



# Could Collaboration between Emergency Department Clinicians and Dentists More Effectively Treat Patients with Acute Dental Pain?

Ciarrocca K, Giwa J, Reside G, Matthews N, Phillips C and White R\*

Adams School of Dentistry, University of North Carolina, USA

## Abstract

Clinicians in emergency departments and urgent care centers in the United States are often confronted with patients seeking relief from acute dental pain, usually a “toothache”. These providers often have limited knowledge of current, evidence-based management of oral pain. Consequently, patients are treated with immediate acting opioid drugs and antibiotics. We propose collaboration between emergency or urgent care providers and dentists, facilitated by telemedicine, allowing the dentist to be on-call, but not at the clinical site. With collaboration between the ED clinicians and dentists to discuss possible alternate treatment options including NSAIDs and intraoral injections of bupivacaine, fewer opioid drugs might be prescribed and lower leftover doses available for misuse.

**Keywords:** Acute dental pain; Opioid drugs; Antibiotics; Tele-medicine

## Background

In the later decades of the 20<sup>th</sup> century, it was believed that clinicians were not effectively reducing acute post-procedure pain. In response, the Joint Commission on Accreditation of Healthcare Organizations recommended revised pain-management standards which included a quantitative assessment using a 10-point Likert-type scale, anchored with zero as “no pain” and ten as the “worst pain imaginable [1]. This pain assessment was deemed “a fifth vital sign.” At that time, clinicians responded aggressively to reduce acute pain after surgery and other procedures, resulting in an increase in prescriptions of then recently available immediate-acting opioid drugs, hydrocodone or oxycodone, as well as other analgesic medications. These practices led to a large number of left-over opioid drug doses and their misuse for unintended purposes [1]. Increasing numbers of individuals became addicted to prescription opioids leading to frequent deaths from overdose. These outcomes seemed to affect young adults in higher numbers, particularly those who were first-time opioid users [2].

## Current Problem

Emergency Department (ED) and Urgent Care Center (UCC) providers are confronted by patients with acute pain more often than chronic pain [3]. Many patients access EDs and UCCs for acute oral pain and the treating clinicians are not equipped to manage these conditions. As a consequence, opioid analgesics are prescribed often. In a 33-month study of almost a million Medicaid recipients treated in an ED across 13 U.S. states, opioid drugs were prescribed half the time for an acute dental condition and even more frequently after hours during the work-week, nights, and weekends [3]. Current data from North Carolina (NC) can be compared with these findings. In a convenience sample from a University of North Carolina IRB-approved 2019 Qualtrics<sup>®</sup> survey of 85 physicians or physicians assistants (PA), 33% prescribed an opioid analgesic for acute dental pain (rated  $\geq 8$  of 10) in a case scenario of an otherwise healthy patient. This contrasts with data from a convenience sample of NC dentists with opioid prescribing privileges confronted with the same scenario; opioid analgesics were prescribed by endodontists 16% of the time and general dentists 15%.

Based on new guidelines from the American Dental Association, antibiotics also may be over prescribed for acute dental pain by both ED clinicians and dentists [4]. In the Qualtrics<sup>®</sup> survey scenario cited above, NC physicians or Pas recommended antibiotics 78%, NC endodontists 53%, and NC general dentists 56%. Guidelines recommend that antibiotics only be used for acute dental pain in otherwise healthy patients if systemic involvement is apparent including symptoms of

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### \*Correspondence:

White R, Adams School of Dentistry,  
University of North Carolina, Chapel  
Hill, NC 27599-7450, USA, Tel: +1-919-  
537-3944; Fax: +1-919-537-3842;  
E-mail: ray\_white@dentistry.unc.edu

Received Date: 08 Feb 2021

Accepted Date: 05 Mar 2021

Published Date: 08 Mar 2021

### Citation:

Ciarrocca K, Giwa J, Reside G,  
Matthews N, Phillips C, White R. Could  
Collaboration between Emergency  
Department Clinicians and Dentists  
More Effectively Treat Patients with  
Acute Dental Pain?. *Clin Surg.* 2021;  
6: 3101.

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fever and malaise. If definitive treatment of the condition within two days is not practical or the patient's condition deteriorates rapidly, a post-dated prescription for antibiotics may also be an option within current guidelines [4].

## Possible Solutions

The healthcare system in the United States has become increasingly complicated and difficult to navigate. This complexity reinforces the need for collaboration across health professions, Interprofessional Education (IPE) and team-based care [5]. IPE is defined as "when two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes" [5]. Incorporating the "Quadruple Aim" approach to healthcare is paramount for this process, whereby health outcomes are improved by concurrently addressing population health, patient experience, costs, and provider wellness [6]. Achieving the "Quadruple Aim" requires intentional education and training across professions. Increasing evidence demonstrates that IPE and team-based education has a favorable effect on attitudes, knowledge, and skills and can even positively influence professional practice and clinical outcomes [7]. With ED clinicians and dentists collaborating, perhaps the number of prescribed opioid analgesic drugs could be reduced and the more effective use of antibiotics could be embraced for the management of acute dental pain.

Support from recent data out of Wisconsin suggests that physicians are receptive to collaboration on oral health problems [8]. With that in mind, a consultation network could easily be established between EDs or UCCs and a dentist on-call. The dentist need not be physically present, as communication could easily be established via telemedicine using visual communication by HIPPA compliant Zoom, FaceTime, or another platforms available within electronic medical record systems. The dentist, compensated by contract with the respective health facility, need not be responsible for the patient's treatment beyond the consultation. Telemedicine continues to be an efficient tool for collaboration. The 2020 COVID-19 pandemic has accelerated the adoption of telemedicine into current clinical practice with its effective use by many clinicians [9,10,11].

## Treatment Options

Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) are more effective for moderating inflammatory conditions than opioid analgesics, particularly when treatment is with scheduled doses [12-15]. The NSAID, ibuprofen, with acetaminophen has been reported to provide greater analgesia than opioid drugs without significantly increasing the adverse effects that often are associated with opioid-containing analgesic combinations [12]. An intraoral injection of bupivacaine can eliminate acute pain for hours. Liposomal bupivacaine injected at affected sites can effectively moderate acute pain for at least 48 h allowing patient's time to seek definitive treatment. If indicated by systemic rather than local signs of infection such as fever or malaise, supplemental antibiotics can be prescribed for a limited time course until definitive treatment can be rendered [4]. Based on the bacteria most often involved, oral amoxicillin 500 mg TID or oral penicillin V potassium 500 mg QID are the preferred options. All of these strategies provide effective pain management without the use of opioids and their risk from left-over doses.

## Summary

Interprofessional collaboration in the management of acute

dental pain offers improved treatment options to clinicians and their patients that have not been often utilized until recently. Further collaboration between ED or UCC providers and dentists on painful dental conditions should be welcomed by interested parties and facilitated by emerging telemedicine options. Management of acute dental pain through improved communication and collaboration is an easy, effective strategy that can reduce the numbers of opioid drugs in circulation. In addition, if both medical providers and dentists adhere to current guidelines, more effective and judicious use of antibiotics may follow.

## Funding Source

Grant #T12HP28876 Health Resources and Services Administration, U.S. Department of Health and Human Services. NIH Clinical Trials.gov registration #NCT03809507. IRB: UNC IRB Study #18-2495 approved 11/19/18.

## Acknowledgement

The authors appreciate the contributions to this project from Dr. Phillips' Staff, Ms. Meagan Solloway, Ms. Ashley Blake for data management of the Qualtrics Survey.

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