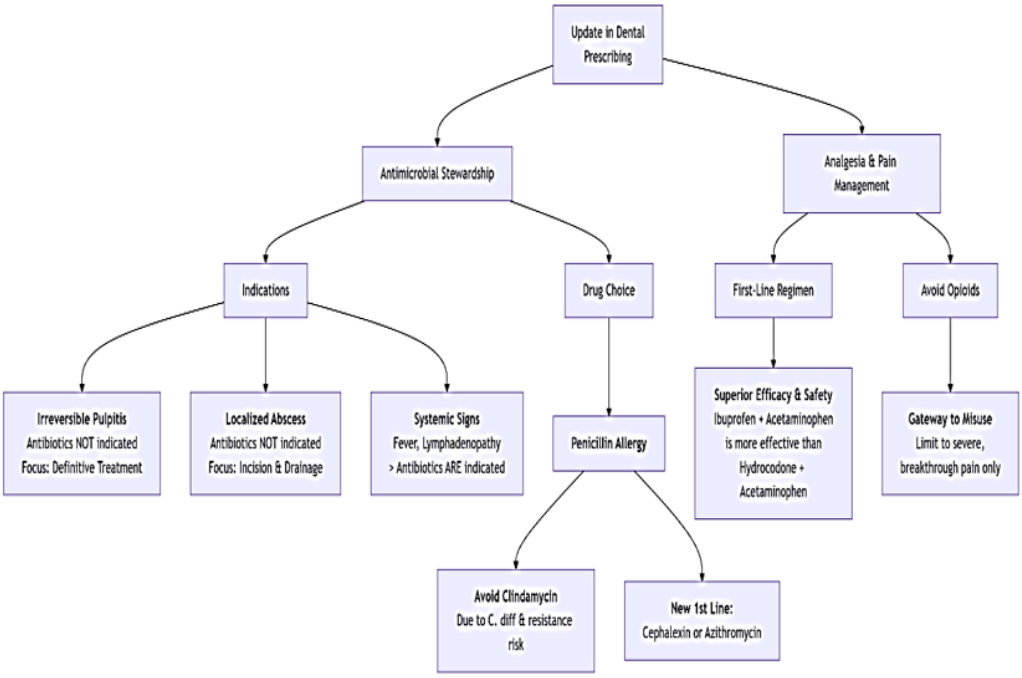

Figure 1: The implications of recent publications that demand immediate integration into daily practice

The implications of these recent publications are profound and demand immediate integration into daily practice. We propose the following key recommendations for an evidence-based update to dental prescribing (Figure 1):

1. Antibiotics for Pulpal Pain and Abscesses: Antibiotics are not indicated for irreversible pulpitis or localized acute apical abscesses without systemic signs. The primary treatment must be definitive dental intervention (e.g., endodontic therapy, extraction, incision and drainage).

2. Antibiotic Choice in Penicillin Allergy: Clindamycin should no longer be the default choice for penicillin-allergic patients. Cephalexin (for non-anaphylactic allergies) or azithromycin should be considered as preferred alternatives.

3. First-Line Analgesia: A combination of ibuprofen (400-600 mg) and acetaminophen (500-650 mg) should be the first-line analgesic regimen for acute postoperative dental pain. Opioids should be reserved for rare cases of severe pain not managed by this combination and prescribed in limited quantities (e.g., 3-5 tablets).

In conclusion, the evidence from 2023-2025 provides a clear roadmap for more responsible and effective medication prescription in dentistry. By embracing antimicrobial stewardship and adopting non-opioid multimodal analgesia, the dental profession can significantly contribute to public health efforts against antibiotic resistance and the opioid epidemic while providing superior patient care. We urge dental educators, professional organizations, and journal editors to widely disseminate these critical updates.

Conflicts of Interest:

The authors declare no conflicts of interest.

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