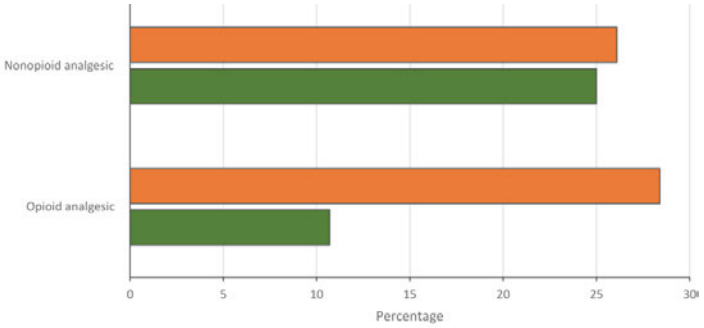
IHS Division of Oral Health
PROJECT REPORT
"Triaging and Treating Dental Conditions in the Emergency Department"
July 31, 2023

Contents

A. Background

Each year in the U.S. there are over 2 million Emergency Department visits related to dental conditions. Of these, 110,000 result in hospital admissions. 26.1% of dental-related ED visits are from patients who self-pay (do not have a third-party payer, compared to 11.8% of non-dental related ED visits. 42.2% of dental-related ED visits are from patients with Medicaid, compared to 32.4% of non-dental related ED visits. In the 46 IHS and tribal hospitals in FY 2022, there were 9,501 dental-related ED visits, about 1.4% of all ED visits.

Research[i] has shown that dental ED visits had a significantly higher likelihood than non-dental visits of receiving an opioid prescription (aRR = 4.76; 95% CI, 3.53–6.41) than no analgesic after controlling for demographic and clinical characteristics, insurance status, pain scores, and other covariates.



Another study[ii] showed that an antibiotic, most often a narrow-spectrum penicillin or clindamycin, was prescribed in 65% of ED visits with any dental diagnosis. At the same time, the most common dental diagnoses seen in the ED for all ages were unspecified disorder of the teeth and supporting structures (44%, ICD-9-CM code 525.9), periapical abscess without sinus (21%, ICD-9-CM code 522.5) and dental caries (18%, ICD-9-CM code 521.0). Recommended treatments for these conditions are usually dental procedures rather than antibiotics. Thus, the common use of antibiotics for dental conditions in the ED indicates the need for greater access to both preventative and urgent care from dentists and other related specialists as well as the need for clearer clinical guidance related to oral infections.

B. Purpose/Objectives

In early 2022, Dr. Ricks participated in a meeting of the American Dental Association's Emergency Department (ED) Referral Workgroup, a stakeholder group developed to improve the referral process of hospital EDs to dentists across the country in collaboration with the American College of Emergency Physicians. Dr. Russell Dunkel, state dental director of Wisconsin, outlined a successful program whereby, working with two counties in WI, he was able to improve the ED to dental referral process while at the same time decreasing unnecessary opioid and antibiotic prescriptions for dental conditions presented in the ED. The IHS Division of Oral Health desired to replicate this project as part of its overall antibiotic and opioid stewardship efforts.

Project goals included the following:

1. Increase awareness of diagnosis of different dental conditions presenting in the emergency department.
2. Increase communications and timely referrals between IHS and tribal emergency departments and dental programs.
3. Decrease the number of opioid prescriptions for dental conditions in the emergency department.
4. Promote antibiotic stewardship in relation to dental conditions in emergency departments.
5. Enhance skills of ED medical providers in administering local anesthesia for patients presenting with dental pain.

C. Collaborators

The Division of Oral Health collaborated with the following in carrying out this project:

1. Dr. Russ Dunkel, Wisconsin state dental director, who served as the technical expert throughout the initial project period;

2. Dr. Paul Charlton and Dr. Emily Bartlett, IHS National Chief Clinical Consultant for Emergency Medicine and designee, who served as liaisons to the participating EDs; and
3. The IHS Division of Clinical and Community Services, under which emergency medicine reports.
4. Mr. Kirk Greenway, statistician, IHS Office of Public Health Support, who provided baseline data on emergency room visits related to dental conditions in the IHS.

D. Initiative Participants

In 2022, the IHS created a new pilot project entitled "Improving Pain and Addiction Care in IHS EDs." Five hospital emergency departments were selected as the in this pilot project, and the IHS Division of Oral Health tapped into this existing initiative to identify the five programs for this specific dental initiative. This overall IHS project is in partnership with the American College of Emergency Physicians (ACEP) and the aim is to lead toward bronze accreditation through the ACEP Pain and Addiction Care in the ED (PACED) accreditation program (see https://www.acep.org/paced/).

Sites chosen included [redacted]

[redacted]

E. Data Analysis

With the help of the acting chief clinical consultant for emergency medicine, Dr. Emily Bartlett, an online questionnaire was sent to the five participating emergency departments On November 7, 2022 (Attachment A). Based on the responses from the five EDs, most of the ED physicians

stated that they had sometimes done local anesthetic blocks and infiltrations in the ED for dental pain, but none expressed a high level of confidence for the inferior alveolar, posterior superior alveolar, mental nerve, or incisive canal blocks, while two of the five expressed confidence in maxillary infiltration injections. These data were interpreted as a need to provide a comprehensive hands-on and didactic anesthesia training at the five sites.

Following a data query by the IHS Office of Public Health Support, the following data was obtained for the five participating programs.

1. Total non-dental ED visits, FY 2022: 687,266
   - [redacted]: 10,606
   - [redacted]: 8,076
   - [redacted]: 9,815
   - [redacted]: 17,567
   - [redacted]: 37,546

2. Total dental ED visits, FY 2022: 9,501
   - [redacted]: 333
   - [redacted]: 254
   - [redacted]: 337
   - [redacted]: 380
   - [redacted]: 303

3. % of ED visits that were for dental, FY 2022: 1.4%
   - [redacted]: 3.1% (*3rd highest in IHS)
   - [redacted]: 3.1% (*3rd highest in IHS)
   - [redacted]: 3.4% (*2nd highest in IHS)
   - [redacted]: 2.2%
   - [redacted]: 0.8%

F. Components/Timeline

This project entailed both a didactic and a hands-on component. Dentists at each of the sites were recruited to be the on-site trainers for ED physicians and mid-level medical providers.

1. Didactic Training

Fortunately, Dr. Dunkel had already created multiple videos for dentists and emergency department medical providers as part of his state initiative, so IHS was able to take advantage of

these existing videos in promoting this initiative to the participating dental programs. These included:

- Strategies for treating dental pain in emergency room settings
- Comprehensive Training for Dentists Part 1
- Comprehensive Training for Dentists Part 2
- https://vimeo.com/684769651/6dc0b356ee

We also modified two other products of the Wisconsin Dental Pain Protocol Project: the Triage/Treatment Algorithm (Attachment B) and a Power Point that dentists were to provide to ED providers prior to the hands-on anesthesia training.

2. Hands-On Training

The last critical component of the training was the creation of hands-on training of ED medical staff by dentists, using a specialized manikin that lights up when the anesthetic is delivered in the correct anatomical place. Here is a photo of this manikin:

Below is a timeline of the major components of the initial project:

Project Component	Responsibility	Start Date	Completion
Initial Proposal & Approval by CMO	Dr. Tim Ricks	Mar 14, 2022	Apr 15, 2022
Initial Coordination with Technical Expert	Dr. Tim Ricks Dr. Russell Dunkel	May 2, 2022	May 12, 2022
Customization of Triage/Treatment Template	Dr. Brandy Larson Dr. Damon Pope Dr. Nathan Mork Dr. Ken Moran	May 13, 2022	Oct 19, 2022
Initial Contact with 5 project sites dental	Dr. Tim Ricks	May 16, 2022	May 30, 2022
Initial Contact with 5 project sites ED	Dr. Emily Bartlett	Nov 2, 2022	Nov 7, 2022

Needs Assessment for 5 project sites	Dr. Emily Bartlett	Nov 7, 2022	Dec 19, 2022
Initial Zoom Meeting for Dental team	Dr. Tim Ricks	Jan 19, 2023	Jan 19, 2023
Sites began to order manikins for hands-on training	5 participating sites	Jan 29, 2023	May 18, 2023
Funds transfer to support purchase of manikins	Dr. Tim Ricks Dr. Tim Lozon	Jan 30, 2023	Feb 6, 2023
Request for ED data from OPHS	Dr. Tim Ricks Kirk Greenway	Mar 13, 2023	Apr 11, 2023
Review of PP Training via Zoom Meeting	Dr. Russ Dunkel Dr. Tim Ricks	Apr 20, 2023	Apr 20, 2023
Didactic (videos and Power Point) training of EDs	5 participating sites	Apr 20, 2023	Jul 31, 2023
Table clinic created to spread project nationwide	Dr. Tim Ricks Dr. Tamana Begay	May 11, 2023	Jul 24, 2023
Review of Hands-On Training to be provided to EDs	Dr. Russ Dunkel	May 18, 2023	May 18, 2023
Hands-on anesthesia training of ED staff by dental	5 participating sites	May 18, 2023	Jul 31, 2023
Final Meeting of project sites to report outcomes	Dr. Tim Ricks	Jul 20, 2023	Jul 20, 2023
Final Report generated	Dr. Tim Ricks	Jul 31, 2023	Jul 31, 2023

G. Resources

The IHS Division of Oral Health supported this pilot project with $5,000 per participating site, or $25,000 in total. Programs were to use the funding to purchase:

1. The manikin used for hands-on anesthetic training;
2. Specific dental supplies for the emergency department including 2X2 gauze, topical anesthetic, dry socket paste, cotton tip applicators, anesthetic syringes (disposable or non-disposable), ibuprofen, acetaminophen, a box to store these materials, and any other emergency supplies that the dental department felt were needed in the emergency department.

The DOH project team included Dr. Tim Ricks, project lead, and Dr. Nathan Mork, project co-lead. The project was supported by Dr. Tim Lozon, director of the DOH.

H. Project Outcomes

At the last meeting of the participating sites, four of the five sites reported that they had provided both didactic and hands-on training: [redacted]. [redacted] lost its dental staff and did not participate on three of the five Zoom meetings. However, the Great Plains Area Dental

Officer did state that she would follow up with ED staff at [redacted] to provide the training in the near future.

It is too early to tell whether or not this training has helped improve the referral process from the ED to the respective dental departments, whether the number of unnecessary opioid prescriptions or antibiotic prescriptions in EDs for dental conditions have decreased, or whether the sheer number of ED visits for dental conditions have decreased, but these may be evaluated in the future.

Final reports describing lessons learned and recommended improvements from the participating sites were as follows:

1. [redacted]
   "What went well: The online training was excellent. Feedback regarding the flow chart, was that they really appreciated having this to refer too! Presented and got to know some of the ED providers. We rarely get the opportunity to interact, or even meet so this training facilitated that introduction. ED providers did well utilizing the mannequin to give anesthetics. Our department is hoping to continue this relationship and training with our ED department, especially when they on-board new providers, and for refreshers with others as requested. The ED "dental box"- is a great idea, and got feedback from our ED Providers as to what they would like to additionally have in the box (ie. Temporary filling material). We did conduct a survey for the Month of May asking our Emergency Walk-in patients if they went to the ED for their dental problem, and how many visits. We only had 17 persons that indicated they had gone to the ED first. The majority came through dental emergency, knowing we have walk-in clinic every morning M-F.

   What could be improved upon: It was tricky trying to find a schedule for the hands-on component that worked for everyone. Eventually we set aside office hours on multiple days so that the ED providers could 'drop in' for training."

2. [redacted]
   "We found that about 5% of our dental walk-in patients had been seen in the ED for the tooth condition prior to coming to dental (3% at [redacted] ED, 2% [redacted] ED). Overall, it has gone well. Sometimes patients come in and say the block they got in the ED was a life-saver, sometimes they report that the ED provider completely missed the block. But I have found our ED providers to be eager to learn and are reaching out more and more with Qs about how they could have handled specific cases better and there is better communication now! They have trained 2 of 3 ED staff, and state that the ED staffing is unstable, a 'revolving door.'"

3. [redacted]
   - "**Overall:** The ED Dental project improved communication between Dental and ED Providers. The ED providers seemed eager to learn about dental blocks and enjoyed practicing on the mannequin. They appreciated the IHS Acute Pain ED Protocol and thought it was very helpful.
   - **Referrals:** ED providers are currently sending Dental Consults in EHR. This allows us to keep track of referrals from ED to Dental. All providers can view the updates of the consult.
   - **Shared Folder:** We created a shared folder for the ED Providers to review slides for the presentation, articles discussing Combination Pain Management, the Acute Dental Pain ED Protocol and other related documents.
   - **Videos:** Video clips of the Management of Dental Pain in the ER video and Dr. Dunkel's video were included in the presentation which did a great job of showing where to inject and how the mannequin works.
   - **Cheat Sheet:** The ED providers asked for a cheat sheet in the tool kit to help with anesthetic selection. A word document was created to show which anesthetics are recommended for the upper and lower and which ones are long acting vs short acting.

   - **Pain Control Guidelines:** A Combination Pain Management Protocol sheet was created for patients demonstrating the correct dosage and number of pills to take for the Combination Pain Management Protocol of Acetaminophen and Ibuprofen. The ED providers could print this out and send it home with the patient. The hope was to help the patients be more compliant with the Pain Control Guidelines as well as reduce the number of opioid prescriptions given in the ED.
   - **Formulary:** Acetaminophen was not on the [redacted] Pharmacy Formulary. We were able to get it added this month which should also help patients be more compliant with the Pain Control Guidelines since they can receive both prescriptions from the Pharmacy now. The Pharmacy also created a quick order which includes the dosages and quantities for Acetaminophen and Ibuprofen making it easier for the providers to prescribe the First Line Pain Therapy recommended on the IHS Acute Pain ED Protocol.
   - **Hands-On Workstations:** The hands-on portion of training included a demonstration of how to assemble a dental syringe, a volunteer patient to demonstrate the difference between what they will see in a patient's mouth versus the mannequin and practicing on the mannequin.

What could be improved upon:

   - Plan to conduct multiple training sessions due to provider schedules.
   - Create a plan to provide ongoing trainings for new ED providers.
   - Additional supplies requested by ED: Temporary filling material and mouth guard to use as a temporary splint."

4. [redacted] – no final report received.

5. [redacted] – no final report received.

I. Future Implications/Recommendations

DOH is now working with the Northwest Portland Area Indian Health Board and Dr. Bartlett to create an Indian Country ECHO webinar in the near future. DOH will solicit a volunteer program from the five participating programs. In addition, the resources developed from this project will be made available in the near future on the IHS Dental Portal at www.ihs.gov/doh. These will include the triage/treatment algorithm, the customized Power Point presentation, and the videos. It is hoped that dental programs in the 46 IHS and tribal hospitals will engage their emergency departments and share this information, and at the same time open communication lines to improve the referral process for patients presenting to the ED with dental conditions.

Appendix A: Needs Assessment

1. To which IHS program do you belong?
   - ○ [redacted]
   - ○ [redacted]
   - ○ [redacted]
   - ○ [redacted]
   - ○ [redacted]

2. Are there any modifications to the ***Indian Health Service Acute Dental Pain Protocols in Emergency Department Settings*** algorithm (see attachment with this form) necessary to make it consistent with your existing ED protocols for pain and infection control?
   - ○ Yes. Please elaborate: Click or tap here to enter text.
   - ○ No

3. Which of the following does your ED have? Check all that apply.
   - ☐ General ED equipment for dental anesthesia (e.g., syringes, needles)
   - ☐ Specialized dental anesthesia carpujects with prefilled vials of local anesthetic
   - ☐ Dental clinical resources (i.e., a "Dental Box")
   - ☐ None of the above
   - ☐ Unsure

4. How frequently are local anesthetic blocks and infiltrations being given in your ED for dental pain (summary of all providers in the ED)?
   - ○ Never
   - ○ Rarely
   - ○ Sometimes
   - ○ Routinely
   - ○ Unsure

5. Which anesthetics are available in your ED or dental department? Check all that apply.
   - ☐ 2% lidocaine with 1:100,000 epinephrine
   - ☐ 2% mepivacaine with 1:20,000 neo-cobefrin
   - ☐ 0.5% bupivacaine with 1:200,000 epinephrine
   - ☐ Other: Click or tap here to enter text.
   - ☐ Unsure

6. What is the overall ED provider confidence/comfort level in administering the following dental anesthetic injections? Left click on "choose an item" and then choose from the menu of items for each of the types of injections. Choices are highly confident/comfortable, somewhat confident/comfortable, and not confident/comfortable.

   a. Inferior alveolar nerve block — Choose an item.
   b. Posterior superior alveolar nerve block — Choose an item.
   c. Mental nerve block — Choose an item.
   d. Incisive canal block — Choose an item.
   e. Maxillary infiltration — Choose an item.

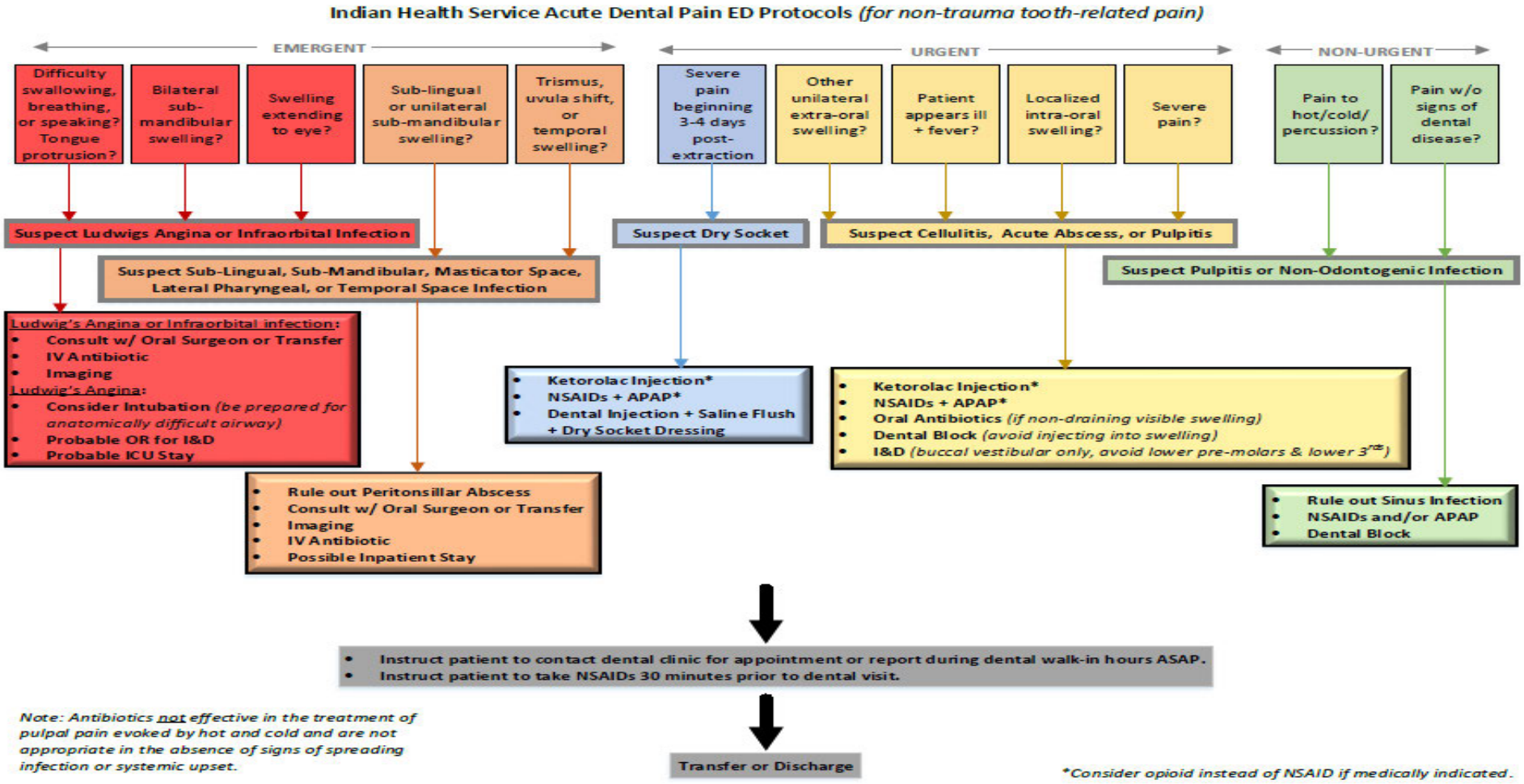
7. Generally, what are your current discharge protocols for non-traumatic dental pain patients? Check all that apply.
   - ☐ Patients are given verbal instructions to see a dentist
   - ☐ There is a "warm" hand-off from the ED to the co-located IHS dental program
   - ☐ Patients are told to call the IHS dental clinic to make a follow-up appointment
   - ☐ Other: Click or tap here to enter text.

8. Thinking about implementation of this project, how do you anticipate the referral to the dental clinic will be facilitated in your ED? Check all that apply.
   - ☐ Instruct patient to set up an appointment with the dental clinic
   - ☐ Case manager (medical, CHR, etc.) will follow-up with patient
   - ☐ Build dentist referral into the EHR discharge template
   - ☐ Other: Click or tap here to enter text.

9. Whose role is it to ensure that the dental referral occurs? Choose the best answer.
   - ○ Physician
   - ○ Nurse
   - ○ ED unit clerk or secretary
   - ○ Care coordinator (CHR, etc.)
   - ○ Social worker
   - ○ Other: Click or tap here to enter text.

10. What barriers do you anticipate when thinking about implementing the ***Indian Health Service Acute Dental Pain Protocols in Emergency Department Settings*** algorithm?
    Click or tap here to enter text.

Appendix B: IHS Emergency Department Triage/Treatment Algorithm



Indian Health Service Acute Dental Pain Protocols in ED Settings | Evidence-Based Treatment Recommendations Last Revision: 9/12/22

All recommendations are subject to provider modification based on variations in clinical case presentation and local protocols for pain control and treatment of infections. These recommendations for acute dental pain control and management of dental infections are based on existing dental evidence and CDC guidance. Providers should prescribe based on their assessment of patient health history and clinical circumstance, as well as availability of medications on formulary. Providers must be mindful of contraindications and daily dosing maximums based on weight and co-morbidities.

Resources:

It is strongly recommended that providers receive training on injection technique prior to utilizing local anesthetic injections. See "Management of Dental Pain in the Emergency Room for ED and UCC Personnel" training link. The time stamps offer targeted information and guidance for review. Other recommended resources: "Handbook of Local Anesthesia" (Stanley Malamed) and "Lexicomp Drug Information Handbook for Dentistry".

Link: www.youtube.com/watch?v=spwoD4x79Tw

Time Stamps:

I. Opioid Prescribing and Its Impact (2:52)
II. Local Anesthetic and Use of Vasoconstrictors (7:32)
III. Anesthetics for Dental Pain (14:52)
IV. Anesthesia Injection Techniques (25:35)
V. Delivering Local Anesthetic Demonstration (29:05)
VI. Types of Analgesia (46:08)
VII. Dental Infection and Antibiotic Selection (1:02:28)

Pain Control Guidance:

First Line Pain Therapy

- 6 x Day Dosing = 400mg Ibuprofen + 650mg Acetaminophen
- 4 x Day Dosing = 600-800mg Ibuprofen + 650-1,000mg Acetaminophen

**Can substitute Naproxen, Etodolac, or Mobic for Ibuprofen*
→ Consider 15mg Ketorolac injection for patients with significant pain

If additional pain control is needed for severe pain w/ clinical signs of infection, consider Hydrocodone + Acetaminophen 5/325mg, but Acetaminophen in the first line pain therapy must be reduced to 325mg dose. Only prescribe enough opioids to get patient out of pain until they can get into their dentist or for antibiotics to take effect (48 hours), whichever is the lesser.

Local Anesthetic Guidance:

- Pregnant Women: 2% Lidocaine *(w/ 1:100,000 Epinephrine)*. Expect 60 mins. of pulpal anesthesia.
- For I&D Procedures: 2% Mepivacaine *(w/ 1:20,000 Neo-Cobefrin)*. Expect 60 mins. of pulpal anesthesia.
- Long Lasting Anesthetic: 0.5% Bupivacaine *(w/ 1:200,000 Epinephrine)*. Expect 90 mins. *(infiltration)* or 360 mins.*(block)* of pulpal anesthesia.

Dental Infection Management:

Mild infections

- Amoxicillin 500mg – TID
- Penicillin VK 500mg – QID
- Cephalexin 500mg – QID
- Azithromax 250mg – 2 tabs first day, then 1 tab until gone (5 days)

*Rx antibiotics for 7 days *(except for Azithromycin)*
*Consider loading doses for Amoxicillin and Penicillin
*Severe infections may require IV antibiotics.

Moderate Infections

- Clindamycin 300mg – QID
- Amoxicillin 500mg + Clavulanate 125mg – TID
- Amoxicillin 500mg + Metronidazole 500mg – TID

Mild Infections = localized intra-oral swelling *(non-draining)* + pain *(spontaneous and/or to percussion)*.
Moderate Infections = extra-oral or significant intraoral swelling + pain *(spontaneous and/or to percussion & palpation)*.
Dry Socket = significant/severe pain that begins 3-4 days post-extraction *(no fever)*

Dry Sockets

- Bupivacaine injection, irrigate socket with sterile saline, place Eugenol impregnated sterile, dissolvable foam. Rx NSAID + Acetaminophen *(no antibiotics or opioids)*.

References

[i] Naavaal S, Kelekar U, Shah S. Opioid and Nonopioid Analgesic Prescriptions for Dental Visits in the Emergency Department, 2015–2017 National Hospital Ambulatory Medical Care Survey. Prev Chronic Dis 2021;18:200571. DOI: http://dx.doi.org/10.5888/pcd18.200571

[ii] Roberts R, Hersh A, Shapiro D, Fleming-Dutra K, Hicks L. Antibiotic Prescriptions Associated with Dental-Related Emergency Department Visits. Ann Emerg Med. 2019 Jul; 74(1): 45–49. DOI: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6943909/