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1 Policy on Acute Pediatric Dental Pain Assessment and Management

2

3 Originating Council

4 Council on Clinical Affairs

5 Adopted

6 2012

7

8 Review Council

9 Council on Clinical Affairs

10 Revised

11 2017

12

13 Purpose

14 The American Academy of Pediatric Dentistry (AAPD) recognizes that children vary greatly in their  
15 cognitive and emotional development, medical conditions, and responses to pain and interventions.

16 Infants, children, adolescents, and those with special health care needs can and do experience pain,

17 and the majority of pain in the dental setting can be prevented or substantially relieved. The AAPD

18 further recognizes that there are many therapeutics available to treat pain with varying dosages and /

19 or regimens. ~~that~~ Recently concerns have developed about associated toxicities to codeine ~~and~~

20 acetaminophen.

21

22 Methods

23 This policy is based on a review of current dental and medical literature pertaining to pediatric pain  
24 management and is a revision of the policy that originated in 2012. It is based on a review of current

25 dental and medical literature pertaining to pediatric pain management including an electronic

26 literature search with PubMed® using the following parameters: Terms: ~~pain management and~~

27 ~~dentistry, pediatric pain assessment, dental analgesia and opioids, dental analgesia and NSAIDs,~~

28 ~~postoperative pain, pediatric dental pain management, pediatric pain management, pediatric~~

29 postoperative pain management, pediatric analgesic overdose; Fields: all; Limits: within the last ten

30 years, humans, all children zero to 18 years, English, clinical trials, and literature reviews. The search

31 returned 3,388 ~~128~~ articles. The reviewers agreed upon the inclusion of ~~47~~ 13 documents ~~articles~~ that

32 met the defined criteria. Five additional documents were retained from the previous version of this

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33 policy and included for historical purposes. When data did not appear sufficient or were inconclusive,  
34 ~~recommendations~~ information included in this policy were based upon expert and/or consensus  
35 opinion by experienced researchers and clinicians.

36

## 37 Background

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

43

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

53

54 In addition to documenting pain severity, it is important to assess the following: pain onset, pattern,  
55 location, and quality; aggravating and relieving factors; previous treatment and its effect; and barriers  
56 to assessment<sup>6</sup> (~~Chou et al 2016, AAP/American Pain Society 2001~~). When assessing pain in a child,  
57 the patient's psychological status should be considered. The dentist also should account for the  
58 intensity and duration of pain that may be perceived from a given dental procedure<sup>7,8</sup> (~~AAP/American~~  
59 ~~Pain Society 2001; Needleman et al 2008~~). ~~Depending on the duration and intensity, Pain control-~~  
60 ~~therapy~~ Pain management may range from ~~cognitive behavior therapy and non-pharmacologic~~  
61 ~~modalities to pharmacological treatment.~~ Non-pharmacologic Behavior therapy includes maintaining  
62 a calm environment, encouraging deep breathing, and employing guided imagery, distraction, play  
63 therapy, and tell-show-do<sup>9</sup> (~~Lee et al 2016~~). Pharmacologic therapy may consist of analgesic  
64 medications, administration of adequate topical and local anesthesia, and mild, anxiolysis, moderate,

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65 or deep sedation regimens<sup>9,10</sup>~~(Lee et al 2014, Guideline on Use of Local Anesthesia for Pediatric~~  
66 ~~Dental Patients 2015)~~<sup>7</sup>.

67

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

76

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

86

87 Treatment of postoperative pain may include opioid analgesics and non-opioid analgesics ~~{eg,~~  
88 ~~nonsteroidal anti-inflammatory agents (NSAIDs), acetaminophen}~~. Since most cases of post-  
89 operative pain include an inflammatory component, nonsteroidal anti-inflammatory agents  
90 ~~(NSAIDs)~~ NSAIDs are considered first line agents in the treatment of acute mild to moderate  
91 postoperative pain<sup>11</sup>~~(Becker 2010)~~. Aspirin-containing analgesics are contraindicated for pediatric  
92 pain management in most situations because, if administered during a viral illness, the potential exists  
93 for a serious condition known as Reye syndrome<sup>13</sup>~~(Ruest 2016)~~. Acetaminophen lacks anti-  
94 inflammatory properties but can be a non-opioid alternative when NSAIDs are contraindicated<sup>11</sup>  
95 ~~(Becker 2010)~~. Acetaminophen is found as a single agent and also in combination with other drugs  
96 agents such as opioid analgesics. Overdose of acetaminophen is a ~~common~~ potential pediatric  
97 emergency and the maximum daily dose should be observed, especially when combination

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98 medications are used<sup>14</sup> (Watson et al 2004; American Association of Poison Control Centers 2006).  
99 For this reason, it must not be given prior to six hours after the last dose was administered, whether at  
100 home, in office, or in the post-anesthesia recovery unit of the hospital (Buck 2001). Alternating  
101 administration of ibuprofen and acetaminophen is another strategy for pain management in  
102 children<sup>6,15</sup> (Liu 2015, Chou 2016). Acetaminophen or NSAIDs also can be administered rectally or  
103 intravenously which may be practical in some settings (e.g., an operating room)<sup>13</sup> (Ruest 2016).  
104  
105 Practitioners may be hesitant to prescribe opioid analgesics for pediatric patients for fear of addiction.  
106 Because opioid use for dental pain should be of short duration, physical dependence is unlikely and  
107 its use should be considered<sup>12</sup> (Sutters 2010). Opioid analgesics are effective ~~provide analgesia~~ for  
108 moderate to severe postoperative pain but have potential for diversion and adverse side effects ~~effects~~  
109 including nausea, emesis, constipation, sedation, and respiratory depression<sup>15,16,17</sup> (Yaksh 2010, and  
110 Liu 2015, Dione 2016). Opioid analgesics such as hydrocodone and oxycodone, and codeine ~~are~~  
111 often combined with acetaminophen, added to non-opioids to manage moderate to severe pain.  
112 Concomitant or alternating opioid administration with ibuprofen can reduce opioid consumption<sup>6</sup> ~~the~~  
113 amount of opioid analgesics required for pain control (Chou et al 2016).  
114  
115 Codeine, ~~one of the most widely prescribed narcotic opioids,~~ is a prodrug that is metabolized to  
116 morphine in the liver, has been removed from many hospital formularies because of safety  
117 concerns.<sup>18,19,20</sup> Individual response to codeine ranges from high sensitivity to no effect at all due to  
118 genetic variability.<sup>19,20</sup> (Yaksh 2010). ~~Recently, research has found a~~ A genetic polymorphism of the  
119 liver cytochrome enzyme CYP2D6 which causes some patients to be ultra-rapid metabolizers of  
120 codeine<sup>18</sup> (FDA Drug Safety Communication 2013 Voronov, Przybylo, and Jagannathan 2007).  
121 ~~Ultimately, these patients convert codeine into high levels of morphine, very quickly. There is no way~~  
122 ~~to reliably identify which patient might be an ultra-fast metabolizer other than a non-commercially~~  
123 ~~available laboratory test. For this reason, care must be exercised when postoperative use of codeine~~  
124 has been associated with is considered as it may have undesirable consequences including death,  
125 especially in infants and children<sup>18,19,20</sup> (FDA Drug Safety Communication 2013 Voronov, Przybylo,  
126 ~~and Jagannathan 2007; Madadi et al 2009).~~ An important consideration ~~Of equal importance to~~  
127 consider is that the ~~a~~ Another variant of CYP2D6 this liver enzyme may causes patients to be poor  
128 metabolizers of codeine and, consequently, under-respond to the opioid narcotic<sup>20</sup> (Crews et al  
129 ~~2014 Bernard et al 2006).~~ Repeated doses of codeine-containing analgesics/acetaminophen  
130 combinations sooner than six hours in these patients fail to result in adequate analgesia since codeine

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131 is not effectively broken down into the active metabolite morphine<sup>20</sup> may result in acetaminophen  
132 overdose (Crews et al 2014).

133

134 Reducing parental apprehension regarding postoperative discomfort could be associated with  
135 decreased reports of pain in pediatric patients. Parental anxiety associated with postoperative pain  
136 may influence home administration of analgesics<sup>6</sup> (Chou et al 2016). FDA-cleared tests are available  
137 and could be considered to identify both ultra-rapid and poor metabolizers of codeine and other  
138 opioid analgesics<sup>18</sup> (FDA Drug Safety Communication 2013, Crews 2014). Tramadol and to a lesser  
139 extent hydrocodone and oxycodone are also influenced by CYP2D6 activity and ultra-rapid  
140 metabolizers may have an increased risk of toxicity.<sup>20</sup> Morphine and non-opioid alternatives are not  
141 influenced by CYP2D6 metabolism.<sup>20</sup> Parental education, expectation management, and effective use  
142 of non-opioid analgesics are keys reducing adverse effects of opioid analgesics.<sup>19</sup> Often, practitioners  
143 can be hesitant to prescribe opioid analgesics for pediatric patients for fear of addiction. Because  
144 opioid use for dental pain should be of short duration, physical dependence is unlikely and its use  
145 should be considered.

146

## 147 Policy statement

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

- 151 • Recognize, ~~and~~ assess, and document symptoms of pain in the patient's ~~chart~~ record.
- 152 • Consider preoperative, intraoperative, and postoperative pain management options.
- 153 • Use non-pharmacologic and pharmacologic strategies to reduce pain experience ~~pre-~~  
154 operatively.
- 155 • Utilize drug formularies in order to accurately prescribe medications for the management of  
156 postoperative pain.
- 157 • Choose agents compatible ~~Be familiar~~ with the patient's medical history to avoid prescribing  
158 a drug that would be otherwise contra- indicated.
- 159 • Comprehend the consequences, morbidities, and toxicities associated with the use of specific  
160 therapeutics.
- 161 • Consider non-opioid analgesics as first line agents-for ~~post-operative~~ pain management.
- 162 • ~~Consider combining NSAIDs with acetaminophen to provide a greater analgesic effect than~~

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- 163           the single agent alone.
- 164           • Consider simultaneous use of analgesics with different mechanisms of action to optimize
- 165           pain management.
- 166           • Discontinue use of codeine in pediatric patients due to safety concerns.
- 167           • Combine opioid analgesics with NSAIDs or acetaminophen for ~~management of for post-~~
- 168           ~~operative treatment of~~ moderate to severe pain to decrease overall opioid consumption.

169  
170  
171  
172

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