Policy on Acute Pediatric Dental Pain Assessment and Management

Originating Council
Council on Clinical Affairs

Adopted
2012

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2017

Purpose
The American Academy of Pediatric Dentistry (AAPD) recognizes that children vary greatly in their cognitive and emotional development, medical conditions, and responses to pain and interventions. Infants, children, adolescents, and those with special health care needs can and do experience pain, and the majority of pain in the dental setting can be prevented or substantially relieved. The AAPD further recognizes that there are many therapeutics available to treat pain with varying dosages and/or regimens. Recently concerns have developed about associated toxicities to codeine and acetaminophen.

Methods
This policy is based on a review of current dental and medical literature pertaining to pediatric pain management and is a revision of the policy that originated in 2012. It is based on a review of current dental and medical literature pertaining to pediatric pain management including an electronic literature search with PubMed® using the following parameters: Terms: pain management and dentistry, pediatric pain assessment, dental analgesia and opioids, dental analgesia and NSAIDs, postoperative pain, pediatric dental pain management, pediatric pain management, pediatric postoperative pain management, pediatric analgesic overdose; Fields: all; Limits: within the last ten years, humans, all children zero to 18 years, English, clinical trials, and literature reviews. The search returned 3,388 articles. The reviewers agreed upon the inclusion of 17 documents that met the defined criteria. Five additional documents were retained from the previous version of this.
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Policy and included for historical purposes. When data did not appear sufficient or were inconclusive, recommendations information included in this policy were based upon expert and/or consensus opinion by experienced researchers and clinicians.

Background

Pain assessment is an integral component of the dental history and comprehensive evaluation. When symptoms or signs of orofacial/dental pain are evident, a detailed pain assessment should be conducted and documented in the patient’s record. This assessment helps the dentist to derive a clinical diagnosis, develop a prioritized treatment plan, and better estimate analgesic requirements for the patient.

Pain is difficult to measure due to its subjectivity, especially in children\(^1\)\(^-\)\(^2\), and often relies on the report of parents. There are several pain scale indicators that can be used with children, including the FACES pain scale and the Wong-Baker FACES scale\(^1\)\(^-\)\(^2\) (Barretto, Ferreira, and Pordeus 2004; Hicks et al 2001; Jain 2012). The method selected by the practitioner, whichever method of assessing pain is selected by the practitioner, must be able to accurately reflect the patient’s level of pain intensity. Pain experienced by children with special health care needs or developmental disabilities is more challenging to assess accurately and may require utilization of scales that rely on observations such as vocalization, facial expressions, and body movements\(^3\)\(^-\)\(^5\) (NIH Pain Consortium 2007; Feldt 2000; IOM (Institute of Medicine) 2011; Merkel et al 1997).

In addition to documenting pain severity, it is important to assess the following: pain onset, pattern, location, and quality; aggravating and relieving factors; previous treatment and its effect; and barriers to assessment\(^6\) (Chou et al 2016; AAP/American Pain Society 2001). When assessing pain in a child, the patient’s psychological status should be considered. The dentist also should account for the intensity and duration of pain that may be perceived from a given dental procedure\(^2\)\(^8\) (AAP/American Pain Society 2001; Needleman et al 2008). Depending on the duration and intensity, pain control therapy Pain management may range from cognitive behavior therapy and non-pharmacologic modalities to pharmacological treatment. Non-pharmacologic Behavior therapy includes maintaining a calm environment, encouraging deep breathing, and employing guided imagery, distraction, play therapy, and tell-show-do\(^8\) (Lee et al 2016). Pharmacologic therapy may consist of analgesic medications, administration of adequate topical and local anesthesia, and mild anxiolysis, moderate,
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or deep sedation regimens\(^{9,10}\) (Lee et al 2014, Guideline on Use of Local Anesthesia for Pediatric Dental Patients 2015).7.

The extent of treatment affects post-operative pain. It has been reported that 95 percent of children undergoing full mouth dental rehabilitation, regardless of extent of treatment, report pain of moderate intensity\(^8\) (Needleman et al 2008). Pain scores usually are their highest immediately postoperatively while the patient is in the post-anesthesia recovery unit\(^8\) (Needleman et al 2008). Due to analgesics and/or local anesthetics administered intra-operatively during dental rehabilitation, some patients may be delayed in their pain response and report greater intensity of pain at home following the procedures. Patients who had extractions, as well as those who had 12 or more dental procedures, were more likely to experience pain at home\(^8\) (Needleman et al 2008).

The selection of an appropriate analgesic depends on the individual patient, the extent of treatment, the duration of the procedure, psychological factors, as well as and the patient’s medical history. and Physiologic factors such as bleeding disorders, liver problems, or and kidney problems should be given particular attention since some analgesics may promote bleeding\(^11\) (Becker 2010). If moderate to severe pain is considered likely, an analgesic should be administered on a regular basis during the first 36-48 hours. Analgesics should initially be administered on a regular time schedule if moderate to severe pain is considered likely during the first 36 to 48 hours and not as needed so as to create stable plasma levels of analgesics and decrease the chance of breakthrough pain\(^11,12\) (AAP/American Pain Society 2001; Becker 2010; Sutters et al 2010).

Treatment of postoperative pain may include opioid analgesics and non-opioid analgesics [eg, nonsteroidal anti-inflammatory agents (NSAIDs), acetaminophen]. Since most cases of post-operative pain include an inflammatory component, nonsteroidal anti-inflammatory agents (NSAIDs) are considered first line agents in the treatment of acute mild to moderate postoperative pain\(^11\) (Becker 2010). Aspirin-containing analgesics are contraindicated for pediatric pain management in most situations because, if administered during a viral illness, the potential exists for a serious condition known as Reye syndrome\(^13\) (Ruest 2016). Acetaminophen lacks anti-inflammatory properties but can be a non-opioid alternative when NSAIDs are contraindicated\(^11\) (Becker 2010). Acetaminophen is found as a single agent and also in combination with other drugs agents such as opioid analgesics. Overdose of acetaminophen is a common potential pediatric emergency and the maximum daily dose should be observed, especially when combination
medications are used\(^\text{14}\) (Watson et al 2004; American Association of Poison Control Centers 2006). For this reason, it must not be given prior to six hours after the last dose was administered, whether at home, in office, or in the post-anesthesia recovery unit of the hospital (Buck 2001). Alternating administration of ibuprofen and acetaminophen is another strategy for pain management in children\(^\text{6,15}\) (Liu 2015, Chou 2016). Acetaminophen or NSAIDs also can be administered rectally or intravenously which may be practical in some settings (e.g., an operating room\(^\text{13}\) (Ruest 2016).

Practitioners may be hesitant to prescribe opioid analgesics for pediatric patients for fear of addiction. Because opioid use for dental pain should be of short duration, physical dependence is unlikely and its use should be considered\(^\text{12}\) (Sutters 2010). Opioid analgesics are effective provide analgesia for moderate to severe postoperative pain but have potential for diversion and adverse side effects including nausea, emesis, constipation, sedation, and respiratory depression\(^\text{15,16,17}\) (Yaksh 2010, and Liu 2015, Dione 2016). Opioid analgesics such as hydrocodone and oxycodone, and codeine are often combined with acetaminophen, added to non-opioids to manage moderate to severe pain. Concomitant or alternating opioid administration with ibuprofen can reduce opioid consumption\(^\text{6}\) the amount of opioid analgesics required for pain control (Chou et al 2016).

Codeine, one of the most widely prescribed narcotics opioids, is a prodrug that is metabolized to morphine in the liver, has been removed from many hospital formularies because of safety concerns.\(^\text{18,19,20}\) Individual response to codeine ranges from high sensitivity to no effect at all due to genetic variability.\(^\text{19,20}\) (Yaksh 2010). Recently, research has found a genetic polymorphism of the liver cytochrome enzyme CYP2D6 which causes some patients to be ultra-rapid metabolizers of codeine\(^\text{18}\) (FDA Drug Safety Communication 2013, Voronov, Przbylo, and Jagannathan 2007). Ultimately, these patients convert codeine into high levels of morphine, very quickly. There is no way to reliably identify which patient might be an ultra-fast metabolizer other than a non-commercially available laboratory test. For this reason, care must be exercised when postoperative use of codeine has been associated with is considered as it may have undesirable consequences including death, especially in infants and children\(^\text{15,19,20}\) (FDA Drug Safety Communication 2013, Voronov, Przbylo, and Jagannathan 2007; Madadi et al 2009). An important consideration Of equal importance to consider is that another variant of CYP2D6 this liver enzyme may cause patients to be poor metabolizers of codeine and, consequently, under-respond to the opioid narcotic\(^\text{20}\) (Crews et al 2014, Bernard et al 2006). Repeated doses of codeine-containing analgesics/acetaminophen combinations sooner than six hours in these patients fail to result in adequate analgesia since codeine
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Reducing parental apprehension regarding postoperative discomfort could be associated with decreased reports of pain in pediatric patients. Parental anxiety associated with postoperative pain may influence home administration of analgesics (Chou et al 2016). FDA-cleared tests are available and could be considered to identify both ultra-rapid and poor metabolizers of codeine and other opioid analgesics (FDA Drug Safety Communication 2013, Crews 2014). Tramadol and to a lesser extent hydrocodone and oxycodone are also influenced by CYP2D6 activity and ultra-rapid metabolizers may have an increased risk of toxicity. Morphine and non-opioid alternatives are not influenced by CYP2D6 metabolism. Parental education, expectation management, and effective use of non-opioid analgesics are keys reducing adverse effects of opioid analgesics (Chou et al 2016). Often, practitioners can be hesitant to prescribe opioid analgesics for pediatric patients for fear of addiction. Because opioid use for dental pain should be of short duration, physical dependence is unlikely and its use should be considered.

Policy statement

The AAPD recognizes that children experience pain and exhibit variability in the expression of pain and that inadequate pain management may have significant physical and psychological consequences for the patient. Therefore, the AAPD encourages health care professionals to:

- Recognize, assess, and document symptoms of pain in the patient’s chart record.
- Consider preoperative, intraoperative, and postoperative pain management options.
- Use non-pharmacologic and pharmacologic strategies to reduce pain experience preoperatively.
- Utilize drug formularies in order to accurately prescribe medications for the management of postoperative pain.
- Choose agents compatible with the patient’s medical history to avoid prescribing a drug that would be otherwise contraindicated.
- Comprehend the consequences, morbidities, and toxicities associated with the use of specific therapeutics.
- Consider non-opioid analgesics as first line agents for postoperative pain management.
- Consider combining NSAIDs with acetaminophen to provide a greater analgesic effect than...
Consider simultaneous use of analgesics with different mechanisms of action to optimize pain management.

Discontinue use of codeine in pediatric patients due to safety concerns.

Combine opioid analgesics with NSAIDs or acetaminophen for management of postoperative treatment of moderate to severe pain to decrease overall opioid consumption.

References


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American Pain Society, American Society of Regional Anesthesia and Pain Medicine.

American Academy of Pediatric Dentistry. Use of local anesthesia for pediatric dental patients.


American Academy of Pediatric Dentistry. Use of local anesthesia for pediatric dental patients.


