



AMERICA'S PEDIATRIC DENTISTS
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Report of the Council on Clinical Affairs

*Proposed changes/additions to oral health policies and clinical
recommendations of the American Academy of Pediatric Dentistry*

3/25/2021

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1 Policy on Third-party Reimbursement of Fees Related to Dental 2 Sealants

3
4 Latest Revision
5 ~~2016~~ 2021

7 Abbreviation

8 **AAPD:** American Academy of Pediatric Dentistry

10 Purpose

11 The American Academy of Pediatric Dentistry (**AAPD**) recognizes that the placement of sealants
12 and their continued maintenance are scientifically-sound and cost-effective techniques for
13 prevention of pit and fissure caries and to prevent the progression of early noncavitated carious
14 lesions.

16 Methods

17 This policy was developed by the Clinical Affairs Committee and adopted in 1999 (AAPD
18 Policy on Sealants, 1999). This document is an update of the previous version, revised in ~~2011~~
19 2016, and is based upon a review of current dental and medical literature related to dental
20 sealants (AAPD Policy on Sealants, 2016). The update used electronic database and hand
21 searches of articles using the terms: dental sealants AND insurance; fields: all; limits: within the
22 last 10 years, humans, English. Sixty-one articles matched these criteria. Papers for review were
23 chosen from this list and from the references within selected articles. When data did not appear
24 sufficient or were inconclusive, recommendations were based upon expert and/ or consensus
25 opinion by experienced researchers and clinicians.

27 Background

28 According to national estimates, ~~by 17 years of age, 68 percent of children in the United States~~
29 ~~have experienced caries~~ the prevalence of dental caries (untreated and treated) in primary

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30 or permanent teeth among children aged 2–19 years was 45.8 percent (Beltrán-Aguilar et al.
31 2005 Fleming 2018) Data indicate that around 40 percent of children ages 2-8 years have
32 experienced dental caries in their primary teeth, with 44 percent of caries lesions in the pits and
33 fissures. (Tinanoff et al. 2015; Dye et al. 2015) Pit and fissure occlusal caries occur
34 disproportionately higher in the school-aged population compared to smooth surface caries.
35 Wright JT, 2016) ~~As much as 90 percent of all caries in school aged children occurs in pits and~~
36 ~~fissures.~~(Beauchamp et al. 2008) The teeth at highest risk by far are permanent first and second
37 molars where fluoride has its least preventive effect on the pits and fissures. Any tooth, including
38 primary teeth and permanent teeth other than molars, may benefit from sealant application due to
39 fissure anatomy and caries risk factors.(Wright, 2016Beauchamp et al. 2008; AAPD
40 BP_Restorative dentistry; Unal et al. 2015) Caries risk may increase due to changes in patient
41 habits, oral microflora, or physical condition, and unsealed teeth subsequently might benefit
42 from sealant application.(Beauchamp et al. 2008; AAPD BP_Restorative dentistry-Wright, 2016)
43 Placement of pit and fissure sealants significantly reduces the percentage of incipient
44 noncavitated carious lesions that progress in children, adolescents, and young adults, compared
45 to unsealed teeth, for as long as five years after sealant placement.(Griffin et al. 2008) When
46 placed over existing caries, sealants lower the number of viable bacteria by at least 100-fold and
47 reduce the number of lesions with any viable bacteria by 50 percent. (Oong et al. 2008) Sealants
48 provide secondary prevention by inhibiting or arresting the progression of pit and fissure caries.
49 (Wright, 2016)

50
51 Current data show that, although initial sealant retention rates are high, sealant loss does
52 occur.(Wright, 2016AAPD BP_Restorative dentistry; Gooch et al. 2009) It is in the patient's
53 interest to receive periodic evaluation of sealants for maintenance or replacement.(Gooch et al.
54 2009; AAPD BP_Periodicity) Without recall and maintenance, sealant failure will compound
55 over time, leaving previously sealed surfaces with a caries susceptibility equal to that of surfaces
56 that never were sealed.(Griffin et al. 2009) With appropriate follow-up care, the success rate of
57 sealants may be 80 to 90 percent, even after a decade.(Tinanoff et al. 2015; AAPD
58 BP_Periodicity, Urquhard et al. 2019)

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60 Although sealants are safe and effective, ~~their use continues to be low~~ they continue to be
61 underutilized. (US DHHS Healthy People 2010 2020) Sealants are particularly effective in
62 preventing pit and fissure caries. They provide cost savings if placed on patients during periods
63 of greatest risk by delaying or avoiding invasive treatment and the destructive cycle of dental
64 caries. (Wright, 2016~~AAPD BP Restorative dentistry; Weintraub 2001; Quiñonez 2005~~; ADA
65 2013 Lee 2018, Wright 2016, Atkins, 2016) However, initial insurance coverage for sealants
66 often is denied based on the age of the patient, and insurance coverage for repair and/or
67 replacement may be limited.(Neusser et al. 2014; Chi et al. 2014; Ney et al. 2014)

68

69 Policy statement

70 The AAPD encourages all policy makers and third-party payors to consult the AAPD in the
71 development of benefit plans that best serve the oral health interests of infants, children,
72 adolescents, and individuals with special health care needs.

73

74 The AAPD advocates that the dentition periodically be evaluated for developmental defects and
75 deep pits and fissures that may contribute to caries risk and that sealants be placed on primary
76 and permanent teeth judged to be at risk for dental caries. AAPD encourages placement of dental
77 sealants on early (noncavitated/incipient) ~~earious~~ caries lesions to inhibit lesion progression.
78 Once sealants have been placed, they should be evaluated for repair or replacement as part of a
79 periodic dental examination.

80

81 The AAPD encourages third-party payors to:

- 82 • recognize that dental sealants are scientifically-sound and cost-effective techniques for
83 primary or permanent teeth at increased risk for caries and for early
84 (noncavitated/incipient) ~~earious~~ caries lesions.
- 85 • base third-party coverage for sealants on a patient's caries risk rather than age. Timing of
86 the eruption of teeth can vary widely. Furthermore, caries risk may increase at any time
87 during a patient's life.

88

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89 The AAPD shall continue to work with other dental organizations, the insurance industry, and
90 consumer groups to make the advantages of dental sealants understood and to seek
91 reimbursement for fees associated with their placement, maintenance, and repair.

92

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1 Policy on Third-party Reimbursement for Oral Health Care 2 Services Related to Congenital and Acquired Orofacial Anomalies 3 Differences

4
5 Latest Revision

6 ~~2016~~ 2021

7
8 Abbreviation

9 **AAPD:** American Academy of Pediatric Dentistry

10

11 Purpose

12 The American Academy of Pediatric Dentistry (**AAPD**) values the unique qualities of each person and the
13 need to ensure maximal health attainment for all, regardless of developmental anomalies or other special
14 health care needs. Recognizing that patients with craniofacial differences, referred to in this document as
15 anomalies require oral health care as a direct result of their craniofacial condition and that these services
16 are an integral part of the rehabilitative process,(ACP-CA 201809) AAPD advocates for the providing
17 benefits for provision of comprehensive oral health care services throughout life. The purpose of this
18 document is to provide background information to assist pediatric dentists to continue to work with and
19 encourage third party payors to provide oral health care benefits for these individuals.

20

21 Methods

22 This policy was developed by the Clinical Affairs Committee and adopted in 1996. This document is an
23 update of the previous version, revised in 2016~~4~~. It is based on review of current dental and medical
24 literature, including a search of the PubMed[®]/MEDLINE database using the terms: orofacial anomalies
25 and cleft OR cleft palate OR anodontia OR oligodontia OR ectodermal dysplasia AND insurance OR
26 third-party OR reimbursement; fields: all; limits: within the last 10 years, human, English. Seventy-two
27 articles matched these criteria. Papers for review were chosen from this list and from the references
28 within selected articles. When data did not appear sufficient or were inconclusive, policies were based
29 upon expert and/or consensus opinion by experienced researchers and clinicians.

30

31 Background

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32 There exists a large and diverse group of cCongenital and acquired orofacial anomalies that (e.g.,
33 ectodermal dysplasia, cleft defects, oral cancer) can have significant negative functional, esthetic, and
34 psychological effects on individuals and impose a financial burden to their families. (ACP-CA 2018~~09~~;
35 Murdock et al. 2005; NFED 2015; Coffield et al. 2005; Long et al. 2016, Boulet et al. 2009, Nidey and
36 Wehby 2019) The oral health care needs of these patients are unique, impact their overall health, and
37 necessitate special considerations. (AAPD BP_SHCN) Patients with craniofacial anomalies often require
38 specialized oral health care as a direct result of their condition to promote normal function and
39 development. These services are medically necessary and an integral part of the rehabilitative
40 process. (~~AAPD P. Medically necessary care, AAPD P. Medically necessary care~~ ACPA-CA 2018))
41 Young children benefit from esthetic and functional restorative techniques and readily adapt to appliances
42 that replace missing teeth and improve function, appearance, and self-image. During the period of facial
43 and oral growth, appliances require frequent adjustment and have to be remade as the individual grows.
44
45 These patients ~~often are~~ should not be denied coverage for initial appliance construction and/or, ~~more~~
46 ~~frequently,~~ replacement of appliances as the child grows. Unfortunately, ~~t~~Third-party payors legally may
47 control the coverage of these services by limiting contractual benefits. The distinction between congenital
48 and acquired anomalies involving the orofacial complex and those involving other parts of the body ~~often~~
49 seems arbitrary and unfair. For instance, health care policies may provide reimbursement for the
50 necessary prosthesis required for congenitally missing extremities and its replacement as the individual
51 grows; but deny benefits for the initial prosthesis and the necessary periodic replacement for congenitally
52 missing teeth. Third-party payors frequently will refuse to pay for oral health services even when they
53 clearly are associated with the complete rehabilitation of the craniofacial condition. (Strauss 1999;
54 Pfeifauf 2020)
55
56 Coverage for orthodontic services for individuals with orofacial anomalies and/or cleft palates is at the
57 discretion of individual state mandates (Pfeifauf, 2018; Pfeifauf 2020), leaving room for states to exclude
58 coverage for crucial treatment. Private health insurance plans may demand clear indications of medical
59 necessity to improve function (PREMERA Medical Policy) and documented agreement among an
60 interdisciplinary team(HMSA. 2019 , UHA Policy 2015) while denying coverage for services deemed
61 elective or cosmetic in nature. Subjective and indiscriminate denials by insurance companies hinder the
62 ability of individuals to obtain comprehensive and timely care that can significantly improve their
63 appearance, function and quality of life (Abeleira et al 2014, Abeleira et al 2016).
64

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65 The Patient Protection and Affordable Care Act of 2010(~~111th US Congress 2010~~ACA, 2010) “is silent on
66 the features of what might constitute a fair and acceptable medical necessity standard in qualified health
67 plans”(AAP 2014). Despite being included as one of the essential health benefits in all qualified plans,
68 federal regulations allow significant flexibility to plans that include dental care, and these services ~~often~~
69 are often restricted.(Pfeifauf 2018, Nidey 2019, Wanchek 2020, Pfeifauf 2020). The restriction of these
70 benefits largely affects children with multiple chronic conditions who have complex developmental needs
71 and use specialty care.(AAP 2014). Additionally, limitations on allowable services and reimbursement
72 inequitably affect those with public health insurance, amplifying the vulnerability of those requiring
73 complex treatment (Broder 2012). ~~Furthermore,~~ clerical personnel and professional consultants
74 employed by third-party payors ~~often~~ sometimes make benefit determinations based on arbitrary
75 distinction between medical versus dental anomalies, ignoring important functional and medical
76 relationships. Recent legislation has been introduced to address the disconnect between coverage for
77 preliminary surgeries and denials of corrective or follow up procedures, including necessary dental
78 services. (ELSA, 2019; Pfeifauff, 2020) Evaluation and care provided for an infant, child, or adolescent
79 by a cleft lip/palate, orofacial, or craniofacial ~~deformities-anomalies~~ team has~~ve~~ been described as the
80 optimal way to coordinate and deliver complex services.(ACPA-CA 2018, Strauss 1999) This approach
81 may provide additional documentation to facilitate medical necessity of dental rehabilitation.

82

83 Policy statement

84 The AAPD encourages all policy makers and third-party payors to consult the AAPD in the development
85 of benefit plans that best serve the oral health interests of infants, children, adolescents, and individuals
86 with special health care needs.

87

88 The AAPD strongly believes that the dentist providing the oral health care for the patient determines the
89 medical indication and justification for treatment for patients with congenital and acquired orofacial
90 anomalies.

91

92 The AAPD encourages third-party payors to:

- 93 • recognize that congenital and acquired orofacial anomalies require care over the life-time of the
94 patient.
- 95 • include oral health services related to these facial and dental anomalies as benefits of health
96 insurance without discrimination between the medical and dental nature of the defect. These

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- 97 services, optimally provided by the craniofacial team, include, but are not limited to, initial
 98 appliance construction, periodic examinations, and replacement of appliances.
- 99 • provide payable benefits for oral health services related to these facial and dental anomalies.

100

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1 Policy on Third-party Reimbursement for Management of Patients 2 with Special Health Care Needs

3

4 ~~Adopted~~ Latest Revision

5 ~~2017~~2021

6

7 Abbreviations

8 **AAPD:** American Academy of Pediatric Dentistry.

9 **CDT:** Current Dental Terminology.

10 **CPT:** Current Procedural Terminology.

11 **CSHCN:** Children with special health care needs.

12

13 Purpose

14 The American Academy of Pediatric Dentistry (**AAPD**) recognizes that, because of improvements in
15 medical care, the number of patients with special health care needs(**SHCN**) will continue to grow. Many
16 of the formerly acute and fatal diagnoses have become chronic and manageable conditions. ~~These~~
17 Patients with SHCN require a dental team with special knowledge and skills and additional staff time to
18 coordinate care and/or accommodate the patient's unique circumstances. An increased appointment length
19 ~~often is~~ often necessary in order to treat the patient in a safe, effective, and high-quality manner. Such
20 customized services have not been reimbursed by third-party payors. AAPD advocates for reimbursement
21 ~~for~~ measures that are necessary to manage the patient's unique healthcare needs within the dental home.

22

23 Methods

24 This policy originally developed by the Council on Clinical Affairs and adopted in 2017(AAPD Policy).
25 is a review of current dental and medical literature, sources of recognized professional expertise related to
26 medical and dental reimbursement, and industry publications. An electronic search was conducted using
27 the PubMed®/ MEDLINE database with the terms: special health care needs and access to care, special
28 health care needs and reimbursement, disease management and managed care, disease management and
29 insurance, disease management and reimbursement; fields: all; limits: within the last ~~2~~10 years, humans,
30 English, birth through age 99. The search found ~~1229~~1375 articles. Papers for review were chosen from
31 this list and from the references within selected articles.

32

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33 Background

34 ~~Approximately about~~ 18.5 percent (13.6-12.5 million) of U.S. children have SHCN special health care
 35 ~~needs, and one in four households (24.8%) have one or more children with SHCN~~ numbers continue to
 36 rise. (National Survey of Children’s Health 2017-2018, Newacheck et al. 2000) The AAPD defines special
 37 needs as “any physical, developmental, mental, sensory, behavioral, cognitive, or emotional impairment
 38 or limiting condition that requires medical management, health care intervention, and/or use of
 39 specialized services or programs.”(AAPD D_SHCN2020) The 2001 National Survey of Children with
 40 Special Health Care Needs (~~CSHCN~~) determined that dental care was among the largest unmet needs, a
 41 finding that has remained consistent for nearly two decades. More than eight percent of CSHCN were
 42 unable to obtain this service.(US DHHS Chartbook 2001) ~~This trend continued in the more recent 2005~~
 43 National Survey.(US DHHS Chartbook 2005-2006, US DHHS Chartbook 2013, National Survey of
 44 Children’s Health 2017-2018, Leburn-Harris 2019) The specific category of dental care for children with
 45 SHCN has also been reviewed and compared with healthy children. (Lewis 2009, US DHHS Chartbook
 46 2013) Children with SHCN have been shown to receive preventive care at equal or greater rates than
 47 children without SHCN (Lewis, Leburn-Harris 2019). However, parents of children with SHCN are more
 48 likely to report unmet dental care needs in their children compared with unaffected children. (Lewis 2009,
 49 Sannicandro et al 2017)

50
 51 ~~These p~~Patients with SHCN face both a multitude of disparities and barriers to oral health in accessing
 52 dental care.(Nelson, Kerrins, Norwood) Disparities refer to differences in health status that result from
 53 discrimination, lack of access, or systematic exclusion from services. (Nelson, Webb JR Overview of
 54 disability in Dental care for children with Special Needs 2019) ~~These b~~ Barriers may be either
 55 environmental/system-centered or nonenvironmental.(Nelson et al. 2011) Environmental barriers to
 56 obtaining oral healthcare include difficulties in finding a dental office close to home that will accept the
 57 patient’s dental insurance and is able to accommodate the patient’s unique needs, in addition to the rising
 58 costs of healthcare (Nelson). Non-environmental factors center around the patient: They may include
 59 patient anxiety, oral defensiveness, and inability to tolerate dental treatment in an office setting (Nelson)
 60 ~~the patient is afraid of the dentist, orally defensive, or unable to cooperate for the dentist.~~ Additionally,
 61 the patient’s medical condition may complicate dental treatment or the patient may have medical health
 62 care needs which are more urgent than dental care needs.(Nelson et al. 2001)

63
 64 Patients with SHCN special health care needs may require more provider time, particularly those with
 65 developmental disabilities, complex health care issues, behavioral issues, and dental fears may require

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66 more provider time. (Hernandez 2007, Mattson Pediatrics 2019) It is well documented that many dentists
 67 often are unwilling to treat these individuals with SHCN due to lack of familiarity with the medical
 68 conditions, the additional time required to obtain a medical history or medical consultations and render
 69 treatment, poor reimbursement, and inadequate training in treatment of to treat patients with SHCN, poor
 70 reimbursement, and lack of knowledge about available resources special health care needs. (Lewis 2009,
 71 Shakespeare 2009, Burtner et al. 1990; Casamassimo et al. 2004; Edelstein 2007; Ferguson et al. 1991)
 72 Consequently, Pediatric dentists have the necessary expertise and provide a disproportionate amount of
 73 care to individuals with SCHN; however, the number and distribution of this population, but U.S.
 74 pediatric dentists cannot adequately address the treatment needs of this population are too few in number
 75 to meet the need. (Norwood & Slayton 2013, Casamassimo 2002, Kerrins 2011) While The AAPD has
 76 successfully advocated for obtained federal Title VII funding to train more pediatric dentists through the
 77 for expansion and creation of new pediatric dental residency positions and programs, most of which focus
 78 on providing care to children with SHCN. (Ng 2008) However, there has been little to no progress
 79 towards improving reimbursement has been done on the financial front by third-party payors for the
 80 additional time required to provide dental care for individuals with SCHN (Bayarsaikhan 2015).
 81
 82 Lack of insurance coverage, high out-of-pocket expense, and high deductibles Financing and
 83 reimbursement of dental care have been cited as common financial barriers for that disproportionately
 84 burden families of patients with SHCN when seeking medically necessary oral health care in the special
 85 needs population. (Bayarsaikhan et al. 2015, Bachman 2017, Nelson et al. 2011; Rouleau et al. 2011; Cral
 86 2007 da Fonseca and Hong 2007; Kastner 2004) Eliminating or reducing these effect of this barriers can
 87 be expected to result in may have lasting positive effects on the oral health for of patients with SHCN
 88 (Paschal 2015) special health care needs. To that point, low Medicaid reimbursement and a shortage of
 89 general dentists qualified or willing to treat patients with SHCN have been identified as the main barriers
 90 to transitioning to adult-centered dental care. (Bayarsikhan Z et al, 2015) Conversely, access to private
 91 insurance has been shown to facilitate the transition to adult centered dental care for individuals with
 92 SHCN (Bavarsikhan Z et al, 2015). Patients with significant health histories medical complexity require
 93 additional longer face-to-face appointments time to review take a thorough history, as well as additional
 94 non-face-to-face time for medical consultations, documentation, and care coordination (Dorlan 2019,
 95 Mount 2015, Cohen 2011). Currently, there is a medical model exists that seeks to accounts for either
 96 complexity in medical decision making or the is increased time above the usual amount of time a
 97 practitioner requires would take to treat a non-complex patient. (Dorlan 2019, Dowling 2014; AMA
 98 20204) In the medical model, if the additional time that is spent is for counseling and/or coordination of

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99 care, then primary care providers~~physicians~~ are allowed to bill for evaluation and management (E/M;
100 CPT codes 99201-99215) based on time (Cohen Pediatrics 2011, AMA CPD 2020). In doing this,
101 providers ~~physicians~~ need to document the following information:

- 102 • total time of the visit,
- 103 • time or percent of the visit spent in counseling/coordination of care, and
- 104 • nature of the counseling/coordination of care.

105
106 ~~Discussions~~ing with patients regarding~~ng~~ referrals to other providers and reviewing and ordering of
107 tests/labs meet the time criteria for medical billing.(AMA CPD 202014) ~~Adequate reimbursement for the~~
108 ~~care coordination code (D9992)(ADA CDT 2017) will more accurately identify patients with special~~
109 ~~health care needs and help alleviate the loss of income that dentists experience while treating these~~
110 ~~individuals~~. Care coordination offers the possibility of improving quality and controlling costs for patients
111 with complex conditions.(Goodell et al. 2009) Adequate reimbursement for the care coordination code
112 (D9992)(ADA CDT 201720) will more accurately identify patients with special health care needs and
113 help alleviate financial losses to dentists caring for individuals with SHCN (Krall 2007).

114
115 Many patients with special needs can be treated in the traditional clinical setting without the increased
116 medical risk or additional cost of general anesthesia, but the provision of this care may require~~take~~
117 additional time and involve the use of additional personnel or use of advanced behavior management
118 techniques. When physicians are faced with similar circumstances, they are able to use the prolonged
119 service codes (CPT codes 99354 and 99356).(AMA CPT 202014) In order to qualify for billing either
120 code, the physician or other qualified healthcare professional must provide at least one hour of face-to-
121 face patient contact, either outpatient or inpatient respectively, beyond the usual evaluation and
122 management service. CPT codes 99355 and 99357 may be used if the prolonged service is increased by
123 an additional 30-minute increment.(AMA CPT 202014) The behavior management code (CDT code
124 9920) in Current Dental Terminology(ADA CDT 202017) is most similar to the prolonged service code.
125 Reimbursement for the behavior management code ~~could~~ may result in reduced the need referrals for
126 costly general anesthesia services and facilitate the delivery of medically necessary oral health care in a
127 dental setting to which these patients are entitled (Krall 2007).

128
129 Payment reform that allows ~~via~~ implementation and reimbursement of ~~these~~ codes such as the behavior
130 management code (CDT code 9920) or for time-based billing could allow the dental home to follow an
131 important trend of the medical home(Krall 2007). Care coordination activities could change from being

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132 mostly reactive to patients' episodic needs to being more systematically proactive and
 133 comprehensive (Van Cleave et al. 2015) thereby reducing hospitalizations and avoiding emergency room
 134 visits. (Goodell et al. 2009) As numbers of patients with SHCN increase, demands and expertise required
 135 for management and care coordination also increase (Bayarsaikhan 2015). The dental care paradigm for
 136 managing patients with SHCN is changing (Nelson TM Chapter in Dental Management of Special
 137 Needs). Treatment in isolation is no longer possible and a team approach is often necessary (Nelson TM
 138 Chapter in Dental Management of Special Needs). Practitioners may need to communicate with primary
 139 care physicians, medical specialists, occupational therapists, behavioral health providers, and social
 140 workers to effectively care for individuals with SCHN (Nelson TM Chapter in Dental Management of
 141 Special Needs). Combining dental services with separate procedures requiring sedation or general
 142 anesthesia (e.g. medical imaging, adenotonsillectomy, myringotomy) is an example of providing
 143 collaborative healthcare for patients with SHCN (Syed 2018)

144

145 Policy Statement

146 The AAPD recognizes that the population of people with special health care needs is increasing, and that
 147 additional time and skills are necessary to provide optimal care to those individuals in a dental home
 148 setting. Care coordination activities for patients with SHCN that are more systematically proactive, rather
 149 than reactive, and allow for comprehensive management could reduce hospitalizations and avoid
 150 emergency room visits. Furthermore, reimbursement for the use of additional personnel or advanced
 151 behavior management techniques could reduce the need for costly general anesthesia and facilitate the
 152 delivery of medically necessary oral health care to which these patients are entitled. Therefore, the AAPD
 153 advocates that third-party payors and managed care organizations review their capitation policies to
 154 provide adequate reimbursement for care coordination (~~CPT~~ CDT code D9992) and behavior
 155 management (~~CPT~~ CDT code D9920)

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1 Policy on Emergency Oral Care for Infants, Children, 2 Adolescents, and Individuals with Special Health Care Needs

3
4 Latest Revision

5 ~~2017~~ 2021

6
7 The American Academy of Pediatric Dentistry recognizes emergency care for infants, children,
8 adolescents, and individuals with special health care needs is an essential duty of every dentist. The
9 American Dental Association’s *Principles of Ethics and Code of Professional Conduct* states that
10 “dentists shall be obliged to make reasonable arrangements for the emergency care of their patients of
11 record”.(ADA Ethics 2020) The American Academy of Pediatric Dentistry recommends that dentists
12 should provide instructions to the parent for accessing emergency care.(~~ADA 2016~~) Dental emergencies
13 include, but are not limited to, facial swelling, infections, uncontrolled bleeding, pain, or oral-facial
14 trauma (ADA Dental Emergency 2020) Availability of after-hours emergency care is an important aspect
15 of ~~continually~~continuously accessible care provided through a dental home.(ADA 2016-AAPD Dental
16 Home) Additionally, when consulted for a dental emergency by patients not of record, the dentist should
17 make reasonable arrangements for emergency dental care. If emergency dental treatment is provided, the
18 dentist should recommend that the patient return to his/her dental home unless the parent expresses a
19 different preference.(ADA Ethics 2020)

20
21 This document was developed by the Policy and Review Committee and adopted in 1976.(AAPD 1992)
22 This document is an update from the last revision by the Council on Clinical Affairs in ~~2012-2017~~.(AAPD
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1 Policy on Early Childhood Caries (ECC): Classifications, 2 Consequences, and Preventive Strategies

3 Latest Revision

4 ~~2016~~ 2021

5

6 Abbreviations

7 AAPD: American Academy of Pediatric Dentistry

8 AAP: American Academy of Pediatrics

9 CWF Community water fluoridation

10 ECC: Early childhood caries

11 MS: Mutans streptococci

12 SDF Silver Diamine Fluoride

13

14 Purpose

15 Early childhood caries (**ECC**), formerly referred to as nursing bottle caries and baby bottle tooth decay,
16 remains a significant chronic disease of childhood and a public health problem. (Proceedings ECC
17 Conference 2015) The American Academy of Pediatric Dentistry (**AAPD**) encourages healthcare
18 providers and caregivers to implement preventive practices that can decrease a child's risks of developing
19 this preventable disease to reduce the burden on the child, the family, and society.

20

21 Methods

22 This policy was developed in a collaborative effort of the American Academy of Pedodontics and the
23 American Academy of Pediatrics (**AAP**) and adopted in 1978. (AAP, AAP. January 1978) This document
24 is a revision of the previous version, last revised by the AAPD in ~~2014~~ 2016. The update used electronic
25 and hand searches of English written articles in the dental and medical literature within the last ~~10~~ 14
26 years, using the search terms infant oral health, infant oral health care, ~~and~~ early childhood caries, ECC
27 AND oral microbiome, ECC AND prevention. ~~Recent references to ECC, along with full text, can be~~
28 ~~found on the Early Childhood Caries Resource Center database~~
29 (~~<http://earlychildhoodcariesresourcecenter.elsevier.com>~~). When information from these articles did not
30 appear sufficient or was inconclusive, policies were based upon expert and consensus opinion by
31 experienced researchers and clinicians.

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32

33 Background

34 In 1978, the American Academy of Pedodontics and the AAP released a joint statement “~~Juice in Ready-~~
35 ~~to Use Bottles and Nursing Bottle Caries~~” to address a severe form of caries associated with bottle
36 usage. (~~AAP News and Comment 1978~~) (AAPD, AAP. Nursing bottle caries. January 1978). Initial policy
37 recommendations were limited to feeding habits, concluding that nursing bottle caries could be avoided if
38 bottle feedings were discontinued soon after the first birthday. An early policy revision added ad libitum
39 breast-feeding as a causative factor. Over the next two decades, however, recognizing that ECC was not
40 solely associated with poor feeding practices, AAPD adopted the term ECC to better reflect its ~~multi-~~
41 ~~factoral~~ multifactorial etiology. These factors include susceptible teeth due to enamel hypoplasia, oral
42 colonization with elevated levels of cariogenic bacteria, especially Mutans streptococci (MS), and the
43 metabolism of sugars by tooth-adherent bacteria to produce acid which, over time, demineralizes tooth
44 structure. (Tinanoff 2015)

45

46 ECC is defined as “the presence of one or more decayed (noncavitated or cavitated lesions), missing (due
47 to caries), or filled tooth surfaces in any primary tooth”(Drury 1999) in a child under the age of six. The
48 definition of severe early childhood caries (S-ECC) is any sign of smooth-surface caries in a child
49 younger than three years of age; and from ages three through five, one or more cavitated, missing (due to
50 caries), or filled smooth surfaces in primary maxillary anterior teeth or a decayed, missing, or filled score
51 of greater than or equal to four (age 3), greater than or equal to five (age 4) or greater than or equal to six
52 (age 5). (Drury et al. 1999)

53

54 Epidemiologic data from a 2011-2012 national survey clearly indicate that ECC remains highly prevalent
55 in poor and near poor U.S. preschool children. For the overall population of preschool children, the
56 prevalence of ECC, as measured by decayed and filled tooth surfaces (dfs), is unchanged from previous
57 surveys, but the filled component (fs) has greatly increased indicating that more treatment is being
58 provided.(Dye et al. 2015) The consequences of ECC often include a higher risk of new carious lesions
59 in both the primary and permanent dentitions,(O’Sullivan and Tinanoff 1996; Al-Shalan et al. 1997)
60 hospitalizations and emergency room visits,(Ladrillo et al. 2006; Griffin et al. 2000) high treatment costs
61 (~~AHRQ 2010~~ Centers for Disease Control and Prevention, 2014), loss of school days,(Edelstein and
62 Reisine 2015) diminished ability to learn,(Blumenshine et al. 2008) and diminished oral health-related
63 quality of life.(Filstrup et al. 2003)

64

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65 Traditional mMicrobial risk markers for ECC include acidogenic-aciduric bacterial species, namely MS
 66 and Lactobacillus species (Kanasi et al.2010) However, new tools for bacterial identification (e.g.
 67 polymerase chain reaction techniques, 16s rRNA gene sequencing) are revealing the complexity of the
 68 oral microbiome and other bacterial species that may be associated with ECC. (Li and Tanner 2015)
 69 Studies using direct culture with arbitrarily primed polymerase chain reaction (AP-PCR) fingerprinting
 70 and other traditional techniques, have shown that MS may be transmitted vertically from parent or
 71 caregiver to child through salivary contact, affected by the frequency and amount of exposure and
 72 horizontally from other individuals in his immediate environment. (Li and Caufield 19952006, Berkowitz
 73 2006) Infants whose mothers have high levels of MS, a result of untreated caries, are at greater risk of
 74 acquiring the organism earlier than children whose mothers have low levels. (Berkowitz 2006) Horizontal
 75 transmission (e.g. between other members of a family or children in daycare) also occurs. (Berkowitz
 76 2006) Newer technologies that sequence DNA and RNA in a rapid and cost-effective manner, known as
 77 high-throughput or new-generation sequencing (e.g. polymerase chain reaction, r RNA gene sequencing),
 78 reveal the complexity of the oral microbiome and have highlighted other bacterial species (e.g., scardovia
 79 wiggisiae, veillonella ssp.) and fungi (e.g. candida albicans) that also may be associated with ECC. (Li and
 80 Tanner 2015, Hajishengallis E, et al 2017, Mira A. 2018), Recent studies on the development of the oral
 81 microbiome since birth continue to support the concept of vertical and horizontal transmission as well as
 82 the importance of diet and environmental exposures. (Dzidic et al 2018, Dashper et al 2019) Parental
 83 education and counseling on the importance of a healthy microbiome and diet in infancy should be
 84 conducted as early as possible.

85
 86 An associated risk factor to microbial etiology is high consumption of sugars. (Moynihan and Kelly
 87 2014) ~~Caries conducive dietary practices appear to be established by 12 months of age and are~~
 88 ~~maintained throughout early childhood. (Kranz et al. 2006) Frequent nighttime bottle bottle feeding with~~
 89 ~~milk and ad libitum breastfeeding are associated with but not consistently implicated in ECC. (Reisine~~
 90 ~~and Douglass 1998) Night time bottle feeding with juice, repeated use of a sippy or no-spill cup, and~~
 91 ~~frequent in-between meal consumption of sugar-added snacks or drinks (e.g., juice, formula, soda)~~
 92 ~~increase the risk of caries. (Tinanoff et al. 2002) While ECC may not arise from breast milk along, breast-~~
 93 ~~feeding in combination with other carbohydrates has been found in vitro to be high cariogenic. (Erickson~~
 94 ~~and Mazhari 1999) Frequent consumption of between meal snacks and beverages containing sugars~~
 95 ~~increases the risk of caries due to prolonged contact between sugars in the consumed food or liquid and~~
 96 ~~cariogenic bacteria on the susceptible teeth (Tinanoff and Palmer 2000). The AAP has recommended~~
 97 ~~that infants should not be given juice from bottles or covered cups that allow them to consume juice~~

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98 throughout the day and intake of 100 percent fruit juice should be limited to no more than four to six
99 ounces per day for children one through six years old. (AAP 2001). Additionally, newly erupted teeth,
100 because of the immature enamel, and teeth with enamel hypoplasia may be at higher risk of developing
101 caries. (Caufield et al. 2012) Although there are clear benefits of breastfeeding in a child's first year of
102 life (Salone LR, Van WF, Lee DL, 2013), breastfeeding and baby bottle use beyond 12 months, especially
103 if frequent and/or nocturnal, are associated with ECC. (Peres et al., 2018). The American Heart
104 Association recommends that sugar in foods and drink should be avoided in children under two years of
105 age. (Vos, Kaar, Welsh et al, 2017) Additionally, the American Academy of Pediatrics recommends that
106 100 percent fruit juice should not be introduced before 12 months of age and be limited to no more than
107 four ounces a day for children between the ages of one and three. (Heyman and Abrams, 2017, AAPD
108 Dietary).

109
110 Community water fluoridation (CWF) as a primary prevention method is considered a key strategy for
111 preventing dental caries. Children with lifetime exposure to CWF show significantly lower dental caries
112 levels than those without, with the benefit being most pronounced in primary teeth (Slade and Grider,
113 2018). In addition to reducing the prevalence of severe caries, the use of CWF in high-risk populations
114 may reduce caries- related visits and help avoid preventable dental surgery under general anesthesia (Lee
115 HH et al. JAMA 2020) CWF has multiple benefits and attenuates income-related inequalities in dental
116 caries in the U.S. (Sanders and Grider 2019). Apart from an increased incidence of enamel fluorosis, the
117 literature fails to provide credible evidence linking CWF with negative health outcome. (CDC. January
118 2020)

119
120 Current best practice to reduce the risk of ECC includes twice-daily brushing with fluoridated toothpaste
121 for all children in optimally-fluoridated and fluoride-deficient communities. (Santos et al. 2013; ADA
122 JADA 2014; Boustedt 2019) When determining the risk-benefit of fluoride, the key issue is mild
123 fluorosis versus preventing dental disease. A smear or rice-sized amount of fluoridated toothpaste
124 (approximately 0.1 mg fluoride) should be used for children less than three years of age. A pea-sized
125 amount of fluoridated toothpaste (approximately 0.25 mg fluoride) is appropriate for children aged three
126 to six. (Wright et al. 2014) Parents should dispense the toothpaste onto a soft, age appropriately sized
127 toothbrush and perform or assist with toothbrushing of preschool-aged children. To maximize the
128 beneficial effect of fluoride in the toothpaste, rinsing after brushing should be kept to a minimum or
129 eliminated altogether. (Sjögren and Birkhed 1993) Less than twice daily tooth-brushing and difficulties

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130 in performing the procedure during the preschool years were significant determinants of caries prevalence
 131 at the age of five years. (Boustedt 2019)

132

133 Professionally-applied topical fluoride treatments also are efficacious in reducing prevalence of ECC. The
 134 recommended professionally-applied fluoride treatments for children at risk for ECC who are younger
 135 than six years is five percent sodium fluoride varnish (NaFV; 22,500 ppm F). (Weyant et al. 2013, AAPD
 136 Dietary). Additionally, the use of 38 percent silver diamine fluoride (SDF) is effective for the arrest of
 137 cavitated caries lesions in primary teeth. (Gao SS, Zhang IS, et al. 2016; Crystal Marghalani et al. 2017.)

138

139 Evidence ~~increasingly~~ suggests that preventive interventions and education of primary care givers within
 140 the first year of life are critical. (Lee et al. 2006) For this reason, establishment of a dental home ~~within~~
 141 six months of the eruption of the first tooth and no later than 12 months of age is especially important in
 142 populations at risk. This may be best implemented with the help of medical providers who, in many cases,
 143 are being trained to provide oral screenings, apply preventive measures, counsel caregivers, and refer
 144 infants and toddlers for dental care. (Douglass et al. 2009)

145

146 Policy Statement

147 The AAPD recognizes early childhood caries as a significant chronic disease resulting from an imbalance
 148 of multiple risk and protective factors over time. To decrease the risk of developing ECC, the AAPD
 149 encourages professional and at home preventive measures that ~~include~~ provide evidence-based prevention
 150 of ECC such as:

151 ~~4.1.~~ establishing a dental home within six months of eruption of the first tooth and no later than 12
 152 months of age to conduct caries risk assessment, ~~and provide parental education, and including~~
 153 anticipatory guidance ~~for prevention of oral diseases.~~

154 ~~4.2.~~ Avoiding ~~modifying~~ diets to avoid frequent consumption of liquids and/or solid foods containing
 155 sugar, in particular:

156 ~~a. sugar sweetened beverages (E.g., juices, soft drinks, sports drinks, sweetened tea)in baby bottle~~
 157 ~~or no spill training cup.~~

158 ~~b. ad libitum breast feeding after the first primary too begins to erupt and other dietary~~
 159 ~~carbohydrates are introduced~~

160 ~~e. baby bottle use after 12-18 months.~~

161 • eliminate baby bottle and breastfeeding beyond 12 months, especially if frequent and/or
 162 nocturnal.

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- 163 • encourage children between 6 and 12 months old to drink 4 to 6 ounces of water per day.
- 164 • avoid sugar in foods and drink in children under two years of age.
- 165 • abstain from 100 percent fruit juice before 12 months of age.
- 166 • limit juice to no more than four ounces a day for children between the ages of one and three
- 167 years.
- 168 ~~2.~~ 3. implementing early oral hygiene measures no later than the time of eruption of the first primary
- 169 tooth. Toothbrushing should be performed for children by a parent twice daily, using a soft toothbrush
- 170 of age-appropriate size. In children under the age of three years, a smear or rice-sized amount of
- 171 fluoridated toothpaste should be used. In children ages three to six years, a pea-sized amount of
- 172 fluoridated toothpaste should be used.
- 173 ~~3.~~ 4. providing professionally-applied fluoride treatments for children at risk for ECC.
- 174 ~~4. establishing a dental home within six months of eruption of the first tooth and no later than~~
- 175 ~~12 months of age to conduct a caries risk assessment and provide parental education~~
- 176 ~~including anticipatory guidance for prevention of oral diseases.~~
- 177 5. supporting CWF as a primary prevention for dental caries to reach underserved and vulnerable
- 178 communities.
- 179 ~~5.~~ 6. working with medical providers to ensure all infants and toddlers have access to dental
- 180 screenings, counseling, and preventive procedures with a consistent unified message.
- 181 ~~6.~~ 7. educating legislators, policy makers, and third-party payors regarding the consequences of and
- 182 preventive strategies for ECC, emphasizing the importance of access to care for all.
- 183 8. raising awareness of ECC with parents and oral health and medical professionals.
- 184 9. advocating for reimbursement systems to allow access for all children and educational reforms that
- 185 emphasize evidence-based preventive and comprehensive management of ECC.

186

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1 Policy on Early Childhood Caries (ECC): Unique Challenges and 2 Treatment Options

3

4 Latest Revision

5 ~~2016~~ 2021

6

7 Abbreviations

8 **AAPD:** American Academy of Pediatric Dentistry

9 **ECC:** Early childhood caries

10 **ITR:** Interim therapeutic restorations

11

12 Purpose

13 The American Academy of Pediatric Dentistry (**AAPD**), to promote appropriate, quality oral health care
14 for infants and children with early childhood caries (**ECC**), must educate the health community and
15 society about the unique challenges and management of this disease, including the need for advanced
16 preventive, restorative, and behavioral guidance techniques.

17

18 Methods

19 This policy was developed by the Council on Clinical Affairs and adopted in 2000 (AAPD P_ECC
20 Challenges 2000). This document is a revision of the previous version, revised in ~~2014-2016~~.(AAPD
21 P_ECC Challenges 2016) The update used electronic and hand searches of English written articles in the
22 dental and medical literature within the last 10 years using the search terms infant oral health, infant oral
23 health care, and early childhood caries. ~~Recent references to ECC, along with full text, can be found on~~
24 ~~the Early Childhood Caries Resource Center database ([27](http://earlychildhoodcariesresource
25 center.elsevier.com). When information from these articles did not appear sufficient or was inconclusive,
26 policies were based upon expert and/or consensus opinion by experienced researchers and clinicians.</p></div><div data-bbox=)~~

28 Background

29 Epidemiologic data from a 2011-2012 national survey clearly indicate that ECC remains highly prevalent
30 in poor and near poor U.S. preschool children.(Dye et al. 2015) For the overall population of preschool
31 children, the prevalence of ECC, as measured by decayed and filled tooth surfaces (dfs), is unchanged
32 from previous surveys, but the filled component (fs) has greatly increased indicating that more treatment

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33 is being provided.(Dye et al. 2015) The consequences of ECC often include a higher risk of new ~~earious~~
34 caries lesions in both the primary and permanent dentitions,(O’Sullivan and Tinanoff 1996; Al-Shalan et
35 al. 1997) hospitalizations and emergency room visits,(Griffin et al. 2000; Ladrillo et al. 2006) high
36 treatment costs,(AHRQ 2010) loss of school days,(Edelstein and Reisine 2015) diminished ability to
37 learn,(Blumenshine et al. 2008) and reduced oral health-related quality of life.(Filstrup et al. 2003)

38

39 Because restorative care to manage ECC on young children often requires the use of sedation and general
40 anesthesia with its associated high costs and possible health risks,(Sinner et al. 2014) and because there is
41 high recurrence of lesions following the procedures,(Berkowitz et al. 2011) there now is more emphasis
42 on prevention and arrestment of the disease processes. Approaches include methods that have been
43 referred to as:

- 44 1. chronic disease management, which includes parent engagement to facilitate and promote
45 preventive measures ~~and temporary restorations to postpone advanced restorative care~~ while
46 encouraging the identification and reduction of individual risk factors. The aim is to sustain oral
47 health in the long term (Edelstein and Ng 2015, Featherstone et al 2020), in combination with:
- 48 2. active surveillance, which emphasizes careful monitoring of caries progression and prevention
49 programs (e.g., frequent fluoride varnish applications) in children with incipient lesions;(AAPD
50 BP_Caries-risk assessment, Weintraub et al 2006) and
- 51 3. minimal intervention approaches. That includes caries arrest with Silver Diamine Fluoride
52 (AAPD SDF guideline), interim therapeutic restorations (ITR) that temporarily restore teeth in
53 young children until a time when traditional cavity preparation and restoration is possible(AAPD
54 P_ITR); and the use of Hall-style crowns. (Crystal et al JADA 2020)

55

56 Those children with known risk factors for ECC should have care provided by a practitioner who has the
57 training and expertise to manage both the child and the disease process. The use of anticariogenic agents,
58 especially twice daily brushing with fluoridated toothpaste and the frequent application of fluoride
59 varnish, may reduce the risk of development and progression of caries. In some children where preventive
60 programs are not successful, areas of demineralization and hypoplasia can rapidly develop cavitation and,
61 if untreated, the disease process can rapidly involve the dental pulp, leading to infection and possibly life-
62 threatening fascial space involvement. Such infections may result in a medical emergency requiring
63 hospitalization, antibiotics, and extraction of the offending tooth.(Sheller et al. 1997)

64

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65 The extent of the disease process as well as the patient’s developmental level and comprehension skills
 66 affect the practitioner’s management decisions. The establishment of a dental home when the first tooth
 67 erupts is imperative to be able to implement preventive and early intervention treatments before advanced
 68 disease becomes established. Definitive restorative treatment in young children, in many cases, can be
 69 postponed by use of ITR or silver diamine fluoride treatments(~~Chu and Lo 2008~~).(Crystal & Niederman
 70 2016) For advanced cases of ECC, the practitioner may need the aid of advanced behavior guidance
 71 techniques to complete the necessary treatment.(AAPD BP_Behavior guidance) Also in such situations,
 72 stainless steel crowns often are indicated to restore teeth with large ~~earious~~-caries lesions, interproximal
 73 lesions, and extensive white spot lesions since stainless steel crowns are less likely than other restorations
 74 to require retreatment.(Adzani EN, et al, 2020). (~~Randall et al 2000~~)The success of restorations may be
 75 influenced by the child’s level of cooperation during treatment, and general anesthesia may provide better
 76 conditions to perform restorative procedures. ~~.General anesthesia, under certain circumstances, may offer~~
 77 ~~a cost saving alternative to sedation of children with ECC(Lee et all 2000).~~

78

79 Policy statement

80 The AAPD recognizes the unique and often virulent nature of ECC. Non-dental healthcare providers who
 81 identify ECC in a child should refer the patient to a ~~licensed~~ dentist for treatment and establishment of a
 82 dental home (AAPD D_Dental home) Immediate intervention is indicated, and non-surgical interventions
 83 should be implemented when possible to postpone or reduce the need for surgical treatment approaches.
 84 Because children who experience ECC are at greater risk for subsequent caries development, preventive
 85 measures (e.g., dietary counseling, reinforcement of toothbrushing with fluoridated toothpaste), more
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1 Policy on Intraoral/Perioral Piercing and Oral Jewelry/Accessories

2

3 Latest Revision

4 ~~2016~~ 2021

5

6 Purpose

7 The American Academy of Pediatric Dentistry (AAPD) recognizes the importance of educating the public
8 and health professionals on the health implications of intraoral/perioral piercings and oral
9 jewelry/accessories.

10

11 Methods

12 This policy was developed by the Council on Clinical Affairs and adopted in 2000. (AAPD Policy on
13 Piercing 2000) This document is a revision of the previous version, revised in ~~2014~~2016 (AAPD Policy
14 on Piercing 2016). The update included a new review of current dental and medical literature, including a
15 search of the PubMed[®]/~~MEDLINE~~ and Cochrane Central Register of Controlled Trials electronic
16 databases through ~~September~~October, 20152020 with the terms: oral jewelry, body piercing, and oral
17 piercing paired with dental and oral piercing; fields: all; limits: within the last 10 years, humans, English,
18 birth through age 99. ~~Four hundred eighty-one~~ Fifty-five articles matched these criteria. ~~Because of so~~
19 ~~many papers identified through electronic searches,~~ Alternate strategies such as appraisal of references
20 from recent evidence-based reviews, controlled clinical trials, and meta-analysis and hand searches were
21 performed. This strategy yielded ~~85~~ 21 manuscripts which were evaluated further by abstract. Papers for
22 review were chosen from this list and from the references within selected articles.

23

24 Background

25 The use of intraoral jewelry and piercings of oral and perioral tissues have been gaining popularity among
26 adolescents and young adults. Intraoral jewelry or other oral accessories may lead to increased; plaque
27 levels, periodontal pathogenic bacteria, gingival inflammation and/or recession, caries, diminished
28 articulation, and metal allergy. (Durosaro and El-Azhary 2009; Ziebolz 2012; Ziebolz 2019, Plessas 2012;
29 Hennequin-Hoenderdos 2016; Covello 2020 Reyes 2008) Oral piercings involving the tongue, lips,
30 cheeks, and uvula have been associated with pathological conditions including pain, infection, scar
31 formation, tooth fractures, metal hypersensitivity reactions, localized periodontal disease, speech
32 impediment, Ludwig's angina, hepatitis, and nerve damage (Reference list, 1-24) (All cited references)

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33 Specifically, gingival recession was evident in ~~seven~~^{up} to 50 percent of all patients(Covello 2020,
34 Ziebolz 2020,Ziebolz 2012, Plessas 2012, Hennequin 2016) with lip piercing and ~~six~~^{up} to 44 percent of
35 patients with tongue piercing (Covello 2020, Ziebolz 2020,Ziebolz 2012, Plessas 2012, Hennequin 2016).
36 Permanent tooth injuries were observed in up to 26 percent of patients with lip piercing and ~~37~~^{up to} 46
37 percent of patients with tongue piercings.(Ziebolz et al. 2012; Covello 2020, Ziebolz 2020, Plessas 2012;
38 Hennequin-Hoenderdos 2016) Life-threatening complications (e.g., bleeding, edema, endocarditis, airway
39 obstruction) have been reported associated with oral piercings~~have been reported, including bleeding,~~
40 ~~edema, endocarditis, and airway obstruction.~~(Reference list, 1-24; Pires et al. 2010; Kapferer et al. 2011;
41 ~~Kapferer and Beier 2012; Kapferer et al. 2013~~) (All cited references) Additionally, the use of dental
42 jewelry (e.g., grills) has been documented to cause dental caries and periodontal problems.(Hollowell and
43 Childers 2007; ADA 2006, ADA 2020) Unregulated piercing parlors and techniques have been identified
44 ~~by the National Institutes of Health~~ as a possible vector for disease transmission (e.g., hepatitis, tetanus,
45 tuberculosis) and as a cause of bacterial endocarditis in susceptible patients.(~~Durosare 2009~~ ADA 2020,
46 Covello 2020) Between January 1, 2002 and December 31, 2008, an estimated 24,459 patients presented
47 to U.S. emergency departments with oral piercing-related injuries.(Gill et al. 2012) The annual average
48 number of estimated emergency department visits was 3,494, with a range from 2,675 (in 2005) to 4,380
49 (in 2006).(Gill et al. 2012)

50

51 Policy statement

52 The AAPD strongly opposes the practice of piercing intraoral and perioral tissues and use of jewelry on
53 intraoral and perioral tissues due to the potential for pathological conditions and sequelae associated with
54 these practices.

55

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1 Policy on Obstructive Sleep Apnea

2

3 ~~Adopted~~ Latest Revision

4 ~~2016~~ 2021

5

6 Abbreviations

7 **AAPD:** American Academy of Pediatric Dentistry

8 **ADHD:** Attention-deficit hyperactivity disorder

9 **CPAP:** Continuous positive airway pressure

10 **CSA:** Central sleep apnea

11 **MAD:** Mandibular advancement device

12 **OSA:** Obstructive sleep apnea

13 **RPE:** Rapid maxillary/palatal expansion

14

15 Purpose

16 The American Academy of Pediatric Dentistry (**AAPD**) recognizes that obstructive sleep apnea (**OSA**)
17 occurs in the pediatric population. Undiagnosed and/or untreated OSA is associated with cardiovascular
18 complications, impaired growth (including failure to thrive), learning problems, and/or behavioral
19 problems. In order to reduce such complications, AAPD encourages healthcare professionals to routinely
20 screen their patients for increased risk for OSA and to facilitate medical referral when indicated.

21

22 Methods

23 This policy is based on a review of current dental and medical literature pertaining to obstructive sleep
24 apnea including a search with PubMed®/MEDLINE using the terms: pediatric obstructive sleep apnea
25 and dentistry, obstructive sleep apnea and dentistry, obstructive sleep apnea and attention-deficit
26 hyperactivity disorder (ADHD), sleep disordered breathing; fields: all; limits: within the last ten years,
27 humans, all children zero to 18 years, English, clinical trials, and literature reviews. The search returned
28 ~~28336~~ articles. The reviewers agreed upon the inclusion of ~~2915~~ articles that met the defined criteria.
29 When data did not appear sufficient or were inconclusive, policies were based upon expert and/or
30 consensus opinion by experienced researchers and clinicians.

31

32 Background

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33 Pediatric Obstructive sleep apnea (OSA) is a disorder of breathing characterized by episodes of complete
34 or prolonged, partial upper airway obstruction and or intermittent/ complete obstruction (obstructive
35 apnea) that disrupts normal ventilation during sleep, and normal sleep patterns often resulting in gas
36 exchange abnormalities and arousals that cause disrupted sleep.(AAP 2012, AASM 2014) OSA affects
37 approximately 18 25 million people in the United States and is a common form of sleep-disordered
38 breathing. (AASM.org – rising prevalence of sleep apnea in US) The presentation, diagnostic criteria,
39 course, and complications of OSA differ significantly between adults and children (ICSD-3). Pediatric
40 OSA differs from adult OSA due to several developmental, physiological, and maturational factors
41 related to respiration and sleep parameters. (Alsubie 2017 OSA: Children are not little adults). The
42 condition exists in one to five percent of children and can occur at any age, but may be most common in
43 children ages two to seven.(Padmanabhan et al. 2010 Marcus 2012, Lumeng 2008, Bixler 2009) In
44 prepubertal children, the disease occurs equally among boys and girls; in adolescents, data suggest the
45 prevalence may be higher in males (AASM 2014). Adult and pediatric OSA and sleep related
46 hypoventilation disorders are defined by different criteria (ICSD-3). Adult criteria for OSA may be used
47 for patients aged 13-18 years.(AASM 2014) Early diagnosis and treatment of OSA may decrease
48 morbidity and improve quality of life; hHowever, diagnosis frequently is delayed.(AAP 2012, Marcus CL
49 Pediatrics 2013)

51 The pathophysiology underlying upper airway narrowing during sleep is multifactorial. (Eckert 2013,
52 AASM 2014) Obstructive sleep apnea occurs when the pharyngeal dilating muscles in the back of the
53 throat relax, causing the airway to narrow on inspiration. This, in turn, may lower the oxygen level and
54 increase carbon dioxide levels in the blood. This decreased oxygen is sensed by the brain, which then
55 wakes the individual to facilitate breathing. This disruption in breathing may occur multiple times per
56 hour all night long.(AAP 2012) Ultimately, these cycles of awakening prohibit the apneic person from
57 reaching deep, restful sleep. Decreased end-expiratory lung volume, failing ventilatory drive, respiratory
58 arousal threshold, muscle responsiveness, and unstable ventilatory control (high loop gain) may also
59 contribute to airway narrowing (Eckert 2013, AASM 2014). Mechanisms of apnea/hypopnea termination
60 are controversial (AASM 2014). Respiratory events may resolve with augmentation of the upper airway
61 muscle tone from chemical stimuli (low PaO₂, high PaCO₂), mechanical stimuli from changes in lung
62 volume (upper airway mechanoreceptors), or change of sleep state (arousal) at either the cortical or
63 subcortical level (AASM 2014). Arousals related to obstructive events cause sleep fragmentation which
64 is believed to be responsible for excessive daytime sleepiness in older children or adolescents and
65 hyperactivity, behavioral problems, and impaired academic performance in younger children(AASM

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66 2014) For this reason, children with untreated OSA may be inappropriately diagnosed as having
67 ADHD. (Padmanabhan et al. 2010 McLaren 2018)

68
69 OSA differs from central sleep apnea. Central sleep apnea (CSA) is less common and occurs when the
70 brain fails to transmit signals to the muscles of respiration. (Malhotra and Owens 2010 McLaren 2018)
71 The most common ~~cause of~~ conditions associated with CSA is include: neurological or neurosurgical
72 conditions (Arnold-Chiari malformation, brain tumor), genetic conditions (Down syndrome, Prader Willi,
73 achondroplasia) congestive heart failure, ~~or~~ stroke, high altitude, and or medication use; however,
74 premature infants also may be predisposed to CSA. (AASM 2014)

75
76 **Symptoms of OSA include:** (AAP 2012, ICSD3)

- 77 • Excessive daytime sleepiness.
- 78 • Loud snoring three or more nights per week.
- 79 • Episodes of breathing cessation witnessed by another person.
- 80 • Abrupt awakenings accompanied by shortness of breath.
- 81 • Awakening with dry mouth or sore throat.
- 82 • Morning headache.
- 83 • Difficulty staying asleep.
- 84 • Attention problems.
- 85 • Mouth breathing.
- 86 • ~~Sweating~~ Diaphoresis.
- 87 • Restlessness.
- 88 • ~~Waking up a lot~~ Frequent awakenings.

89
90 Signs of untreated sleep apnea in school-aged children may include nocturnal enuresis (bed wetting) and
91 poor school performance due to misdiagnosed ADHD, aggressive behavior, or developmental delay. (Lal
92 CHEST 2012, AAP 2012) Rare sequelae of untreated OSA include brain damage, seizures, coma, and
93 cardiac complications. (Tzeng J Clin Sleep Med 2019, AAP 2012; Padmanabhan et al. 2010; AASM
94 2014) Children with OSA These children also may experience impaired growth. (AAP 2012; Park Int J
95 Pediatr Otorhinolaryngol 2018 Padmanabhan et al. 2010)

96
97 **Etiology of pediatric OSA**

98 In most children who are otherwise healthy, narrowing of the upper airway is primarily due to

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99 adenotonsillar hypertrophy (AASM 2014) However, pediatric OSA may be related to inadequate airway
 100 size, inadequate neuromuscular tone of the airway muscles, or both (Quo Principles and Practices of
 101 Sleep Medicine 2017). Patients with certain anatomic anomalies, craniofacial anomalies, neuromuscular
 102 diseases, or hypotonia~~Down syndrome~~ are at increased risk for development of obstructive sleep
 103 apnea.~~(Atkinson 2010 El Mallah Pediatric Ann 2017)~~ Anatomic anomalies may include hypertrophic
 104 tonsils and adenoids, macroglossia, choanal atresia, respiratory tissue thickening (e.g., caused by disease
 105 such as mucopolysaccharidosis, achondroplasia), or obesity.~~(Padmanabhan et al. 2010 Stark 2018)~~
 106 Neuromuscular disorders with a component of hypotonia (e.g., cerebral palsy, myotonic dystrophies,
 107 other myopathies) predispose children to OSA.~~(AAP 2012 Stark 2018)~~ Additionally, ~~infants with~~
 108 ~~gastroesophageal reflux disease may be at risk for OSA due to upper airway edema or laryngospasm.~~
 109 Exposure to environmental tobacco smoke also has been associated with OSA.~~(Jara 2015, AASM 2014)~~

110

111 Children with craniofacial differences (craniosynostotic syndromes, achondroplasia, Pierre Robin
 112 sequence, cleft lip and palate) have an increased risk of having OSA because of modified craniofacial
 113 morphology (Ortho White Paper, Stark 2018). Midface deficiency, with or without micrognathia, may
 114 predispose some children with craniofacial abnormalities to development of OSA.~~(Ortho White Paper~~
 115 2019 AAP 2012; Padmanabhan 2010) Certain surgical procedures (e.g., pharyngeal flaps to correct
 116 velopharyngeal insufficiency) in these patients also may contribute to OSA.~~(AASM 2014)~~

117

118 **Screening and Diagnosis of OSA**

119 Pediatric dentist are in a unique position to be able to identify patients at greater risk. Adenotonsillar
 120 hypertrophy (Chan et al. 2004 Marcus 2013) and obesity (Anderson 2016) are major risk factors for OSA
 121 in otherwise healthy children. With a history and careful clinical examination at each dental visit,
 122 pediatric dentists may identify signs and symptoms that may raise a concern for OSA. Assessment of
 123 tonsillar hypertrophy⁶ and percentage of airway obstruction by supine Mallampati (Kumar HV J Clin
 124 Sleep Med 2014) or the Friedman Tongue Classification system(Friedman et al. 2013) may be done
 125 performed as part of the routine intraoral examination.

126

127 Multiple Validated screening tools are available for adult obstructive sleep apnea (e.g., STOP-BANG,
 128 questionnaire; STOP, Berlin questionnaire, Epworth sleepiness scale (Barsh 2009), Kushida Index [Jauhar
 129 et al. 2012]). However, questionnaires for the pediatric population (e.g., PSQ, OSA-18) are not sensitive
 130 enough to detect presence or severity of OSA (Overland 2019). Nonetheless the inclusion of sleep

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131 questions on the health history form may further help identify patients at risk. Such questions might
132 include:

- 133 • does your child snore loudly when sleeping?
- 134 • does your child have trouble breathing while sleeping?
- 135 • does your child stop breathing during sleep?
- 136 • does your child occasionally wet the bed at night?
- 137 • is your child hard to wake up in the morning?
- 138 • does your child complain of headaches in the morning?
- 139 • does your child tend to breathe through his/her mouth during the day?
- 140 • have you or the teacher commented your child appears sleepy during the day?
- 141 • does your child fall asleep quickly?

142

143 If a patient is suspected of being at risk for OSA, a referral to the appropriate medical doctors (e.g.,
144 otolaryngologist, pulmonologist, sleep medicine physician) is advised. Then, a clinical examination in
145 addition to polysomnography (sleep study) will either confirm or deny the diagnosis. (~~Polysomnography~~
146 ~~Task Force 1997~~ The AASM Manual for the Scoring of Sleep and Associated Events 2017) The
147 American Academy of Pediatrics recommends polysomnography be performed in children/adolescents
148 with snoring and signs/symptoms of OSA. (AAP 2012) The threshold for the diagnosis OSA based on the
149 apnea hypopnea index (AHI) is lower in children than in adults (ICSD-3). A positive diagnosis of OSA
150 ~~likely will be made by a sleep physician in~~ would involve the presence of signs/ symptoms concurrent
151 with at least one predominantly obstructive respiratory event, mixed apnea, or hypopnea per hour of sleep
152 or a pattern of obstructive hypoventilation with hypercapnia for at least 25 percent of total sleep time
153 during the polysomnography. (AASM 2014)

154

155 **Treatment of OSA**

156 Treatment for OSA may be accomplished with either nonsurgical or surgical options, depending on its
157 severity and etiology. Non-surgical options include treatment of nasal allergies, (Liming 2018, ~~AAP 2012~~)
158 continuous positive airway pressure (CPAP) (Perriol 2019), weight reduction, and changes in sleep
159 position, hygiene. (AAP 2012) ~~Previously, three types of oral appliances commonly were used for~~
160 ~~treatment of sleep-related breathing: mandibular advancing devices, tongue retaining devices, and palatal~~
161 ~~life appliances. (Hoffstein 2007)-~~ Some studies have advocated the use of nonsurgical dental
162 interventions; however, these reports were based on small sample sizes and lack control groups (Behrents
163 AAO White paper 2019). Rapid maxillary expansion (RME) used to normalize maxillary transverse

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164 deficiencies and mandibular advancement devices (MADs) for class II correction are examples of
165 orthodontic therapy that may be useful for managing OSA. Cumulative evidence to date on the use of
166 rapid maxillary/palatal expansion (RPE) consists of small uncontrolled studies with a relatively short
167 follow up period or a modified monobloc appliance.(Camacho Laryngoscope 2017) MADs are an
168 alternative to CPAP to treat OSA in adult patients;(Ramar 2015)-however, they are not routinely used in
169 growing children. (Yanyan Sleep Med 2019) Although some studies have advocated the use of non-
170 surgical interventions such as rapid maxillary/palatal expansion (RPE) or a modified monobloc
171 appliance,(Padmanabhan et al. 2010; Capua et al. 2009) these studies had small sample sizes.(Capua et al.
172 2009) As functional intraoral appliances alter the position and/or growth of the maxilla or mandible, a
173 complete orthodontic assessment including records should be completed prior to initiating appliance
174 therapy (Behrents AAO White paper 2019). It is advised that the dentist work with the physician to
175 determine if adjunctive options (e.g., RPE, orthodontic treatment) are advised as part of a
176 multidisciplinary treatment effort. If a dentist decides to treat OSA with an intraoral appliance, it is
177 strongly encouraged that the patient be reassessed throughout treatment for symptoms of OSA to
178 determine if the treatment is ~~working~~ beneficial.(AAP 2012)

179

180 The most common surgical option for treatment of OSA is adenotonsillectomy.(Baldasari et al. 2008
181 Venecamp 2015) Other surgical options include uvulopalatopharyngoplasty, ablation, revision of previous
182 posterior pharyngeal flap surgery, maxillomandibular advancement, distraction osteogenesis, or
183 tracheostomy.(Padmanabhan et al. 2010 Noeller 2018, Ehsan 2016)

184

185 **Complications of untreated OSA**

186 In addition to the comorbidities listed previously (e.g. i.e., cardiovascular problems, impaired growth,
187 learning problems, behavioral problems), untreated OSA in combination with insulin resistance and
188 obesity in a child sets the stage for heart disease and endocrinopathies.

189

190 Pediatric dentists who perform sedation and surgical procedures in patients with OSA should be aware
191 that these patients are more likely to experience perioperative and postoperative breathing
192 complications.(American Society of Anesthesiologists 2014)

193

194 **Policy Statement**

195 The AAPD recognizes that there may be consequences of untreated OSA. Therefore, the AAPD
196 encourages health care professionals to:

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- 197 • screen patients for ~~snoring~~ and sleep-related breathing disorders such as OSA and primary
- 198 snoring.
- 199 • ~~screen patient for OSA.~~
- 200 • assess the tonsillar pillar area for hypertrophy.
- 201 • assess tongue positioning as it may contribute to obstruction.
- 202 • recognize obesity may contribute to OSA.
- 203 • Recognize craniofacial anomalies associated with OSA.
- 204 • refer to an appropriate medical provider (e.g., otolaryngologist, sleep medicine physician,
- 205 pulmonologist) for diagnosis and treatment of any patient suspected of having OSA.

206

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1 Policy on Substance Abuse Misuse in Adolescent Patients

2

3 ~~Adopted~~ Latest Revision

4 ~~2016~~ 2021

5

6 Abbreviations

7 **AAP:** American Academy of Pediatrics

8 **SUD:** Substance-abuse use disorder

9

10 Purpose

11 The American Academy of Pediatric Dentistry (AAPD) recognizes that substance ~~abuse~~ misuse in
12 adolescents is a significant health, social, and familial issue in the United States. The increasing
13 prevalence of substance ~~abuse~~ misuse among adolescents obligates dental personnel to identify behaviors
14 characteristic of active use, recognize clinical signs and symptoms of active use or withdrawal, modify
15 dental treatment accordingly, and facilitate referral to medical providers or behavioral addiction
16 specialists. This policy addresses the harmful effects of alcohol and drug ~~abuse~~ misuse in the adolescent
17 and the dental provider's role in recognition, initiation of appropriate interventions, and referrals.

18

19 Methods

20 This policy, developed by the Council on Clinical Affairs and adopted in 2016 is based upon a review of
21 current dental and medical literature, including a literature review through the PubMed®/~~MEDLINE~~
22 database using the terms: adolescent substance abuse, adolescent substance misuse, substance use in
23 adolescents, alcohol use in adolescents, illicit drug and alcohol use in teenagers, adolescent alcohol and/or
24 drug abuse, prescription drug use/ ~~abuse~~ misuse in teenagers, ~~and inhalant use/abuse in teenagers~~; fields:
25 all; limits: within the last ~~10~~ 5 years, humans, English, birth through age 18, resulting in 741 papers that
26 were reviewed by title and abstract. ~~The authors agreed upon inclusion of 24 articles that matched these~~
27 ~~criteria~~ From those, 41 papers were used to update this document. Papers for review were chosen from
28 this list and from the references within selected articles. Websites and documents from healthcare and
29 public policy organizations, as well as governmental agencies, were reviewed.

30

31 Definitions

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32 *Adolescence:* identifies “adolescence as 11 to 21 years of age, dividing the group into early (ages 11–14
33 years), middle (ages 15–17 years), and late (ages 18–21 years) adolescence. (Hagan et al. 2017; Hardin
34 and Hackell 2008)

35

36 *Binge or heavy episodic drinking:* a “pattern of drinking alcohol that brings blood alcohol concentration
37 (BAC) to 0.08 percent—or 0.08 grams of alcohol per deciliter—or higher. For a typical adult, this pattern
38 of excessive alcohol use corresponds to consuming 4 or more drinks (female), or 5 or more drinks (male)
39 in about 2 hours. Research shows that fewer drinks in the same timeframe result in the same BAC in
40 youth; only 3 drinks for girls, and 3 to 5 drinks for boys, depending on their age and size. (National
41 Institute of Alcohol Abuse and Alcoholism (NIAAA) 2019; Chung et al. 2018)

42

43 *Substance abuse misuse:* a “maladaptive pattern of substance use manifested by recurrent and significant
44 adverse consequences related to the repeated use of substances;”(Center for Substance Abuse Treatment
45 2005) individual use of illicit (illegal) drugs or use of legal drugs inappropriately; repeated use of alcohol
46 or drugs to produce pleasure, reduce stress, or alter or avoid reality.(National Institute on Drug Abuse
47 2014 Science) “is used to distinguish improper or unhealthy use from use of a medication as prescribed
48 or alcohol in moderation. These include the repeated use of drugs to produce pleasure, alleviate stress,
49 and/or alter or avoid reality. It also includes using prescription drugs in ways other than prescribed or
50 using someone else’s prescription”. [National Institute on Drug Abuse (NIDA) 2014 Science]

51

52 *Substance use disorder (SUD):* “a cluster of cognitive, behavioral, and physiological symptoms
53 indicating that the individual continues using the substance despite significant substance-related
54 problems”.(American Psychiatric Association 2013)

55

56 *Withdrawal syndrome:* “the development of a substance-specific maladaptive behavioral change, usually
57 with uncomfortable physiological and cognitive consequences, that is the result of a cessation of, or
58 reduction in, heavy and prolonged substance use”.(Center for Substance Abuse Treatment 2006)

59

60 Background

61 Many physical, social, and behavioral changes occur during the adolescent years. The developing
62 adolescent may encounter difficulties and pressures without effective coping skills or maturity.

63 Unfortunately, some teenagers do not have familial, peer, or other support systems to provide help and
64 guidance in adjusting to changes or with decision making. As a result, they may turn to alcohol or drugs

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65 to seek comfort and reduce the stresses associated with this erratic time in their lives.(National Institute
66 on Drug Abuse 2014-Principles)
67
68 Substances ~~abused~~ misused by adolescents include alcohol, inhalants, opiates, amphetamines, cocaine,
69 marijuana, barbiturates, benzodiazepines, hallucinogens, and anabolic steroids.(Kulig 2005; Kulig et al.
70 2011) In a ~~2014~~ 2019 survey of eighth, tenth, and twelfth grade students, trends revealed alcohol use at
71 ~~9.0~~ 7.9, ~~23.5~~ 18.4, and ~~37.5~~ 29.3 percent respectively in the previous 30 days, reflecting a five-year
72 decreasing trend in comparison to survey results from 2014.(Johnson et al. ~~2015-2020~~) Prevalence of
73 having been drunk in the past 30 days was reported at 2.7, 11.2, and 23.5 percent.(Johnson et al. 2015)
74 Prevalence of binge drinking in the past 30 days demonstrated a five-year decline, reported at 3.8, 8.5,
75 and 14.4 percent.(Johnson et al 2020). Use of any illicit drug was reported to be ~~8.3~~ 8.5 percent for eighth
76 graders, ~~18.5~~ 19.8 percent for tenth graders, and ~~24.0~~ 23.7 percent for twelfth graders.(Johnson et al. ~~2015~~
77 2020)
78
79 Findings from the 2019 Monitoring the Future (MTF) survey demonstrate the strong desire for vaping in
80 adolescence, as seen in the increased prevalence of marijuana use as well as nicotine vaping. (Johnson et
81 al. 2020) Past month marijuana vaping among 12th graders nearly doubled in a single year from 7.5 to 14
82 percent.(Johnson et al. 2020) Marijuana was the most commonly used illicit drug among
83 teenagers.(Johnson et al. 2020) A national sample study of adolescents and young adults demonstrated
84 use of electronic nicotine delivery systems (ENDS) and coupled use of ENDS and cigarettes are
85 significant underlying risk factors for COVID-19. (Gaiha, Cheng, Halpern-Feisher 2020) Association of
86 the prevalence of individuals who vaped (vapers) in each US state and daily number of COVID-19 cases
87 and deaths per state suggested vapers may be more susceptible to COVID-19 cases and deaths. (Li et al.
88 2020) MTF survey findings found rates remaining unchanged for other illegal drug use in this population,
89 including methamphetamine, cocaine, and over-the-counter cough and cold preparations. (Johnson et al.
90 2020) ~~Another recent~~ A 2015 survey found more than 2.3 million youth aged 12-17 years were current
91 users (i.e., in the past 30 days) of illicit drugs, equivalent to 9.4 percent of adolescents.(Centers for
92 Behavioral Health Statistics and Quality 2015) ~~Current~~ In 2015 alcohol use was higher, reported at 11.5
93 percent, corresponding to 2.9 million adolescents, with binge drinking shown to occur in 6.1
94 percent.(Centers for Behavioral Health Statistics and Quality 2015) Among the same age group, ~~current~~
95 marijuana use was at 7.4 percent (approximately 1.8 million adolescents). ~~Abuse~~ Misuse of prescription
96 drugs (i.e., analgesics, stimulants, anxiolytics, sedatives) for non-medical purposes was reported by 2.6
97 percent of adolescents.(Centers for Behavioral Health Statistics and Quality 2015) Based on 2019 survey,

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98 alcohol use among adolescents reduced to 9.4 percent and the percent of binge drinkers reduced to 4.9
99 percent.(Substance Abuse and Mental Health Services Administration, 2020-NSDUH) Despite the
100 decrease, about one in 11 adolescents was a current alcohol users and one in 21 adolescents was a current
101 binge drinkers in 2019.(Substance Abuse and Mental Health Services Administration, 2020-NSDUH).
102 Approximately 17.2 percent (one in six adolescents) aged 12 to 17 in 2019 were past month illicit drug
103 users. In 2015 to 2019, the percentage of adolescents who used illicit drugs in the past year ranged from
104 15.8 to 17.2 percent.(Substance Abuse and Mental Health Services Administration, 2020-NSDUH)
105
106 In 2019, 4.5 percent of adolescents (one in 22 adolescents) had SUD, which was lower than five percent
107 of adolescents diagnosed in 2015.(Substance Abuse and Mental Health Services Administration, 2020-
108 NSDUH) Similarly, the percentage of adolescents with alcohol use disorder decreased from 2.7 percent in
109 2015 to 1.7 percent in 2019. (Substance Abuse and Mental Health Services Administration, 2020-
110 NSDUH) SUD was found to occur in five percent of adolescents, while alcohol use disorders were
111 diagnosed in 2.7 percent of adolescents.(Partnership for Drug Free Kids) Considered harmless and non-
112 addictive, adolescents regularly and frequently consume caffeine-containing beverages such as coffee,
113 tea, cocoa, carbonated beverages, energy drinks, and energy shots. (Pagliaro and Pagliaro 2020). Though
114 caffeine use disorder is not officially classified in the DSM-5, caffeine intoxication and caffeine
115 withdrawal are listed disorders.(American Psychiatric Association 2013)
116
117 Prescription Drug Monitoring Programs (PDMPs) have been implemented in most states and have been
118 effective in reducing the number of prescriptions and opiates available for misuse by adolescents. (CDC,
119 2020) However, many adolescents are resorting to “street opioids” heroin and fentanyl. (O’Donnell et al.,
120 2017) In 2017, misuse of prescription opioids, heroin, and fentanyl analogs increased the overall death
121 rate (per 100,000) to 12.6 in adolescents and young adults up from 3.7 in 2000. (Ford 2019). Drug use at
122 an early age is an important predictor of development of a SUD later in life. (NIDA 2014-Principles) 15.2
123 percent of people who started drinking by age 14 eventually developed an alcohol use disorder as
124 compared to just 2.1 percent of those that waited until they were 21 years or older. (SAMHSA, 2013)
125 Thirteen percent of those that developed an SUD began using marijuana by the time they were 14 years of
126 age. (SAMHSA, 2013) 25.3 percent of individuals who misused prescription drugs at age 13 or younger
127 developed a SUD at some time in their lives. (McCabe et al. 2007) Recurrent use of drugs or alcohol
128 causes significant clinical and functional impairment such as health issues, disability, and failure to fulfill
129 important responsibilities at work, school, or home.(Substance Abuse and Mental Health Services
130 Administration 2015-Mental health)

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131
132 There is high probability that dental personnel will detect signs of possible substance ~~abuse~~ misuse in
133 their adolescent patient population. Staff should be attentive to similar signs displayed by the parent.
134 Clinical presentations of substance use may include odor of alcohol on breath, odor of marijuana on
135 clothing, impaired behavior, slurred speech, staggering gait, visual hallucinations, disorientation, rhinitis,
136 scratching, physical injuries including lacerations, needle marks, cellulitis, diaphoresis, tachycardia,
137 sensory impairment, and pupillary dilation or constriction.(Kulig et al. 2011; ~~Partnership for Drug-Free
138 Kids Partnership to End Addiction 2020~~) Cognitive and behavioral manifestations may present as mood
139 changes or emotional instability, loud obnoxious behavior, laughing at nothing, withdrawn/ depressed
140 affect, lack of communication/silence, hostility/ anger/uncooperative behavior, inability to speak
141 intelligibly or to focus, rapid-fire speech, hyperactivity, and unusually elated mood.(~~Partnership for Drug-
142 Free Kids Partnership to End Addiction 2020~~; Williams and Storck 2007) Perioral and oral signs may
143 include sores around the mouth, continual wetting or licking of lips, clenched teeth, bruxism, trismus,
144 enamel chips or coronal fractures, neglected/ poor oral hygiene, multiple cervical carious lesions,
145 gingivitis, gingival ulceration, periodontitis, pale mucosa, leukoplakia, and intraoral burns.(Kulig et al.
146 2011; ~~Partnership for Drug-Free Kids Partnership to End Addiction 2020~~; Saini et al. 2013) Adolescents
147 experiencing withdrawal syndrome may demonstrate behaviors such as altered mental status, agitation,
148 irritability, restlessness, increased anxiety or panic, and inattentiveness.(Center for Substance Abuse
149 Treatment 2006; Kulig et al. 2011) Clinical signs and reported symptoms of substance withdrawal include
150 rhinorrhea, tachycardia, elevated temperature, yawning, tremors, hallucinations, and seizures.(Center for
151 Substance Abuse Treatment 2006; Kulig et al. 2011)

152
153 Adolescent substance ~~abuse~~ misuse frequently co-occurs with mental disorders.(Center for Substance
154 Abuse Treatment 2005; American Psychiatric Association 2013; National Institute on Drug Abuse 2014-
155 Principles; Kulig 2005; Kulig et al. 2011; Fisher 2016) SUD often coexists with psychiatric conditions
156 such as depression, anxiety disorders, attention-deficit hyperactivity disorder, oppositional defiant
157 disorder, conduct disorder, bipolar disorder, post-traumatic stress disorder, bulimia nervosa, social
158 phobia, and schizophrenia.(Center for Substance Abuse Treatment 2005; National Institute of Drug Abuse
159 2014-Science; Kulig 2005; Chan et al. 2008; Kaminer 2016) Substance use may induce the deterioration,
160 emergence, or reoccurrence of psychiatric disorders, or it may work in reducing, masking, or enabling an
161 adolescent to cope with symptoms.(Center for Substance Abuse Treatment 2005; Chan et al. 2008; Garito
162 2002; Fisher 2016) Behaviors consistent with both SUD and mental disorders may be confusing to dental
163 providers. Professionals must be cautious not to assume clinical signs are associated with substance ~~abuse~~

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164 misuse when, in fact, they are presentations consistent with mental disorders, and vice versa.(Center for
165 Substance Abuse Treatment 2005; National Institute on Drug Abuse 2014-Principles; Kulig et al. 2011;
166 Chan et al. 2008; Kaminer 2016) Such caution prevents inaccurate diagnoses and judgment or labelling of
167 an adolescent patient, which could lead to emotional harm and diversion from necessary treatment.
168 (Center for Substance Abuse Treatment 2005; Chan et al. 2008; Garito 2002)

169

170 Dentists are in a position to identify clinical manifestations of substance use, present brief interventions,
171 and provide referrals to medical providers or behavioral health or addiction specialists. They also can
172 assist the patient and family in finding treatment facilities, self-help groups, and community resources
173 which address alcohol and drug abuse specific to adolescents.(National Institute on Drug Abuse 2014-
174 Principles; Kulig 2005; Kulig et al. 2011; Dean 2016; ADA 2005, Rastegar and Fingerhood 2020) When
175 substance abuse is suspected or confirmed, an empathetic, non-judgmental style of discussion facilitates a
176 trusting patient-doctor relationship.(Kulig 2005) Asking open-ended questions may garner more
177 information as they tend to be less threatening to the patient.(Kulig 2005) Brief interventions may include
178 educating the patient and/or family on health risks of use or ~~abuse~~ misuse of alcohol or other drugs, strong
179 encouragement for avoiding drugs and alcohol, motivational interviewing,(Miller and Rollnick 2013;
180 Kaminer 2016) and initiating referrals for assessment and treatment by other health care
181 providers.(National Institute on Drug Abuse 2014-Principles; Kulig 2005; Kulig et al. 2011; Dean 2016;
182 ADA 2005; Levy and Williams 2016; American Society of Addiction Medicine 2020) Although the
183 dental practitioner may grant patient confidentiality, he must abide by state laws when treating
184 minors.(Kulig et al. 2011) Involvement of the parent and other authorities is imperative when substance
185 ~~abuse~~ misuse places the adolescent patient or others in a high-risk or life-threatening situation.(Kulig et
186 al. 2011; Joffe 2003) In such circumstances, the patient should receive notification when disclosure of
187 confidential information will occur and be provided an opportunity to join the conversation.(Joffe 2003)

188

189 When providing treatment to a patient suspected of substance use, the dentist may need to modify
190 sedation procedures, administration of local anesthetics, and prescribing practices. Administration of
191 nitrous oxide or anxiolytic or sedative medications to an adolescent who is actively using or has a current
192 history of substance ~~abuse~~ misuse can lead to unfavorable drug interactions, over-sedation, or respiratory
193 depression.(Kulig et al. 2011; Dean 2016) Use of these agents during remission/recovery from ~~substance~~
194 ~~abuse~~ a SUD can predispose a patient to relapse.(Center for Substance Abuse Treatment 2005; National
195 Institute on Drug Abuse 2014-Principles; Kulig et al. 2011) Dentists should use local anesthetics
196 containing vasoconstrictors judiciously in adolescent patients who abuse stimulant medications such as

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197 methylphenidate, amphetamine and dextroamphetamine, methamphetamine, and cocaine. Drug
198 interactions between vasoconstrictors and stimulants can cause tachycardia, hypertension or hypotension,
199 palpitations, hyperthermia, cardiac dysrhythmias, myocardial infarction, and cerebrovascular
200 accidents.(Kulig et al. 2011; Klein-Schwartz 2002; Hamamoto and Rhodus 2009; Friedlander et al. 2003)
201 Dentists should be knowledgeable of the various SUDs (e.g., alcohol, opiate, benzodiazepine) when
202 recommending or prescribing medications. When pain management is necessary, an adolescent with an
203 opioid use disorder should receive non-opioid analgesics [e.g., acetaminophen, nonsteroidal anti-
204 inflammatory drugs (NSAIDS)].(Center for Substance Abuse Treatment 2006; Kulig et al. 2011) Prior to
205 prescribing medications that have the potential to be ~~abused~~ misused, the practitioner should assess
206 adolescent patients with risk factors such as active substance use, past ~~substance abuse~~ SUD, current
207 medications, and a family history of ~~substance abuse~~ SUD.(National Institute on Drug Abuse 2014-
208 Principles; Bukstein 2019) For patients at high risk, the dentist should consider prescribing alternative
209 medications with less abuse potential, closely monitoring the patient, reducing length of time between
210 visits for refills, prescribing smaller amounts of liquid medications or fewer pills, and educating both
211 patients and parents about proper use and potential risks of prescription medications, including the risk of
212 sharing them with others.(National Institute on Drug Abuse 2014-Principles)

213

214 Policy Statement

215 The AAPD recognizes that an increasing number of adolescents ~~abuse~~ misuse alcohol and/or
216 drugs.(~~Substance Abuse and Mental Health Services Administration Binge drinking; Centers for~~
217 ~~Behavioral Health Statistics and Quality 2015~~ Johnson et al. 2020; SAMSHA 2020) Providing dental care
218 to adolescents with substance use disorders requires awareness of clinical manifestations and
219 implementation of different treatment approaches. Therefore, the AAPD encourages dental professionals
220 to:

- 221 • gain knowledge of SUD and associated behavioral, physiological, and cognitive effects in
222 adolescents.
- 223 • use a specific adolescent medical history documenting past history, current use, and previous
224 treatments for ~~substance abuse~~ SUD.
- 225 • recognize behaviors, clinical signs, and symptoms of adolescent substance ~~abuse~~ misuse.
- 226 • provide brief interventions to educate the adolescent and his family regarding the risks of
227 substance ~~abuse~~ misuse.
- 228 • provide brief interventions for encouragement, support, and positive reinforcement for avoiding
229 substance use.

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- 230 • provide referrals to primary care providers or behavioral health or addiction specialists for
- 231 assessment and/or treatment of SUD in adolescents when indicated.
- 232 • be familiar with community resources, such as self-help groups and treatment facilities, specific
- 233 to adolescents with SUD.
- 234 • use local anesthetics containing vasoconstrictors with caution in patients having a stimulant use
- 235 disorder.
- 236 • limit or decline use of nitrous oxide and anxiolytic or sedative medications in adolescents with
- 237 SUD.
- 238 • recommend or prescribe non-alcohol containing mouth rinses.
- 239 • recommend non-opioid analgesics when pain management is necessary.
- 240 • prescribe non-controlled substances or medications with a low potential for ~~abuse~~ misuse.
- 241 • prescribe medications that have the potential to be ~~abused~~ misused in small amounts or quantities,
- 242 preferably with no refills.
- 243 • respect patient confidentiality in accordance with state and federal laws.

244

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1 Policy on Transitioning from a Pediatric-centered to an Adult-
2 centered Dental Home for Individuals with Special Health Care
3 Needs

4
5 Revised

6 ~~2016~~ 2021

7
8 Abbreviations

9 **AAPD**: American Academy of Pediatric Dentistry

10 **SHCN**: Special health care needs

11
12 Purpose

13 The American Academy of Pediatric Dentistry (**AAPD**) recognizes the importance of transitioning
14 patients with special health care needs (**SHCN**) to an adult dental home as they reach the age of majority.
15 Finding a dental home (AAPD P_Dental home) to address their special circumstances while providing all
16 aspects of oral care in a comprehensive, continuously accessible, coordinated, and family-centered
17 manner may be a challenge. This policy addresses transition of young adult patients with SHCN and
18 identifies barriers that may challenge delivery of oral health care to this population.

19
20 Methods

21 This policy was developed by the Council on Clinical Affairs, adopted in 2011, (AAPD Transitioning
22 2011), and revised in 2016 (AAPD Transitioning 2016). This revision used electronic database and hand
23 searches of dental and medical literature, using the terms: special needs, disabled patients, handicapped
24 patients, adolescent development, adolescent health, special health care needs AND health care transition,
25 oral health; fields: all; limits: within the last 10 years, humans, English, birth through age 18, young adult:
26 19-24 years. Additionally, Websites for the American Dental Association, American Medical
27 Association, American Academy of Pediatric Dentistry, Agency for Healthcare Research and Quality,
28 Special Care Dentistry Association, and International Association for Disability and Oral Health were
29 reviewed. Expert opinions and best current practices were relied upon when clinical evidence was not
30 available.

31

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32 Background

33 AAPD is aware of the challenges that patients with SHCN patients and their families encounter when
34 seeking oral health care. Due to advances in diagnostic medical criteria-there has been an increase in the
35 As the prevalence of children with SHCN children has been increasing over the past decades with
36 advances in medical technology, the number of young adults with chronic health conditions also has
37 increased.(McManus et al. 2013; Blum 1995, Sharma 2014). With improvements in medical care, patients
38 with SHCN are living longer and require continued medical and oral health care. (Norwwood and Slayton
39 2013). Estimates indicate approximately 25 percent of the 18 million U.S. young adults ages 18 to 24
40 transitioning to adult centered care are affected by at least one chronic health condition.(McPheeters et al.
41 2014) In the United States there are 65 million people who are of transition-age, and an estimated 25-35%
42 of these young adults have one or more chronic conditions (McManus et al. 2020).
43 Each year in the U.S., 750,000 adolescents with SHCN cross into adulthood, with only 40 percent
44 receiving attention to core transition issues.(McManus et al. 2013; Seal and Ireland 2005) Of the 5 million
45 transition-age youth in the U.S. with special healthcare needs, only 17% received adequate transition
46 planning from their health care providers (Lebrun-Harros LA et al 2018).

47

48 Transitions are part of normal, healthy development and occur across the life span. Health care transition
49 for older adolescents with SHCN is a dynamic process that seeks to meet their individual needs. The goal
50 is to maximize lifelong functioning and potential through uninterrupted provision of high-quality,
51 developmentally-appropriate health care as the individual moves from adolescence into adulthood. The
52 cornerstones of patient-centered health care are flexibility, responsiveness, continuity,
53 comprehensiveness, and coordination. (AAP et al. 2011)

54

55 **Transitioning patients with SHCN**

56 Facilitating health care transition for patients with SHCN patients has received national attention from
57 other organizations recognizing the need to support the process.(McPheeters et al. 2014; Koop 1989;
58 Rosen et al. 2003) The medical community, specifically, and the broader health care community
59 (including dentistry) have yet to ensure that young people with SHCN who are the most dependent on
60 coordinated health care services are able to make the transition to the adult health care system and still
61 receive the services that they need.(Starmer et al. 2014; Blum 2002, Sharma 2014) Only one third of
62 pediatricians report making adequate referrals to adult physicians and fewer than 15 percent provide
63 appropriate educational materials to adolescents and their parents (reference??). This is of concern for
64 dental patients because a Adolescents who do not receive medical transitions are less likely to receive

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65 dental transitions.(Chi 2014) Additional factors associated with limited access to care during adulthood
66 transitioning include living in poverty, ~~and~~ being a minority and the independence level of the individual
67 with SHCN.(Amaria et al. 2011; Andemariam et al. 2014; Annunziato and Shemesh 2010, Borromeo et
68 al. 2014) A proper handoff, including clear direct or indirect communication between providers, can
69 reduce medical errors during the transition.(Starmer et al. 2014) The transition process should begin
70 during early adolescence and continue until the transfer of care is complete. (Chavis and Canares 2020)
71 This transitioning period is potentially stressful for parents and adolescents or young adults with SHCN,
72 and resources for acquiring adulthood healthcare are insufficient.(Arango 2011; Cruz et al. 2015;
73 Bayarsaikhan et al. 2015)

74

75 To improve health care transition for adolescents and young adults with chronic conditions, a policy
76 statement was established by a number of medical organizations.(Amaria et al. 2011) The policy
77 statement articulated six critical steps to ensuring the successful transition to adult-oriented care. They
78 are:

- 79 1. “to ensure that all young people with special health care needs have a health care provider who
80 takes specific responsibility for transition in the broader context of care coordination and health
81 care planning.
- 82 2. to identify the core competencies required by health care providers to render developmentally
83 appropriate health care and health care transition, and ensure that the skills are taught to primary
84 care providers and are an integral component of their certification requirements.
- 85 3. to develop a portable, accessible, medical summary to facilitate the smooth collaboration and
86 transfer of care among and between health care professionals.
- 87 4. to develop an up-to-date detailed written transition plan, in collaboration with young people and
88 their families.
- 89 5. to ensure that the same standards for primary and preventive health care are applied to young
90 people with chronic conditions as to their peers.
- 91 6. to ensure that affordable, comprehensive, continuous health insurance is available to young
92 people with chronic health conditions throughout adolescence and into adulthood.”(Rosen et al.
93 2003)

94

95 Although these steps represent a medical perspective, they may be applied to oral health care as well.

96

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97 Education and preparation of the minor patient and parent on the value of transitioning to a dentist who is
98 knowledgeable in adult oral health needs are important. At a time agreed upon by the parent, patient, and
99 pediatric dentist, the patient should be transitioned to a dentist knowledgeable and comfortable with
100 managing the patient's specific health care needs. In cases where this is not possible or desired, the dental
101 home can remain with the pediatric dentist and referrals for specialized dental care should be
102 recommended when needed.(AAPD BP_Management/patients with SHCN)

103
104 Discussion about transition can begin early, although the transfer of care may not take place for many
105 years. (Blum 1995, Chavis and Canares 2020) Evidence supports initiating a transition plan between ~~the~~
106 14 and 16 years of age.(Geenen et al. 2003) Anecdotal evidence suggests that transition planning may be
107 happening even earlier.(AAP et al. 2011)

108
109 **Barriers in transitioning patients with SHCN**

110 The most common category of unmet health care for children with special needs is dentistry.(~~Newacheck~~
111 ~~2002~~, Espinoza 2018) Only 10 percent of surveyed general dentists reported that they treat patients with
112 SHCN often or very often, while 70 percent reported that they rarely or never treat patients with
113 SHCN.(~~Casamassimo 2004~~, Chavis and Canares 2020) Pediatric dentists appear more likely to provide
114 dental care for this population with 99.5% of pediatric dentists reporting that they care for special needs
115 patients (ADA Survey 2012). ~~as evidenced by a survey of AAPD members which reported that 95~~
116 ~~percent routinely treat patients with SHCN.(Nowak 2002)~~

117
118 According to the ~~2011/2012~~ 2017/2018 National Survey of Children with Special Care Needs, there are
119 approximately ~~14.6~~ 13.6 million children with SHCN ~~under age 17 years of age~~ (representing ~~19.8~~ 18.5
120 percent of all U.S. children).(Child and Adolescent Health Measurement Initiative 2012 NSCH Data Brief
121 2020) The U.S. has approximately 6000 pediatric dentists.(AAPD Membership Statistics) The relatively
122 small number and distribution of pediatric dentists mean that broader involvement by general dentists is
123 necessary to address access to care issues, especially transition of patients with SHCN.(AAPD 2007)
124 When patients reach adulthood, their oral health care needs may go beyond the scope of the pediatric
125 dentist's expertise. Even if a patient is best served by maintaining a dental home with a pediatric dentist,
126 he/she may require additional dental providers to manage some aspects of his/her oral health care. It may
127 not be in the young adult's best interest to be treated solely in a pediatric facility.(Woldorf 2007)

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129 Oral health care for adults with special needs is often difficult to access because of a lack of trained
130 providers.(Blum 1995; AAPD 2007) A recent survey revealed that most pediatric dentists help patients
131 with SHCN transition into adult care, but the principal barrier is the availability of general dentists and
132 specialists willing to accept these patients.(Nowak et al. 2010,) A 2005 survey of senior dental students
133 noted that the provision of oral health care to patients with special needs was among the top four topics in
134 which they were least prepared.(Chmar et al. 2006) This self-perceived lack of preparation of future
135 dentists bodes poorly for effective transitioning of adult patients with SHCN patients. Improving training
136 at the predoctoral and postdoctoral levels is needed to increase the general practitioner's skills and
137 comfort for treating patients with SHCN (Espinoza 2018, Williams et al 2015).

138
139 Addressing the manpower issue is of utmost importance. Training and instruction for health care
140 providers can be obtained through post-doctoral educational courses. In the United States, programs such
141 as general practice residencies and advanced education in general dentistry provide opportunity for
142 additional medical, behavior guidance, and restorative training needed to treat patients with SHCN. The
143 Special Care Dentistry Association Fellowship and Diplomate programs and Academy of General
144 Dentistry's Mastership program may provide opportunities to increase workforce competency. (Special
145 Care Dentistry-Fellowship; Special Care Dentistry-Diplomate; AGD-Mastership, Espinoza 2014). In
146 other countries (e.g., Australia, Brazil, the United Kingdom) where special care dentistry is a recognized
147 academic discipline, a variety of post-doctoral education and clinical training programs, as well as
148 organizations (e.g., International Association for Disability and Oral Health), seek to reduce inequities in
149 oral health care. (Faulks et al. 2012).

150
151 Most patients with special needs can receive primary oral health care in traditional settings utilizing
152 clinicians and support staff trained in accommodating these individuals. Others require treatment by
153 clinicians with more advanced training in special facilities.(Chmar et al. 2006) Some pediatric hospitals
154 may enforce age restrictions that can create a barrier to care for patients who have reached the age of
155 majority.(Cruz et al. 2015) Hospitals frequently require that dentists eligible for medical staff
156 membership be board certified, thus making it difficult for general dentists to obtain hospital privileges.
157 While surgery centers abound, these may not be the preferred setting to treat medically compromised
158 patients.

159

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160 Young adults may be discontinued from their parents' insurance, ~~providing~~ resulting in a financial barrier
161 to care. Additional barriers to dental transition include low socioeconomic background and insufficient
162 health insurance benefits.(Chi 2014)

163

164 For patients with special needs, overall health care involves intensive and ongoing medical supervision
165 and coordination between medical and dental care. The integration of dentistry within the medical care
166 system presents a series of logistical challenges.(Edelstein 2007) Special programs or alternative care
167 delivery arrangements (e.g., mobile dental programs, nursing homes, group home facilities) to
168 complement the care provided through private practices to address access issues for patients with SHCN
169 are lacking.(Crall 2007)

170

171 The medical home_(AAP 2002) reflects recognition that care is best served by having a central point of
172 contact for ongoing primary care and coordination of care when delivered by a multitude of health care
173 providers and support service providers. The dental home_(AAPD ~~D~~_P_Dental home) closely parallels the
174 essential elements of the medical home as they relate to dental care.(Crall 2007)

175

176 Linkages between patients' medical and dental homes, however, often are not established as formally as
177 those among medical care providers, frequently resulting in inattention to dental services for patients with
178 SHCN.(~~Slavkin and Baum 2000~~ Chi 2014) Efforts to establish stronger relationships between medical
179 and dental homes are an important endeavor.(Lewis et al. 2005; AAPD-Record transfer form)

180

181 The most efficient but least common arrangement of care for patients with SHCN is a single institution
182 having providers from both disciplines (typically a hospital or regional care center).(Edelstein 2007)
183 Transitioning may become less of an issue in these facilities; however, those with comprehensive dental
184 clinics are limited in number and spread unevenly across the country.

185

186 Policy Statement

187 A coordinated transition from a pediatric-centered to an adult-centered dental home is critical for
188 extending the level of oral health and health trajectory established during childhood.

189

190 The AAPD encourages:

- 191 • Expansion of the medical and dental home across the life-span of a patient, especially to enable
192 successful transition of the adolescent with SHCN.

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- 193 • Partnerships with other organizations to prepare general dentists to accommodate and provide
194 primary health care for these patients in the usual dental setting.
- 195 • Development of special programs or alternative care delivery arrangements (e.g., mobile dental
196 programs, nursing home, group home facilities) to complement the care provided through private
197 practices to address issues for patients with SHCN.
- 198 • Utilization of the six critical steps to maximize seamless health care transition for the adolescent
199 dental patient with special needs. These steps provide a framework to organize and prepare the
200 dentist, patient, and patient’s family for the transition process.
- 201 • Provision of financial assistance for dental treatment for adults with SHCN by local, state, and
202 federal programs.
- 203 • Emphasis on the education of dental pre-doctoral students in treating patients with SHCN
204 patients.

205

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1 Policy on Patient Safety

2

3 Latest Revision

4 ~~2018~~ 2021

5

6 Abbreviations

7 **AAPD:** American Academy Pediatric Dentistry

8 **OEA:** Oxidizer Enriched Atmosphere

9 **WHO:** World Health Organization

10

11 Purpose

12 The American Academy of Pediatric Dentistry (**AAPD**) recognizes patient safety as an essential
13 component of quality oral health care for infants, children, adolescents, and those with special health care
14 needs. The AAPD encourages dentists to consider thoughtfully the environment in which they deliver
15 health care services and to implement practices to improve patient safety. This policy is not intended to
16 duplicate safety recommendations for medical facilities accredited by national commissions such as The
17 Joint Commission or those related to workplace safety such as Occupational Safety and Health
18 Administration.

19

20 Methods

21 This document is a revision of the policy developed by the Council on Clinical Affairs (~~and~~-adopted in
22 2008 (AAPD 2008) and revised in ~~2013~~ 2018.(AAPD 2018) This policy is based on a review of current
23 dental and medical literature, including search of the PubMed®/MEDLINE database using the terms:
24 patient safety AND dentistry, fields: all; limits: within the last 10 years, humans, English. ~~Eight hundred~~
25 ~~twenty-two~~ Four hundred seventy seven articles met these criteria. Papers for review were chosen from
26 this list and from the references within selected articles.

27

28 Background

29 All health care systems should be designed to provide a practice environment that promotes patient
30 safety.(Bailey et al. 2014) The World Health Organization (WHO) defines patient safety as “the reduction
31 of risk of unnecessary harm associated with healthcare to an acceptable minimum.”(WHO-Patient safety)
32 The most important challenge in the field of patient safety is prevention of harm, particularly avoidable

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33 harm, to patients during treatment and care.(WHO-Patient safety) Dental practices must be in compliance
34 with federal laws that help protect patients from preventable injuries and potential dangers such as the
35 transmission of disease.(Boyce and Pittet; WHO-Hand hygiene; AAPD P_Infection control) Laws help
36 regulate hazards related to chemical and environmental factors (e.g., spills, radiation) and facilities (e.g.,
37 fire prevention systems, emergency exits).(US DOL OSHA) AAPD best practices and oral health policies
38 provide additional information regarding the delivery of safe pediatric dental care.(AAPD-11 13 Policies
39 and Best Practices marked with an asterisk in the reference list) Furthermore, state dental practice acts
40 and hospital credentialing committees are intended to ensure the safety of patients and the trust of the
41 public by regulating the competency of and provision of services by dental health professionals.(AADB
42 2018 2020; AAPD P_Hospital staff membership; Joint Commission 2017 2020)

43

44 Patient-centered health care systems that focus on preventing errors are critical to assuring patient
45 safety.(Joint Commission 2017 2020; Ramoni et al. 2012) Some possible sources of error in the dental
46 office are miscommunication, interruptions, stress, fatigue, failure to review the patient's medical history
47 (e.g., current medications, allergies), and lack of standardized records, abbreviations, and
48 processes.(Bailey et al. 2014; Joint Commission -2017 2020; Jadhay et al. 2016) Treating the wrong
49 patient or tooth/surgical site, delay in treatment, disease progression after misdiagnosis, inaccurate
50 referral, incorrect medication dosage ordered/administered, breach in sterilization, waterline
51 contamination and unintentional swallowing, aspiration, or retention of a foreign object are examples of
52 patient safety events that occur in dentistry.(Black and Bowie, 2017; Cullingham et al. 2017; Obadan et
53 al. 2015; Ensaldo-Carrasco et al. 2016; AAP 2011) Adverse events may be classified in terms of severity
54 of harm (e.g., none, mild, moderate, severe, death).(Kalendarian et al. 2017)

55

56 Standardized processes and workflows help assure clerical and clinical personnel execute their
57 responsibilities in a safe and effective manner.(Jadhay et al. 2016) Policy and procedure manuals that
58 describe a facility's established protocols serve as a valuable training tool for new employees and
59 reinforce a consistent approach to promote safe and quality patient care.(Jadhay et al. 2016) Identifying
60 deviations from established protocols and studying patterns of occurrence can help reduce the likelihood
61 of adverse events.(AAPD P_Minimizing occupational hazards)

62

63 Safety checklists are used by many industries and healthcare organizations to reduce preventable
64 errors.(Harden and Roberson 2013; WHO-Surgical Safety Checklist) Data supports the use of procedural
65 checklists to minimize the occurrence of adverse events in dentistry (e.g., pre-sedation checklist).(Bailey

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66 et al. 2015; Saksena et al. 2014; ~~Pahe~~ et al. 2010 Robert and Patel 2018, Wali et al. 2020) Regularly
67 scheduled drills and scenario simulations which include review of checklists for emergency response
68 help to ensure that each team member knows his role and can perform it effectively during an emergency.
69 (Robert and Patel 2018 ;Wali et al. 2020) In addition, order sets, reminders, and clinical guidelines built
70 into an electronic charting system may improve adherence to best practices.(AAP 2011)

71
72 Zero harm, the concept that a patient will not experience preventable harm or injury is a goal in medicine
73 today.(Leonard et al. 2013) The medical profession has generally embraced the systematic approach to
74 safety change, but the dental profession has been slower to adopt this approach. (Thuse 2012 ; Stahl et al.
75 2020; Yansane 2020) The journey to achieve zero harm does not occur without effort. For change to
76 occur in dental practices and organizations, it is important that dental professionals publicly commit to the
77 establishment of a safety culture, encourage effective teamwork and promote effective communication
78 and training (Frankle 2016; Yansane2020).Reducing clinical errors requires a careful examination of
79 adverse events(Jadhay et al. 2016; AAP 2011; Hurst 2016) and near-miss events(Ramoni et al. 2012;
80 Frankel et al. 2017). In a near-miss event, an error was committed, but the patient did not experience
81 clinical harm.(Ramoni et al. 2012; Frankel et al. 2017) Detection of errors and problems within a practice
82 or organization may be used as teaching points to motivate changes and avoid recurrence.(Tucker and
83 Edmondson 2003) A root cause analysis can be conducted to determine causal factors and corrective
84 actions so these types of events may be avoided in the future.(Harden and Roberson 2013; Ramoni et al.
85 2014; Frankel et al. 2006; Leonard et al. 2013) Embracing a patient safety culture demands a non-punitive
86 or no-blame environment that encourages all personnel to report errors and intervene in matters of patient
87 safety.(Ramoni et al. 2012; Ramoni et al. 2014) Alternatively, a fair and just culture is one that learns and
88 improves by openly identifying and examining its own weaknesses; individuals know that they are
89 accountable for their actions, but will not be blamed for system faults in their work environment beyond
90 their control.(Frankel et al. 2006 ;Leonard et al.2013) Evidence-based systems have been designed for
91 healthcare professionals to improve team awareness, clarify roles and responsibilities, resolve conflicts,
92 improve information sharing, and eliminate barriers to patient safety.(Sheppard et al. 2013; US DHHS
93 AHQR; Leonard et al. 2013)

94
95 The environment in which dental care is delivered impacts patient safety. In addition to structural issues
96 regulated by state and local laws, other design features should be planned and periodically evaluated for
97 patient safety, especially as they apply to young children. Play structures, games, and toys are possible
98 sources for accidents and infection.(Rathmore and Jackson 2017; AAP 2010)

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99

100 The dental patient would benefit from a practitioner who follows current literature and participates in
101 professional continuing education courses to increase awareness and knowledge of best current practices
102 and public health concerns. Scientific knowledge and technology continually advance, and patterns of
103 care evolve due, in part, to recommendations by organizations with recognized professional expertise and
104 stature, including the American Dental Association, The Joint Commission, WHO, Institute for Health
105 Improvement, and Agency for Healthcare Research and Quality. Data-driven solutions are possible
106 through documenting, recording, reporting, and analyzing patient safety events.(Obadan 2015;Spera et al.
107 2017; Thusu et al. 2012) Continuous quality improvement efforts including outcome measure analysis to
108 improve patient safety should be implemented into practices.(AAP 2011; Kiersma 2011) Patient safety
109 incident disclosure is lower in dentistry compared with medicine since a dental-specific reporting system
110 does not exist in the United States.(Thusu et al. 2012 Stahl et al. 2020) Identifiable patient information
111 that is collected for analysis is considered protected under the Health Insurance Portability and
112 Accountability Act (HIPAA).(AAPD-Record Keeping; US DHHS Office for Civil Rights 2013)

113

114 Dental practitioners should be aware of and minimize the potential for patient fire during procedures
115 when an ignition source, fuel, and oxidizer are present simultaneously. (Weaver 2012; Bosack et al. 2016;
116 Chen 2019) (Figure 1) Patient fire is rare but can result in injury and death. (Bosack et al. 2016, Weaver,
117 2012) Sparks from burs, lasers, and electrosurgical units can serve as an ignition source. (Bosack et al.
118 2016) Combustible agents (e.g., dry gauze, throat pack, paper and cotton products; hair; petroleum-based
119 lubricants; alcohol-based products; rubber dam and nitrous mask) can act as a fuel.(Bosack et al. 2016)
120 Delivery of nitrous oxide and/or oxygen, both of which are oxidizers, can produce an oxidizer enriched
121 atmosphere (OEA).

122

123 Policy statement

124 To promote patient safety, the AAPD encourages:

- 125 1. Patient safety instruction in dental curricula to promote safe, patient-centered care.
- 126 2. Professional continuing education by all licensed dental professionals to maintain familiarity with
127 current regulations, technology, and clinical practices.
- 128 3. Compliance and recognition of the importance of infection control policies, procedures, and practices
129 in dental health care settings in order to prevent disease transmission from patient to care provider,

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- 130 from care provider to patient, and from patient to patient.(WHO-Patient safety; Boyce and Pittet;
131 WHO-Hand hygiene)
- 132 4. Routine inspection of physical facility in regards to patient safety. This includes development and
133 periodic review of office emergency and fire safety protocols and routine inspection and maintenance
134 of clinical equipment.
- 135 5. Recognition that informed consent by the parent, and assent from the child when applicable, is
136 essential in the delivery of health care and effective relationship/communication practices can help
137 avoid problems and adverse events. The parent should understand and be actively engaged in the
138 planned treatment.
- 139 6. Accuracy of patient identification with the use of at least two patient identifiers, such as name and
140 date of birth, when providing care, treatment, or services.
- 141 7. An accurate and complete patient chart that can be interpreted by a knowledgeable third
142 party.(AAPD-Monitoring and management/Sedation) Standardizing abbreviations, acronyms, and
143 symbols throughout the record is recommended.
- 144 8. An accurate, comprehensive, and up-to-date medical/ dental history including medications and allergy
145 list to ensure patient safety during each visit. Ongoing communication with health care providers,
146 both medical and dental, who manage the child's health helps ensure comprehensive, coordinated
147 care of each patient.
- 148 9. A pause or time out with dental team members present before invasive procedure(s) to confirm the
149 patient, planned procedure(s), and tooth/surgical site(s) are correct.
- 150 10. Inclusion of fire prevention and management protocols in procedure and emergency plans. A time out
151 may be used to assess the fire potential(Bosack et al. 2016) of a procedure when nitrous oxide or
152 oxygen is to be used. If an ignition source and fuel are present, risk of a patient fire may be reduced
153 by monitoring the flow of gases and using high volume suction for at least one minute prior to the use
154 of a potential ignition source.(Bosack. et al. 2016, VanCleave et al. 2014)) In addition, maintaining a
155 moist working field and avoiding cutting dry can decrease fire risk. (Chen 2019; Van Cleave et al.
156 2014).
- 157 ~~10-11.~~ Appropriate staffing and supervision of patients treated in the dental office.
- 158 ~~11-12.~~ Adherence to AAPD recommendations on behavior guidance, especially as they pertain to use of
159 advanced behavior guidance techniques (i.e., protective stabilization, sedation, general anesthesia).
- 160 ~~12-13.~~ Standardization and consistency of processes within the practice. A policies and procedures
161 manual, with ongoing review and revision, could help increase employee awareness and decrease the
162 likelihood of untoward events. Dentists should emphasize procedural protocols that protect the

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163 patient's airway (e.g., rubber dam isolation), guard against unintended retained foreign objects (e.g.,
164 surgical counts; observation of placement/removal of throat packs, retraction cords, cotton pellets,
165 and orthodontic separators), and minimize opportunity for iatrogenic injury during delivery of care
166 (e.g., protective eyewear).

167 ~~13-14.~~ Minimizing exposure to nitrous oxide by maintaining the lowest practical levels in the dental
168 environment. This includes routine inspection and maintenance of nitrous oxide delivery equipment
169 as well as adherence to clinical recommendations for patient selection and delivery of inhalation
170 agents.

171 ~~14-15.~~ Minimizing radiation exposure through adherence to as low as reasonably achievable (ALARA)
172 principle, equipment inspection and maintenance, and patient selection criteria.

173 ~~15-16~~ All facilities performing sedation for diagnostic and therapeutic procedures to maintain records
174 that track adverse events. Such events then can be examined for assessment of risk reduction and
175 improvement inpatient safety.

176 ~~16-17~~ Dentists who utilize in-office anesthesia providers take all necessary measures to minimize risk to
177 patients. Prior to delivery of sedation/general anesthesia, appropriate documentation shall address
178 rationale for sedation/general anesthesia, informed consent, instructions to parent, dietary precautions,
179 preoperative health evaluation, and any prescriptions along with the instructions given for their use.
180 Rescue equipment should have regular safety and function testing and medications should not be
181 expired. The dentist and anesthesia providers must communicate during treatment to share concerns
182 about the airway or other details of patient safety.

183 ~~17-18.~~ Ongoing quality improvement strategies and routine assessment of risk, adverse events, and near
184 misses. A plan for improvement in patient safety and satisfaction is imperative for such
185 strategies. (AAPD-P Infection control; US DOL OSHA)

186 ~~18-19~~ Comprehensive review and documentation of indication for medication order/administration. This
187 includes a review of current medications, allergies, drug interactions, and correct calculation of
188 dosage.

189 20. Vigilance in monitoring public health concerns (eg: severe acute respiratory syndrome coronavirus 2
190 [SARS -CoV-2]). This includes taking appropriate steps to ensure patient and staff safety as
191 recommended by local and national sources with recognized expertise.

192 ~~19-21.~~ Promoting a culture where staff members are empowered and encouraged to speak up or intervene
193 in matters of patient safety.

194

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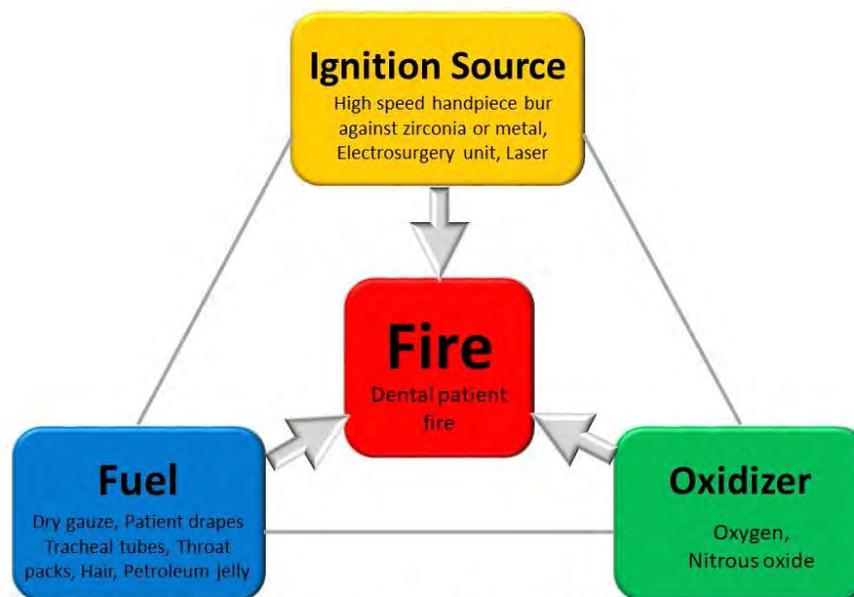
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 364
 365



366 Figure 1. Dental fire triangle: dental fire may result when all three factors are present simultaneously.

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1 Management of Dental Patients with Special Health Care Needs

2

3 Latest Revision

4 ~~2016~~ 2021

5

6 Abbreviations

7 **AAPD:** American Academy Pediatric Dentistry

8 ~~ADA-AwDA:~~ Americans with Disabilities Act

9 **HIPAA:** Health Insurance Portability and Accountability Act

10 **SHCN:** Special health care needs

11

12 Purpose

13 ~~The American Academy of Pediatric Dentistry (AAPD) recognizes that p~~Providing both primary and
14 comprehensive preventive and therapeutic oral health care to individuals with special health care needs
15 (SHCN) is an integral part of the specialty of pediatric dentistry.~~(AAPD Overview National Commission)~~
16 The American Academy of Pediatric Dentistry (AAPD) values the unique qualities of each person and the
17 need to ensure maximal health attainment for all, regardless of developmental disability or other special
18 health care needs. These recommendations were intended to educate health care providers, parents,
19 (AAPD overview) caregivers, and ancillary organizations about the management of oral health care needs
20 particular to individuals with SHCN rather than provide specific treatment recommendations for oral
21 conditions.

22

23 Methods

24 Recommendations on the management of dental patients with SHCN were developed by the Council on
25 Clinical Affairs, ~~and~~ adopted in 2004~~(AAPD 2004)~~. ~~This document is a revision of the previous~~
26 ~~version, and~~ last revised in 2016~~(AAPD 2016)~~. This update is based on a review of the current dental and
27 medical literature related to individuals with SHCN. ~~An~~ search was conducted via PubMed®/MEDLINE
28 using the terms: special needs, disability, disabled patients/persons/children, handicapped patients,
29 dentistry, dental care, and oral health; fields: all; limits: within the last 10 years, human, and English, ~~and~~
30 clinical trials. Eighty-seven electronic and hand searched articles met the defined criteria. Papers for
31 review were chosen from the resultant list of articles and from references within selected articles. When
32 data did not appear sufficient or were inconclusive, recommendations were based on expert and/or

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33 consensus opinion by experienced researchers and clinicians, ~~including papers and workshop reports~~
 34 ~~from the AAPD-sponsored symposium “Lifetime Oral Health Care for Patients with Special Needs”~~
 35 ~~(Chicago, Ill.; November, 2006).~~(AAPD 2007)

36

37 Background

38 The AAPD defines special health care needs as “any physical, developmental, mental, sensory,
 39 behavioral, cognitive, or emotional impairment or limiting condition that requires medical management,
 40 health care intervention, and/or use of specialized services or programs. The condition may be congenital,
 41 developmental, or acquired through disease, trauma, or environmental cause and may impose limitations
 42 in performing daily self-maintenance activities or substantial limitations in a major life activity. Health
 43 care for individuals with special needs requires specialized knowledge, as well as increased awareness
 44 and attention, adaptation, and accommodative measures beyond what are considered routine.”(AAPD
 45 D_SHCN).

46

47 Children with SHCN may include those with behavioral (e.g., anxiety, attention deficit hyperactivity
 48 disorder, autism spectrum disorder), congenital (e.g., Trisomy 21, congenital heart disease),
 49 developmental (e.g., cerebral palsy) or cognitive (e.g., intellectual disability) disorders. and systemic
 50 diseases (e.g., childhood cancer, sickle cell disease). (Estrella 2010) In some instances, the condition
 51 primarily affects the orofacial complex (e.g., amelogenesis imperfecta, dentinogenesis imperfecta, cleft
 52 lip/palate, oral cancer). While these individuals may not experience the same limitations as other patients
 53 with SHCN, their needs are unique, affect their overall quality of life, and require specialized,
 54 multidisciplinary oral health care. Individuals with SHCN These individuals may be at an increased risk
 55 for oral diseases throughout their lifetime.(AAPD 2007; USDHHS 2000; Anders 2010; Lewis 2009;
 56 Norwood 2013; Estrella2010) Oral health conditions associated with SHCN include (Norwood 2013):

- 57 - build-up of calculus resulting in increased gingivitis and periodontal risk
- 58 - enamel hypoplasia
- 59 - dental caries
- 60 - oral aversion and behavior problems
- 61 - crowding
- 62 - malocclusion
- 63 - anomalies in tooth development, size, shape, eruption, occlusion, alignment, and arch formation
- 64 - bruxism and wear facets
- 65 - fracture of teeth or trauma

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67

68 Oral diseases can have a direct and devastating impact on ~~the~~ general health and quality of life,
 69 Individuals of those with certain systemic health problems or conditions such as ~~Patients with~~
 70 compromised immunity (e.g., leukemia or other malignancies, human immunodeficiency virus, history of
 71 organ transplant); or cardiac conditions at a high risk for infective ~~associated with~~ endocarditis may be
 72 especially vulnerable to the effects of oral diseases.(Thikkurissy 2009) Patients with cognitively,
 73 developmental, or physical disabilities that impact one's ~~who do not have the~~ ability to understand,
 74 assume responsibility for, or cooperate with preventive oral health practices are susceptible as
 75 well.(Charles 2010) Oral health is an inseparable part of general health and well-being.(USDHHS
 76 2005~~2000~~)

67

78 ~~SHCN also includes disorders or conditions which manifest only in the orofacial complex (e.g.,~~
 79 ~~amelogenesis imperfecta, dentinogenesis imperfecta, cleft lip/palate, oral cancer). While these patients~~
 80 ~~may not exhibit the same physical or communicative limitations of other patients with SHCN, their needs~~
 81 ~~are unique, impact their overall health, and require oral health care of a specialized nature.~~

68

83 According to the National Survey of Children's Health in 2017-2018~~U.S. Census Bureau~~, approximately
 84 13.6 million children (18.5percent) had a special health care need. (NSCH 2020) One in four children
 85 with SHCN (26.6 percent) had functional limitations, one in five (19.9 percent) were consistently and/or
 86 significantly impacted by their health condition(s), and nearly half (46.0 percent) were
 87 sometimes/moderately impacted by their health condition(s). (NSCH 2020)~~37.9 million Americans have~~
 88 ~~a disability, with about two thirds of these individuals having a severe disability.(US Census Bureau~~
 89 ~~2010) The proportion of children in the U.S. with SHCN is estimated to be 18 percent, approximately~~
 90 ~~12.5 million.(Newacheek et al. 2000) The Surgeon General's Call to Action to Improve the Health and~~
 91 ~~Wellness of Persons With Disabilities included a call to double efforts in preventing disease and~~
 92 ~~promoting the overall health and well-being of persons with disabilities. (DHHS 2005) Because of~~
 93 ~~improvements in medical care, patients with SHCN will continue to grow in number are living longer and~~
 94 ~~require extended medical and oral health care. ; many~~Many of the formerly acute and fatal diagnoses
 95 have become chronic and manageable conditions. (Norwood 2013) Oral health care is as important as the
 96 provision of medical services. The Americans with Disabilities Act (AwDA) defines the dental office as
 97 a place of public accommodation.(US DOJ 1990) Thus, dentists are obligated to be familiar with these
 98 regulations and ensure compliancee. Failure to accommodate patients with SHCN could be considered

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99 ~~discrimination and a violation of federal and/or state law. Regulations require practitioners to provide~~
100 ~~physical access to an office (e.g., wheelchair ramps, disabled parking spaces). ; however, individuals with~~
101 ~~SHCN can face many barriers to obtaining oral health care.~~
102
103 ~~Families with SHCN children experience much higher expenditures than required for healthy children.~~
104 Unmet dental needs are associated with SHCN status and complexity.(Iida 2010) Children affected with
105 more severe conditions have increased risk of having unmet dental needs. (Iida 2010; Mayer 2004;
106 Norwood 2013). Barriers to care for children with SHCN may range from access to a dentist willing to
107 provide care, access to a professional with experience and expertise, limitations in the child’s cooperation,
108 and transportation issues. Because of these unmet dental care needs of individuals with SHCN, emphasis
109 ~~on~~a dental home with and comprehensive, coordinated services should be established.(US DOJ 1990;
110 Lewis 2005) Optimal health of children is more likely to be achieved with access to comprehensive health
111 care benefits.(AAP 2012) ~~Financing and reimbursement have been cited as e~~Common barriers for
112 medically necessary oral health care ~~include financial constraints.~~(Rouleau 2011; Nelson 2011) Insurance
113 plays an important role for families with children who have SHCN, but it still provides incomplete
114 protection.(Newacheck 2009; Newacheck 2005; Chen 2006) ~~Furthermore, as children with disabilities~~
115 reach adult hood, health insurance coverage may be restricted.(Newacheck and Kim 2005; Kenny 2009;
116 Callahan and Cooper 2007) Many individuals with SHCN rely on government funding to pay for medical
117 and dental care and lack adequate access to private insurance for health care services.(Kenny 2009) Lack
118 of preventive and timely therapeutic care may increase the need for costly care and exacerbate systemic
119 health issues.(Newacheck 2000)-Nonfinancial barriers such as language and psychosocial, structural, and
120 cultural considerations may interfere with access to oral health care.(Chen 2006) Effective
121 communication is essential and, for hearing impaired patients/parents, can be accomplished through a
122 variety of methods including interpreters, written materials, and lip-reading. Psychosocial factors
123 associated with access for patients with SHCN include oral health beliefs, norms of caregiver
124 responsibility, and past dental experience of the caregiver. Structural barriers include transportation,
125 school absence policies, discriminatory treatment, and difficulty locating providers who accept
126 Medicaid.(Rouleau 2011) ~~Community based health services, with educational and social programs, may~~
127 assist dentists and their patients with SHCN.(Halfon et al. 1995)
128
129 Priorities and attitudes can serve as impediments to oral care. The caregiver’s oral health promotion
130 efforts and interest in oral health-related education has been positively correlated with the level of
131 function, capabilities, and independence of an individual with SHCN. (Petrova et al 2014) Parental and

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132 physician lack of awareness and knowledge in the management of children with SHCN may hinder an
133 individual with SHCN from seeking preventive dental care.(Shenkin 2001; Petrova 2014) Other health
134 conditions may seem more important than dental health, especially when the relationship between oral
135 health and general health is not well understood.(Barnett 2006) Persons with SHCN ~~patients~~ may express
136 a greater level of anxiety about dental care than those without a disability, which may adversely impact
137 the frequency of dental visits and, subsequently, oral health.(Peltier 2009) An assessment of anxiety or
138 dental fear is challenging in this population and, in some cases, an estimation through parent or caregiver
139 report is helpful. Patients with SHCN require additional considerations for behavior guidance including
140 the patient’s development, education level, cognitive ability, cooperation in medical settings, triggers for
141 uncooperative behavior, soothing strategies, adherence to schedule or routine, current therapies, and other
142 beneficial accommodations (Townend 2019) as these can complicate the delivery of care. The use of
143 basic and advanced behavior guidance techniques (AAPD BP Behavior Guidance, BP Protective
144 Stabilization) allows the dentist to recognize the complexities of managing patients with SHCN.

145
146 Managing patients with SHCN includes proper coordination and transition into adult care. Pediatric
147 dentists are concerned about decreased access to oral health care for patients with SHCN as they
148 transition beyond the age of majority.(Nowak 2010) Finding a dental home for non-pediatric patients with
149 SHCN ~~could~~ can be challenging. Pediatric hospitals, by imposing age restrictions, can create another
150 barrier to care for these patients. This presents difficulties for pediatric dentists providing care to adult
151 patients with SHCN who have not yet transitioned to adult primary care. ~~Some pediatric hospitals require~~
152 ~~dentists to be board certified, thus making it difficult for general dentists to obtain hospital privileges.~~
153 Outpatient surgery centers and in-office general anesthesia may be alternatives, although they may not be
154 appropriate ~~to treat~~ for patients with medically-complex special needs ~~due to medical complexity.~~ (AAPD
155 P_Transitioning) ~~Transitioning to a dentist who is knowledgeable and comfortable with adult oral health~~
156 ~~care needs often is difficult due to a lack of trained providers willing to accept the responsibility of caring~~
157 ~~for SHCN patients.(Woldorf 2007; Casamassimo et al. 2004) It should be noted that t~~ The Commission on
158 Dental Accreditation of the American Dental Association introduced an accreditation standard requiring
159 requires dental schools to ensure that curricular efforts ~~are~~ focused on educating ~~their~~ students on how to
160 assessment of treatment needs of patients with SHCN.(ADA CODA; Krause et al. 2010)

161

162 Recommendations

163 Recommendations to reduce the risk of developing oral disease is an integral part of the comprehensive
164 oral health care for children with SHCN. The goals of care include: (1) establishing dental home at an

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165 early age, (2) obtaining thorough medical, dental, and social patient histories, (3) creating an environment
166 conducive for the child to receive care, (4) providing comprehensive oral health education and
167 anticipatory guidance to the child and caregiver, and (5) providing preventive and therapeutic services
168 including behavior guidance and a multidisciplinary approach when needed. (Estrella 2010) Attention to
169 detail is important for all aspects of care including scheduling appointments, assessment, treatment
170 planning, consent, education and anticipatory guidance, treatment, recalls, and transition of care when the
171 patient reaches adulthood.

172

173 **Dental home**

174 A dental home should be established by 12 months of age (AAPD P Dental Home). The dental home
175 provides an opportunity to implement individualized preventive oral health practices, help establish
176 routine dental care, and reduces the child's risk of preventable dental/oral disease. (AAPD Dental Home).
177 Dentists are obligated to be familiar with the regulations of the Americans with Disabilities Act (AwDA)
178 and ensure compliance. Regulations require practitioners to provide physical access to the dental office
179 (e.g., wheelchair ramps, disabled-parking spaces).

180

181

182 **Scheduling appointments**

183 The caregiver's/ and patient's initial contact with the dental practice allows both parties an opportunity to
184 address the child's primary oral health needs and to confirm the appropriateness of scheduling an
185 appointment with that particular practitioner. Along with the child's name, age, and chief complaint, the
186 receptionist should determine the presence and nature of any SHCN and, when appropriate, the name(s)
187 of the child's medical care provider(s). The office staff, under the guidance of the dentist, should
188 determine the need for an increased length of appointment and/or additional auxiliary staff in order to
189 accommodate the patient in an effective and efficient manner. The need for increased dentist and team
190 time as well as customized services should be documented so the office staff is prepared to accommodate
191 the patient's unique circumstances at each subsequent visit.(Hernandez and Ikkanda 2011) Consideration
192 for length of time, time of the appointment (e.g., morning, first appointment of the day, limited patients in
193 the waiting room) or need for introductory visits helps to ensure a positive experience. (Estrella 2010).
194 When scheduling patients with SHCN, ~~it is imperative that the dentist be familiar~~ it is imperative that the dentist be familiar
195 with Health Insurance Portability and Accountability Act (HIPAA) and AwDA regulations applicable to
196 dental practices ~~are imperative.~~ are imperative. (USDHHS HIPAA, AwDA) HIPAA insures that the patient's privacy is
197 protected and AwDA prevents discrimination on the basis of a disability.

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198

199 **Dental home**

200 Patients with SHCN who have a dental home(AAPD P_Dental Home) are more likely to receive
201 appropriate preventive and routine care. The dental home provides an opportunity to implement
202 individualized preventive oral health practices and reduces the child's risk of preventable dental/oral
203 disease.

204

205 When patients with SHCN reach adulthood, their oral health care needs may extend beyond the scope of
206 the pediatric dentist's training. It is important to educate and prepare the patient and parent on the value of
207 transitioning to a dentist who is knowledgeable in adult oral health needs. At a time agreed upon by the
208 patient, parent, and pediatric dentist, the patient should be transitioned to a dentist knowledgeable and
209 comfortable with managing that patient's specific health care needs. In cases where this is not possible or
210 desired, the dental home can remain with the pediatric dentist and appropriate referrals for specialized
211 dental care should be recommended when needed.(Nowak 2002)

212

213 **Patient assessment**

214 Familiarity with the patient's medical history is essential to decreasing the risk of aggravating a medical
215 condition while rendering dental care. An accurate, comprehensive, and up-to-date medical history is
216 necessary for correct diagnosis, and effective treatment planning, and decreasing the risk of aggravating a
217 medical condition while rendering dental care. The intake interview should address information regarding
218 the chief complaint, history of present illness, medical conditions and/or illnesses, medical care providers,
219 hospitalizations/surgeries, anesthetic experiences, current medications, allergies/sensitivities,
220 immunization status, review of systems, and family, and social histories, and thorough dental
221 histories should be obtained.(AAPD BP_Record-Keeping, AAPD Pediatric Medical History) ~~As many~~
222 The interview should include patient's development, education level, and cognitive ability to help predict
223 cooperation. (Townsend 2019) Many children with SHCN may have sensory issues or limitations to
224 communication that can make the dental experience challenging; the dentist should include such
225 considerations during the history intake and be prepared to modify the traditional delivery of dental oral
226 health care to address the child's unique needs. If the patient/ parent is unable to provide accurate
227 information, consultation with the caregiver or with the patient's physician may be required.

228

229 At each patient visit, the dental team history should be consulted and verbally update the patient's
230 medical history, noting any d. R-recent medical attention for illness or, injury, or changes in health status,

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231 newly diagnosed medical conditions ~~or, new~~ allergies/sensitivities, and changes in medications ~~should be~~
232 ~~documented.~~ Obtaining a written update ~~should be obtained~~ at each recall visit enhances documentation
233 and awareness of the patient's history and health status. The patient's record should identify any
234 significant medical conditions ~~should be identified in a conspicuous yet confidential manner in the~~
235 ~~patient's record.~~

236

237 A ~~C~~comprehensive clinical examination includes evaluation of the head, neck, and oral structures
238 ~~examinations should be completed on all patients.~~ Along with caries- and periodontal-risk assessment
239 should be performed. (AAPD Caries-risk Assessment, AAPD Perio document) Caries-risk assessment
240 provides a means of classifying caries risk at a point in time and, therefore, should be applied periodically
241 to assess changes in an individual's risk status. (AAPD Caries-risk Assessment) The examination also
242 should include assessments of occlusion, habits, and traumatic injuries ~~history.~~ The dentist should review
243 all available adjunctive diagnostic aids such as radiographs, photographs, or blood tests. ~~An~~
244 individualized preventive program, including a dental recall schedule, should be recommended after
245 evaluation of the patient's caries risk, oral health needs, and abilities.

246

247 A summary of the oral findings and specific treatment recommendations should be provided to the patient
248 and parent/~~caregiver~~. When appropriate, the patient's other health care providers (e.g., physicians, nurse
249 practitioners, therapists ~~social workers~~) and care takers should be informed of any significant findings. An
250 individualized preventive program, including a dental recall schedule, should be recommended after
251 evaluation of the patient's caries risk, oral health needs, and capabilities.

252

253 **Medical consultations**

254 The dentist should coordinate care via consultation with the patient's other care providers. When
255 appropriate, the physician should be consulted regarding medications, sedation, general anesthesia, and
256 special restrictions or preparations that may be required to ensure the safe delivery of oral health care. A
257 multidisciplinary approach may be necessary in complex case management. The dentist and staff always
258 should be prepared to manage a medical emergency.

259

260 **Patient communication**

261 ~~When treating patients with SHCN, similar to any other child, developmentally appropriate~~
262 ~~communication is critical. Often, information provided by a parent or caregiver prior to the patient's visit~~
263 ~~can assist greatly in preparation for the appointment.~~ (Charles 2010) ~~An attempt should be made to~~

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264 communicate directly with the patient and, when indicated, to supplement communication with gestures
265 and augmentive methods of communication during the provision of dental care. A patient who does not
266 communicate verbally may communicate in a variety of non-traditional ways. At times, a parent, family
267 member, or caretaker may need to be present to facilitate communication and/or provide information that
268 the patient cannot. According to the requirements of the ADA, if attempts to communicate with a
269 patient with SHCN/parent are unsuccessful because of a disability such as impaired hearing, the dentist
270 must work with those individuals to establish an effective means of communications. (US DOJ 1990)

271

272 **Planning dental treatment**

273 The process of developing a dental treatment plan typically progresses through several steps. Before a
274 treatment plan can be developed and presented to the patient and/or caregiver, information regarding
275 medical, physical, psychological, social, behavioral, and dental histories must be gathered (Glassman and
276 Subar 2009) and clinical examination and any additional diagnostic procedures completed.

277 The goals of oral health care for individuals with SHCN align with those for all children with careful
278 consideration of the risks, benefits, and prognosis of the proposed plan to the individual's condition.
279 Understanding the patient's cognitive level, sensitivities, oral aversion, and triggers to negative behavior
280 will help improve delivery of care and communication. Pediatric dentists should communicate with
281 patients with SHCN at a level appropriate for their cognitive development. (Townsend 2019) The dentist
282 should not assume that patients with impaired communication have associated intellectual disability,
283 unless specified. (Townsend 2019).-Patients with hearing or visual impairment may require non-verbal
284 communication and cues with the help of the caregiver. Other considerations include treating active
285 disease prior to any major medically-necessary procedures (e.g., cardiac surgery, initiation of oncology
286 treatment), deferring all elective dental treatment during active phases of medical care if a child is
287 immunocompromised or at hematologic risk (Estrella 2010), and prescribing antibiotic prophylaxis if risk
288 for infective endocarditis or distant site infection (e.g., in the presence of uncontrolled systemic disease, if
289 the individual is immunocompromised) is high. (AAPD BP antibiotic prophylaxis) The practitioner
290 should have a thorough knowledge of indications and contraindications for the use of pharmacologic
291 agents (e.g., antibiotics, analgesics, sedatives, anesthetics) in relation to the patient's medical condition.
292 In some situations (e.g., anatomic airway issues; high risk of complications with procedures, surgeries, or
293 general anesthesia; the need for high level specialist care), treatment in a tertiary hospital setting is
294 indicated. There is anecdotal parental concern for increased risk of development of neurodevelopmental
295 disorders such as autism with general anesthesia exposure. Research has shown that exposure to general
296 anesthesia before the age of two years and number of exposures were not associated with the development

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297 of autism (Ko et al 2015), however, further research regarding the risks associated with
298 neurodevelopmental disorders is warranted. (FDA 2017)

299
300 Indications for an orthodontic evaluation include facial asymmetry, abnormalities in nasal breathing,
301 difficulties with chewing, swallowing, speech, and/or oral functioning, and malocclusion. The primary
302 motivation for parents to have their child with SHCN undergo orthodontic therapy is to improve the
303 child's facial attractiveness, oral function, and quality of life. (Abeleira et al 2014, Abeleira et al 2016).
304 The decision to initiate orthodontic treatment should factor in the child's ability to tolerate treatment and
305 the expected outcomes of care.

306
307 **Informed consent**

308 All patients must be able to provide signed informed consent for dental treatment or have someone
309 present who legally can provide this service for them.- Informed consent/assent must comply with state
310 laws and, when applicable, institutional requirements. Informed consent should be well documented in the
311 dental record through a signed and witnessed form.(AAPD BP_Informed Consent)

312
313 **Behavior guidance**

314 Behavior guidance of the patient with SHCN can be challenging. Communication may be limited due to
315 anxiety, intellectual disability, or impaired hearing or vision. Because of dental anxiety, or a lack of
316 understanding of dental care, oral aversion, or fatigue from multiple medical visits and procedures
317 (previously referred to as white coat syndrome), children with SHCN disabilities may exhibit resistant
318 behaviors. These behaviors can interfere with the safe delivery of dental treatment. With the
319 parent/caregiver's assistance, most patients with physical and ~~mental~~intellectual disabilities can be
320 managed receive oral health care in the dental office. Protective stabilization can be helpful ~~in~~ for some
321 patients (e.g., those with aggressive, uncontrolled, or impulsive behaviors; ~~when~~for whom traditional
322 behavior guidance techniques are not adequate);(AAPD BP_Behavior Guidance, BP Protective
323 Stabilization) ~~for safe delivery of care and with consent. When protective stabilization is not feasible or~~
324 effective non-pharmacologic behavior guidance techniques are ineffective, the practitioner may
325 recommend sedation or general anesthesia to allow completion of comprehensive treatment in a safe and
326 efficient manner. ~~the behavioral guidance armamentarium of choice. When in-office sedation/ general~~
327 anesthesia is not feasible or effective, an out-patient surgical care facility might be necessary.

328

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329 **Preventive strategies**

330 Individuals with SHCN may be at increased risk for oral diseases; these diseases further jeopardize the
331 patient's overall health.(AAPD D_SHCN) Education of parents/caregivers is critical for ensuring
332 appropriate and regular supervision of daily oral hygiene. The team of dental professionals should
333 develop an individualized oral hygiene program that ~~takes into account~~accommodates the unique
334 disability of the patient. Assistance from other health professions (e.g., occupational therapist) may be
335 beneficial. Brushing with a fluoridated dentifrice twice daily ~~should be emphasized to help~~s prevent
336 caries and gingivitis. If a patient's sensory issues cause the taste or texture of fluoridated toothpaste to be
337 intolerable, a toothpaste without sodium laurel sulfate (SLS) to eliminate foaming nature, a fluoridated
338 mouth rinse, or an alternative (e.g., casein phosphopeptide-amorphous calcium phosphate [CPP-ACP])
339 may be applied with the toothbrush. Toothbrushes can be modified to enable individuals with physical
340 disabilities to brush their own teeth. Electric toothbrushes and floss holders may improve patient
341 compliance. Caregivers should provide the ~~appropriate~~optimal oral care when the patient is unable to do
342 so adequately.

343
344 Practitioners should encourage A a non-cariogenic diet ~~should be discussed~~ for long term prevention of
345 dental disease.(AAPD P_Dietary Recommendations) When a diet rich in carbohydrates or the use of high
346 calorie supplements is medically necessary (e.g., to increase weight gain), the dentist should provide
347 strategies to mitigate the caries risk by altering frequency of and/or increasing preventive measures.
348 Medications and the ~~As well, other~~ oral side effects (e.g., xerostomia, gingival overgrowth) of
349 medications should be reviewed as these can have an impact on caries and periodontal risk.

350
351 Patients with SHCN may benefit from sealants. Sealants reduce the risk of caries in susceptible pits and
352 fissures of primary and permanent teeth.(AAPD BP_Restorative DentistryWright 2016) Topical fluorides
353 (e.g., sodium fluoride, silver diamine fluoride) may be indicated when caries risk is increased.(AAPD
354 BP_Fluoride Therapy) Interim therapeutic restoration (ITR),(AAPD P_ITR) using materials such as glass
355 ionomers that release fluoride, may be useful as both preventive and therapeutic approaches in patients
356 with SHCN.(AAPD BP_Restorative Dentistry) In cases of gingivitis and periodontal disease,
357 chlorhexidine mouth rinse may be useful. (McGrath 2019) ~~For patients who might swallow a rinse,Use of
358 a toothbrush can be used to apply the chlorhexidine is an option if caregivers are concerned about the
359 child's potentially swallowing the antiseptic. An increased recall frequency for patients ~~Patients having~~
360 with severe dental disease is indicated. ~~Those patients~~ Patients with ~~progressive~~aggressive periodontal~~

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361 disease ~~should be referred~~require referral to a periodontist for evaluation and treatment if the treatment
362 needs are beyond the treating dentist's scope of practice.

363

364 Preventive strategies for patients with SHCN also should address traumatic injuries. This would include
365 anticipatory guidance about risk of trauma (e.g., with seizure disorders or motor skills/coordination
366 deficits), mouthguard fabrication, and what to do if dentoalveolar trauma occurs. Additionally, children
367 with SHCN are more likely to be victims of physical abuse, sexual abuse, and neglect when compared to
368 children without disabilities.(Giardino et al. 2003) Craniofacial, head, face, and neck injuries occur in
369 more than half of the cases of child abuse.(AAPD BP_Child Abuse and Neglect) Because of this
370 incidence, dentists need to be aware of signs of abuse and mandated reporting procedures.(Giardino et al.
371 2003; AAPD BP_Child Abuse and Neglect)

372

373 **Barriers**

374 Dentists should be familiar with community-based resources for patients with SHCN and encourage such
375 assistance when appropriate. While local hospitals, public health facilities, rehabilitation services, or
376 groups that advocate for those with SHCN can be valuable contacts to help the dentist/patient address
377 language and cultural barriers, other community-based resources may offer support with financial or
378 transportation considerations that prevent access to care.(Nowak 2002)

379

380 **Patients with developmental or acquired orofacial conditions**

381 The oral health care needs of patients with developmental or acquired orofacial conditions-necessitate
382 special considerations, and. ~~While these individuals usually do not require longer appointments or~~
383 ~~advanced behavior guidance techniques commonly associated with children having SHCN,~~ management
384 of their oral conditions may presents ~~other~~-unique challenges.(AAPD BP_Developmental Anomalies)
385 Some children with acquired orofacial conditions may have an oral aversion which can increase their
386 anxiety and decrease cooperation in the dental setting. Developmental defects, such as hereditary
387 ectodermal dysplasia, ~~where~~ with clinical manifestations of oligodontia and anomalies in size or shape
388 ~~most teeth are missing or malformed,~~ can cause lifetime problems ~~that can~~and be devastating to children
389 and adults.(USDHHS Oral Health in America 2000) From the first contact with the child and family,
390 every effort must be made to assist the family in adjusting to and understanding the complexity of the
391 anomaly and the related oral needs and provide an overview of goals and progression of
392 treatment.(American Cleft Palate-Craniofacial Association 2018) The dental practitioner must be
393 sensitive to the psychosocial well-being of the patient, as well as the effects of the condition on growth,

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394 function, and appearance. Congenital oral conditions may entail therapeutic intervention of a protracted
395 nature, timed to coincide with developmental milestones. Patients with conditions such as ectodermal
396 dysplasia, epidermolysis bullosa, cleft lip/palate, and oral cancer frequently may require an
397 ~~interdisciplinary~~ multidisciplinary team approach to their care. Coordinating delivery of services by the
398 various health care providers can be crucial to successful treatment outcomes.

399

400 Patients with oral involvement of conditions such as osteogenesis imperfecta, ectodermal dysplasia, and
401 epidermolysis bullosa may often present with unique financial barriers. Although the oral manifestations
402 are intrinsic to the genetic and congenital disorders, medical health benefits may often do not provide for
403 related professional oral health care. The distinction made by third party payors between congenital
404 anomalies involving the orofacial complex and those involving other parts of the body is often arbitrary
405 and without merit.(AAPD P_Reimbursement Orofacial Anomalies) For children with ~~hereditary~~
406 ectodermal dysplasia, hypodontia and/or oligodontia, removable or fixed prostheses (including complete
407 dentures or over-dentures) and/ or implants may be indicated.(National Foundation for Ectodermal
408 Dysplasias) Dentists should work with the insurance industry to recognize the medical indication and
409 justification for such treatment in these cases.

410

411 **Referrals**

412 A patient may suffer progression of his/her oral disease if treatment is not provided because of age,
413 behavior, inability to cooperate, disability, or medical status. Postponement or denial of care can result in
414 unnecessary pain, discomfort, increased treatment needs and costs, unfavorable treatment experiences,
415 and diminished oral health outcomes. Dentists have an obligation to act in an ethical manner in the care of
416 patients.(AAPD P_Ethical Responsibilities) ~~Once~~ If the patient's needs are beyond the skills of the
417 practitioner, the dentist should make necessary referrals in order to ensure the overall health of the patient.
418 In some cases, the complex nature of disease and/or existing conditions necessitate multiple referrals and
419 a team (e.g., cleft lip/palate team) approach to providing comprehensive care.

420

421 **Transition into adult dentistry**

422 When patients with SHCN reach adulthood, their oral health care needs may extend beyond the scope of
423 the pediatric dentist's practice. The successful transition from pediatric to adult dental care is integral to
424 continuity of care and improved long-term outcomes of children with SHCN. (Borromeo et al 2014)
425 Education and preparation before transitioning to a dentist who is knowledgeable and comfortable in both
426 adult oral health needs and managing SHCN are important. (Woldorf 2007; Casamassimo et al 2004)

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427 Until the new dental home is established, the patient should maintain a relationship with the current care
 428 provider and have access to emergency services. (AAPD Periodicity) In cases where transitioning is not
 429 possible or desired, the dental home can remain with the pediatric dentist who should recommend
 430 appropriate referrals for specialized dental care as needed.(Nowak 2002). A coordinated transition from a
 431 pediatric to an adult dental home is critical for extending the level of oral health and health trajectory
 432 established during childhood. (AAPD Policy on Transitioning)

433

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1 Oral Health Care for the Pregnant Adolescent Pediatric Dental 2 Patient

3
4 Latest Revision

5 ~~2016~~ 2021

6
7 Abbreviations

8 **AAPD:** American Academy Pediatric Dentistry

9 **MS:** Mutans streptococci

10 **TOP:** ~~Teen Outreach Program~~

11
12 Purpose

13 The American Academy of Pediatric Dentistry (**AAPD**), as the oral health advocate for infants, children,
14 adolescents, and persons with special health care needs, recognizes that adolescent pregnancy remains a
15 significant social and health issue in the U.S. These recommendations are intended to address
16 management of oral health care particular to the pregnant adolescent rather than provide specific
17 treatment recommendations for oral conditions.

18
19 Methods

20 Recommendations on oral health care for the pregnant adolescent were developed by the Council on
21 Clinical Affairs Committee on the Adolescent and adopted in 2007. This document is an update of the
22 previous version, revised in ~~2012~~2016. The revision included a search of the PubMed®/~~MEDLINE~~
23 database using the terms: ~~teen pregnancy AND dental and adolescent pregnancy~~ (“pregnancy”[Mesh] OR
24 "pregnancy in adolescence"[Mesh] OR "teen pregnancy"[Text word] OR "pregnant teen"[Text word] OR
25 "pregnant adolescent"[Text word] OR "adolescent pregnancy"[Text word]) AND ("Oral Health"[MesH]
26 OR "oral health"[Text word] OR "dental health"[Text word] OR "dental care"[Mesh]) Filters: 10 years,
27 Humans, English. This search yielded ~~209~~ 434 articles that met the defined criteria to update this
28 document. The search then was narrowed to include articles that were limited to clinical trials, systematic
29 reviews, or meta-analysis yielding 56 articles. Additional strategies such as Google Scholar and hand
30 searches were employed. When data did not appear sufficient or were inconclusive recommendations
31 were based upon expert and/or consensus opinion by experienced researchers and clinicians.

32

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33 Background

34 **General considerations**

35 ~~In 2014, a total of 249,067 infants were born to 15 through 19 year olds, for a live birth rate of 24.2 per~~
36 ~~1,000 women in this age group.(Martin et al. 2015) This is a nine percent decline from 2013 (26.5 per~~
37 ~~1,000) and represents an historic low for the U.S., with an overall decline of 61 percent since the peak in~~
38 ~~1991 (61.8 per 1,000).(Ventura et al. 2014) Teen birth rate is defined by the Centers for Disease Control~~
39 ~~and Prevention as the number of births per 1000 females aged 15 – 19 years. (Martin, 2019) In 2018, the~~
40 ~~overall teen birth rate was 17.4 births per 1,000 females which was 7 percent decline from 2017. (Martin~~
41 ~~2019) However, racial disparities exist with the teen birth rates being higher for non-Hispanic black~~
42 ~~teenagers (26.3 births per 1000 females) and Hispanic black teenagers (26.7 births per 1000 females)~~
43 ~~compared to non-Hispanic white teenagers (12.1 births per 1000 females). (Martin 2019) Although the~~
44 ~~United States has seen the lowest rates of teen pregnancy in seven decades, the U.S. is still ranked highest~~
45 ~~amongst developed countries. (CDC Health Care Providers and Teen Pregnancy Prevention) While the~~
46 ~~decline in the U.S. teen birth rate is promising, the U.S. teen pregnancy rate still is substantially higher~~
47 ~~than other western industrialized nations.(Sedge et al. 2015) The declines in teen birth rates reflect a~~
48 ~~number of behavioral changes, including decreased sexual activity and increases in the use of~~
49 ~~contraception. (Haffner 1995p Klein 2005ACOG – Committee Opinion, 2017) Approximately 50 percent~~
50 ~~of adolescent pregnancies occur within the first six months of initial sexual intercourse, even with~~
51 ~~increasing use of contraceptives by adolescents.(Klein 2005) It is unclear why adolescents have become~~
52 ~~more effective contraceptive users; involvement in school activities, educational and career aspirations,~~
53 ~~mentoring programs, economic fluctuations, childbearing norms, contraceptive coverage under the~~
54 ~~Affordable Care Act, and the availability of health information via internet or television may have all~~
55 ~~contributed. (ACOG – Committee Opinion, 2017) The American College of Obstetricians and~~
56 ~~Gynecologists supports access for adolescents to all Food and Drug Administration (FDA) approved~~
57 ~~contraceptive methods. (ACOG – Committee Opinion, 2017) The prevalence of unplanned pregnancies in~~
58 ~~adolescents worldwide ranges from 33 to 82.percent (Vazquez-Nava F, 2014) Eighty two eight In the~~
59 ~~United States, 75 percent of adolescent (age 15 – 19 years) pregnancies are not planned. (Finer and Zolna~~
60 ~~2011; Gursory et al. 2008 CDC Reproductive Health 2019) More than half of these pregnancies (59~~
61 ~~percent) end in births, 14 percent result in miscarriages, and 27 percent result in abortion.(Finer and Zolna~~
62 ~~2011) Women living below the federal poverty level had unintended pregnancy rates two to three times~~
63 ~~the national average. (Finer LB 2016)~~
64

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65 Adolescent pregnancy (or childbearing) is a complex issue and is more likely among socioeconomically
66 disadvantaged adolescents. (ACOG – Committee Opinion, 2017) The correlation between poverty and
67 adolescent pregnancy is great; many adolescent females who give birth are from low-income
68 families.(CDC 2011) Teen Adolescent childbearing may present unfavorable consequences for mothers
69 (e.g., not completing high school) and their children and imposes high public sector costs. (CDC 2011
70 ACOG – Committee Opinion, 2017) Nearly two-thirds of teenage mothers receive public assistance and
71 have increased risk for living in poverty as they enter adulthood. (AAP Healthy Children – 2017).
72 Furthermore, the challenges of teen pregnancy may last generations with children of teen mothers more
73 like to perform poorly in school or drop out, and daughters of teen mothers to become teen mothers
74 themselves. (AAP Healthy Children, 2017)Eighty two percent of adolescent pregnancies are not
75 planned.(Finer and Zolna 2011; Gursory et al. 2008) More than half of these pregnancies (59 percent) end
76 in births, 14 percent result in miscarriages, and 27 percent result in abortion.(Finer and Zolna 2011)
77 There exist economic, racial, and ethnic disparities related to oral hygiene practices and dental service
78 utilization during pregnancy; reports indicate minority pregnant adolescents had only limited dental visits
79 and possessed limited knowledge of oral health and pregnancy outcomes.(Boggess et al. 2010; Fadavi et
80 al. 2009) Little is known about individual characteristics or behaviors related to clinically assessed oral
81 health during pregnancy.(Chung et al. 2014)
82 Medical complications involving mother and child occur more frequently in pregnant females aged 11
83 through 15 years than those aged 20 to 22 years.(Klein 2005) These include the delivery of low birth-
84 weight infants, increased neonatal death rate, and increased mortality rate for the mother.(Klein 2005)
85 The socioeconomic and cultural environments of the pregnant adolescent are related to the increased
86 frequency of low weight and premature newborns.(de Azevedo et al. 2015) Pregnancy induced
87 hypertension, anemia, sexually transmissible diseases, and premature delivery also are concerns for the
88 pregnant adolescent.(Klein 2005) Hypertension increases the risk of bleeding during procedures. Teens
89 are at a higher risk for pregnancy related high blood pressure (preeclampsia) and its complications than
90 older mothers.(Carey 2012) Preeclampsia is a dangerous medical condition that combines high blood
91 pressure in women who have never before had high blood pressure with proteinuria and swelling of the
92 hands and face.(WebMD 2016) Risks for the baby include premature birth and low birthweight.(Carey
93 2012) Proper prenatal care is essential, and blood pressure monitoring, weighing in, and testing the urine
94 for protein should take place at each prenatal healthcare visit.(Preeclampsia Foundation) If an abnormal
95 elevation in blood pressure is noted during a dental visit, the patient’s physician should be notified. Blood
96 pressure greater than or equal to 140/90 mmHg is considered mild hypertension, whereas values greater
97 than or equal to 160/110 mmHg are considered severe.(Gaffield et al. 2001) Acute onset, severe

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98 hypertension that persists for 15 minutes or more is considered an emergency. The physician should be
99 notified immediately as untreated severe hypertension can have significant morbidity (e.g., hemorrhagic
100 stroke) or mortality.(American College of Obstetricians 2015)

101

102 Recommendations

103

104 General considerations

105 Oral health care providers should encourage pregnant pediatric dental patients to seek routine care with
106 their obstetrician and primary care providers throughout their pregnancy. Oral health care providers
107 should emphasize that dental visits during pregnancy are safe, effective, and should be encouraged.
108 (National Mat Child Oral Health Resource Center 2012.)

109

110 To review recommendations for adolescent oral health care, please see AAPD *Best Practices on*
111 *Adolescent Oral Health Care* (AAPD Adolescent Oral Health Care 2020)

112

113 Diet considerations during pregnancy

114 The diet of the pregnant adolescent can affect the health of the child. A healthy diet is necessary to
115 provide adequate amounts of nutrients to the mother-to-be and the unborn child. ~~Recommended dietary~~
116 ~~allowances during pregnancy and lactation are tabulated as absolute figures rather than additions to the~~
117 ~~basic allowances.(NRC 1989) Nutrients of particular importance include folate (folic acid), calcium,,~~
118 ~~magnesium, zinc, and vitamins K, C, B-6 and B-12~~ folic acid, iron, calcium, vitamin D, choline, omega-3
119 fatty acids, B vitamins, and vitamin C. (NRC 1989 ACOG – Nutrition 2020) ~~Maternal levels of vitamin~~
120 ~~D during pregnancy may affect the developing primary dentition, with lower levels altering enamel~~
121 ~~integrity and increasing the risk for early childhood caries.(Schroth et al. 2014)~~ Vitamin D works with
122 calcium to help the bones and teeth of the fetus develop. (ACOG – Nutrition 2020) Folic acid, a B
123 vitamin, plays an important role in the production of cells and helps in the development of the neural tube,
124 the brain, and spinal cord. (Division of Birth Defects CDC 2016) Folic acid supplementation has been
125 shown to decrease the risk of isolated cleft lip with or without cleft palate. (Wilcox 2007, Kelly 2012) A
126 recent study supports the hypothesis that folate supplements play a significant role in preventing cleft lip
127 and palate when taken in the first 12 weeks of pregnancy.(Kelly et al. 2012) The growing benefits of folic
128 acid and the importance of folic acid supplements should be included as part of prenatal counseling.
129 (Division of Birth Defects CDC 2016) ~~Assessment of folic acid status in children having orofacial~~
130 ~~clefting is yet to be evaluated in depth.(Brooklyn et al. 2014)~~ During pregnancy, a woman’s nutritional

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131 needs are increased, but certainly the eating for two concept is not recommended. (McCann and Bonci
132 2001) The total energy needs during pregnancy range between 2,500 to 2,700 kcal a day for most women,
133 but pre-pregnancy body mass index, rate of weight gain, maternal age, and physiological appetite must be
134 considered in tailoring this recommendation to the individual. (Kaiser and Allen 2002) Poor prenatal
135 dietary intakes of energy, protein, and micronutrients have been shown to be associated with increased
136 risk of adult obesity in off-spring. (Yang and Huffman 2013)

137

138 Healthy diets during pregnancy should be encouraged. Recent studies have shown that improving the
139 nutritional status of women prior to and during pregnancy can reduce the risk of low-birth-weight babies
140 substantially. (Yang and Huffman 2013) Nausea and vomiting are common during the first trimester and
141 often are associated with young age and low socioeconomic status. (O'Brien and Zhou 1995) An
142 expectant female may modify food choices due to morning sickness and/or taste aversions, but
143 appropriate nutrition for the health of the mother and fetus is crucial. Nausea and vomiting, which are
144 common symptoms during the first trimester, may cause a woman to avoid routine oral health practices
145 such as toothbrushing and flossing. In addition, avoidance of certain foods may lead to an increased
146 cariogenic diet putting the individual at risk for dental caries. This could lead to dental caries and
147 gingivitis. (Bishai and Koren 2000; Vergnes et al. 2012; Buerlein et al. 2010) Gingivitis is reported to be
148 the most common oral disease during pregnancy. (Kandan et al. 2011)

149 Recommendations: Oral health care providers should encourage pregnant patients to consume non-
150 cariogenic, nutrient-dense foods to promote the general and oral health of the mother and developing
151 fetus.

152

153 Pharmacotherapy during pregnancy

154 ~~The goal of any drug therapy during pregnancy is to improve maternal/fetal health while avoiding adverse~~
155 ~~drug reactions. (Moore 1998) Reporting that medications for pregnant patients sometimes are prescribed~~
156 ~~under less than optimal conditions, a study of obstetrician-gynecologists emphasizes the~~ It is of utmost
157 ~~importance of generating and having available to~~ That health care providers be up-to-date on information
158 on effects of medications during pregnancy is of utmost importance. (Morgan et al. 2010) The ~~U.S. Food~~
159 ~~and Drug Administration~~ FDA has defined drug categories according to the risk they pose to pregnant
160 women and their fetuses. (US FDA 1979) These categories provide some guidance to the relative safety
161 of the medication for use by pregnant women and include:

- 162 • Category A ~~includes~~ drugs that have been studied in humans and have evidence supporting
163 their safe use

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- 164 • Category B_ drugs show no evidence of risk to humans. Generally, these drugs are considered
165 acceptable for use during pregnancy.(Moore 1998)
- 166 • Category C _ drugs, such as aspirin and aspirin-containing products, may be used with caution
- 167 • Categories D (e.g., tetracycline) - not intended for use during pregnancy
- 168 • Category X: Not intended contraindicated for use during pregnancy.~~The Organization of~~
169 ~~Teratology Information Services provides useful national information for drug safety during~~
170 ~~pregnancy.(The Organization of Teratology Information Services)~~

171

172 ~~Low socioeconomic status and lack of parental involvement can place an adolescent at increased risk of~~
173 ~~initiating tobacco use.(USDHHS Healthy People 2020)~~In 2014, the FDA updated its requirements for
174 pregnancy and lactation labeling on the labeling of human prescription drugs and biological products for
175 prescription medications via the Pregnancy and Lactation Labeling Rule (PLLR). (Federal register, 2014)
176 The FDA found that the categories often were misinterpreted and misused. Therefore, the decision was
177 made to switch from categorical labeling to a narrative structure. The categories A, B, C, D, and X have
178 been removed for prescription medications and biologics (including vaccines) only and replaced by three
179 subsections that explain the risks of the medication (Federal register 2014, FDA Pregnancy and Lactation
180 Labeling):

- 181 • Pregnancy (includes labor and delivery): Pregnancy exposure registry, risk summary (always
182 required even when no risk exists), clinical consideration, data
- 183 • Lactation (includes nursing mothers): Risk summary, clinical considerations, data
- 184 • Females and Males of Reproductive Potential: Pregnancy testing, contraception, infertility

185

186 Of note, this is effective for all prescription medications submitted after June 30, 2015. However, for
187 existing medications approved on or after June 30, 2001, new labeling is being phased in gradually. (FDA
188 Pregnancy and lactation labeling.) The categorical listing remains for over-the-counter medications. (FDA
189 Pregnancy and lactation labeling.)

190

191 Searchable information on prescription medication labeling (including Section 8 that complies with
192 PLLR) can be found at Daily Med (<https://dailymed.nlm.nih.gov/dailymed/index.cfm>), the official FDA
193 provider of FDA label information. (Daily Med)

194

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195 Some over-the-counter medications should be avoided in pregnant patients. These may include Pepto-
196 Bismol® (bismuth subsalicylate), decongestants (e.g. phenylephrine, pseudoephedrine), cough and cold
197 medicines that contain guaifenesin, and pain medications such as ibuprofen, naproxen, and aspirin.
198 (Michigan 2019) In addition, prescription medications such as doxycycline and tetracycline (both
199 antibiotics) as well as alprazolam and diazepam (both anxiolytics) should be avoided. (Michigan 2019)
200 When in doubt, a consult with the patient’s obstetrician is warranted.

201
202 Certain types of medications (e.g., topiramate, valproic acid), smoking, and diabetes during pregnancy
203 have been associated with cleft lip and palate in fetuses. (CDC Facts 2019) Smoking during pregnancy is
204 associated with adverse outcomes. (USDHHS Healthy People 2020; USDHHS/CDC Preventing
205 Smoking) Women who smoke may have increased risks for ectopic pregnancy, spontaneous abortion, and
206 preterm delivery. (USDHHS Healthy People 2020; USDHHS/CDC Preventing Smoking) Infants born to
207 women who smoke during pregnancy are more likely to be small for gestational age and have low
208 birthweight. (USDHHS Healthy People 2020; USDHHS/CDC Preventing Smoking; Matthews 2001;
209 WHO 1999) The longer the mother smokes during pregnancy, the greater the effect on the infant’s
210 birthweight. (USDHHS/CDC Preventing Smoking) Increasing evidence shows that maternal tobacco use
211 is associated with intellectual disability and birth defects such as oral clefts. (USDHHS Healthy People
212 2020) Women who have higher exposure levels to polycyclic aromatic hydrocarbons (PAHs) produced by
213 the burning of coal, oil, gas, or garbage or smoke from gas/garbage/cigarette/cigar/pipe, or charbroiling
214 meat also were more likely to have babies with cleft lip with or without cleft palate. (CDC NBDPS 2019)
215 Prenatal exposure to secondhand smoke has been associated with cognitive deficits. (AAPD Policy on
216 Tobacco Use, 2020) The risk for perinatal mortality and sudden infant death syndrome (SIDS) is
217 increased for infants of women who smoke. (USDHHS Healthy People 2020; USDHHS/CDC Preventing
218 Smoking) Infants and children exposed to environmental tobacco smoke have higher rates of lower
219 respiratory illness, middle ear infections, asthma, and caries in the primary dentition. (USDHHS Healthy
220 People 2020; USDHHS/CDC Preventing Smoking; Matthews 2001; WHO 1999; USDHHS Preventing
221 Tobacco Use; Aligne et al. 2003) Women are more likely to stop smoking during pregnancy, both
222 spontaneously and with assistance, than at other times in their lives. USDHHS/CDC Preventing Smoking)
223 Dental health care providers should discourage the use of tobacco and educate individuals on the serious
224 health consequences of tobacco use and exposure to environmental tobacco smoke (ETS). (AAPD Policy
225 on Tobacco Use, 2020)

226

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227 No amount of alcohol and no time to drink alcohol during pregnancy is safe. (CDC Alcohol, AAP 2015)
228 Alcohol using during pregnancy is known to cause miscarriage, stillbirth, and other lifelong birth defects
229 and developmental disabilities. (CDC Polysubstance) Children with fetal alcohol spectrum disorders
230 (FASDs) may present with abnormal facial features (e.g. smooth philtrum), small head size, shorter-than-
231 average height, low body weight, poor coordination, hyperactive behavior, difficulty with attention, poor
232 memory, difficulty in school, learning disabilities, speech and language delays, intellectual disabilities,
233 poor reasoning and judgement skills, sleeping and sucking problems as baby, vision or hearing problems,
234 and problems with heart, kidney, or bones. (CDC Alcohol use in pregnancy) Determining the number of
235 individuals with FASDs is difficult, but the CDC estimates 0.2 – 1.5 infants with fetal alcohol syndrome
236 (FAS) are born for every 1,000 live births in certain areas of the U.S. (CDC Prevalence) In addition, a
237 2019 report from the CDC found that one in nine pregnant women reported drinking alcohol in the past
238 30 days. (CDC Prevalence of FASDs) Health care providers should screen for alcohol use and provide
239 counseling to help decrease the risk of FASDs and harm to the infant. (CDC Prevalence of FASDs, CDC
240 FASDs: Information) Early recognition, diagnosis, and prevention can reduce negative outcomes and
241 lifelong consequences for the child. (AAP 2015)

242
243 Individuals with substance misuse issues (e.g. opioids) may misuse these substances regularly or only
244 occasionally. Sexually active adolescents who misuse substances have high rates of sexual risk behaviors,
245 unintended pregnancy, and repeated unplanned pregnancy.(CDC, 2017; Cavazos-Rehg 2012; Salas-
246 Wright 2015; Clayton 2016; Connery 2017). Therefore, substance misuse among pregnant adolescents
247 represents a major public health problem.

248
249 Substance misuse during pregnancy is associated with an increased risk for stillbirths and neonatal
250 abstinence syndrome (NAS) (Varner et al, 2014; Stover & Davis, 2015). NAS occurs with a sudden
251 discontinuation of fetal exposure to licit or illicit substances used or misused by the mother.
252 (Kocherlakota, 2014; Coyle 2018). The American Academy of Pediatrics recommends important
253 prevention measures such as a focus on preventing unintended pregnancies, universal screening for drugs
254 in women of childbearing age, knowledge and informed consent of maternal drug testing and reporting
255 practices, and improved access to comprehensive obstetric care (Klein, 2005; Patrick & Schiff, 2017).
256 Recommendations: Oral health care providers should be aware of and recommend that pregnant patients
257 avoid medications that cross the placenta and pose a risk to the developing fetus. Pregnant pediatric dental
258 patients should be encouraged to avoid smoking and use of alcohol and drugs.

259

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260 **Common oral conditions associated with pregnancy**

261 Physiologic changes in the oral cavity during pregnancy are well documented. (Hughes 2010) These
262 include alterations in both the hard and soft tissues. ~~An increase in caries has been associated with~~
263 ~~carbohydrate loading as snacking becomes more frequent.~~(Hughes 2010) Nausea and vomiting are
264 common during the first trimester and occur in 70-85 percent of women, but are usually self-limiting after
265 the first trimester. ~~Persistent, severe vomiting (hyperemesis gravidarum) is rare (0.3-2 percent of~~
266 ~~pregnancies),~~(Ismail and Kenney 2007) but may contribute to the onset of perimyolysis, an erosion of the
267 lingual surfaces of the teeth caused by exposure to gastric acids. Acid from vomitus can cause
268 demineralization and erosion of enamel, also known as perimyolysis. A sodium bicarbonate rinse can
269 neutralize the acidic challenge. (ACOG- morning sickness) Immediate toothbrushing, however, can cause
270 erosion/ loss of the weakened enamel. (Bogges et al 2010) An pregnant female may modify food choices
271 due to morning sickness and/or taste aversions, but appropriate nutrition for the health of the mother and
272 fetus is crucial. Nausea and vomiting may cause a woman to avoid routine oral health practices such as
273 toothbrushing and flossing. This could lead to dental caries and gingivitis.(Bishai and Koren 2000;
274 Vergnes et al. 2012; Buerlein et al. 2010) Women should be advised about the high sugar content and
275 risk for caries associated with long term frequent use of over the counter antacids When erosion is
276 established, fluoride may be used to minimize hard tissue loss and control sensitivity; a daily neutral
277 sodium fluoride mouth rinse or gel to may be prescribed. (Linnett and Seow 2001) Some physicians
278 advocate frequent snacking or eating multiple small meals throughout the day to help relieve morning
279 sickness. (Mayo Clinic – Morning sickness) Sipping ginger ale or sucking ginger lollipops also has been
280 recommended. (Mayo Clinic – Morning sickness) However, frequent exposure to cariogenic substances
281 may increase the risk of developing caries. Persistent, severe vomiting (hyperemesis gravidarum) is rare
282 (0.3-2 percent of pregnancies),(Ismail and Kenney 2007) but may contribute to the onset of perimyolysis,
283 an erosion of the lingual surfaces of the teeth caused by exposure to gastric acids.

284
285 Pregnancy-associated hormonal changes may cause dryness of the mouth. Approximately 44 percent of
286 pregnant participants in one study reported persistent xerostomia. (Steinberg 1999) A palliative approach
287 to alleviate dry mouth may include increased water consumption or chewing sugarless gum to increase
288 salivation. (Steinberg 1999) A confounding factor is that pregnancy-associated hormonal changes may
289 cause dryness of the mouth. Approximately 44 percent of pregnant participants in one study reported
290 persistent xerostomia.(Steinberg 1999)

291

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292 Signs of gingivitis (e.g., bleeding, redness, swelling, tenderness) are evident in the second trimester and
293 peak in the eighth month of pregnancy, with anterior teeth affected more than posterior teeth. (McGaw
294 2002) These findings ~~are~~ may be exacerbated by poor plaque control and mouth breathing. (Demir et al.
295 2004) From a periodontal perspective, the effects of hormonal levels on the gingival status of pregnant
296 women may be accompanied by increased levels of progesterone and estrogen which contribute to
297 increased vascularity, permeability, and possible tissue edema.(Straka 2011; Xiong 2009) ~~Evidence shows~~
298 ~~a relationship of periodontal disease and gestational diabetes which contributes to maternal and infant~~
299 ~~morbidity as well as the risk of the mother developing type II diabetes mellitus.(McGaw 2002; Xiong et~~
300 ~~al. 2006)~~Periodontal disease has been associated with adverse pregnancy outcomes such as pre-term birth
301 (Komine-Aizawa 2018, Bobetsis 2006, Clotheir 2007), fetal growth restriction (Komine-Aizawa 2018),
302 low birthweight (Komine-Aizawa 2018, Clotheir 2007), pre-eclampsia (Komine-Aizawa 2018) and
303 gestational diabetes. (Komine-Aizawa 2018) True cause-and-effect relationships between periodontal
304 disease and poor fetal outcomes cannot be determined. The development of more interventional trials
305 would be beneficial (Bobetsis 2006) as some recent studies have shown that the treatment of periodontal
306 disease does not eliminate adverse pregnancy outcomes. (Newnham JP 2009, Polyzos N 2010, Macones
307 GA 2010) and may actually put some women at a higher risk for pre-term delivery. (Macones GA 2010)
308
309 ~~The study of periodontitis during pregnancy and its effect on preterm, low birth weight infants is~~
310 ~~ongoing. Early studies noted an increase rate of preterm/low birth weight deliveries associated with~~
311 ~~periodontal disease.(McGaw 2002; Raber Durlacher et al. 1994; Mitchell Lewis et al. 2001) However, a~~
312 ~~more recent study of 116 postpartum women noted clinical attachment level measures were not different~~
313 ~~between those with preterm/low birth weight babies and control groups. Therefore, maternal periodontal~~
314 ~~microbiota and clinical characteristics of periodontal disease were not associated with having~~
315 ~~preterm/low birth weight babies.(Vettore et al. 2008) Additional studies continue to demonstrate~~
316 ~~conflicting results.(Jeffcoat et al. 2001; Davenport et al. 2002; Contreras et al. 2006; Heimonen et al.~~
317 ~~2008; Khader et al. 2009; Guimarães et al. 2010; Newnham et al. 2009; Shub et al. 2009) The effect of~~
318 ~~periodontitis and the development of preeclampsia, a rapidly progressing condition occurring in~~
319 ~~pregnancy characterized by hypertension and the presence of proteinuria, continues to be studied as~~
320 ~~well.(Contreras et al. 2006; Newnham et al. 2009; Shub et al. 2009; California Dental Association~~
321 ~~Foundation 2010; New York State Department of Health 2006)~~
322
323 Poor plaque control coupled with hormonal changes may lead to the development of a pyogenic
324 granuloma (i.e., pregnancy tumor or granuloma gravidarum). This benign vascular lesion appears as a

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325 deep red to purple gingival nodule in the second or third trimester of pregnancy. (Demir et al. 2004;
326 Jafarzadeh 2006) Although the lesion may regress postpartum, surgical excision may be necessary.
327 (Jafarzadeh 2006)

328 Recommendations: Oral health care providers should counsel pregnant patients experiencing morning
329 sickness or gastroesophageal reflux to rinse with a cup of water containing a teaspoon of sodium
330 bicarbonate, and toothbrushing should be avoided for about one hour after vomiting to minimize dental
331 erosion. Pregnant patients who alter their diet to combat morning sickness should be counseled on the
332 negative effects of frequent exposures to sugary substances and the increased risk for developing caries
333 with these practices. Pregnant patients should be encouraged to have routine dental examinations to be
334 evaluated for commonly associated oral lesions. Oral health care providers should encourage pregnant
335 patients to practice good oral hygiene, including brushing twice daily with fluoridated toothpaste and
336 flossing to minimize periodontal insult.

337

338 **Oral health care during pregnancy**

339 ~~A multi-state study concluded that, besides neglecting medical care during pregnancy, most expectant~~
340 ~~females of all ages do not seek dental care, even though 50 percent of them have a dental~~
341 ~~problem.(Preeclampsia Foundation) One study reported the~~ The most significant predictor of not
342 receiving routine dental care during pregnancy was a woman's lack of routine dental care when not
343 pregnant.(Bogges 2010) Improving the oral health of pregnant women reduces complications of dental
344 diseases to both the mother and the developing fetus. (Caufield 2012) Despite this, the prevalence of
345 dental usage during pregnancy ranges from 16-83 percent. (Rocha – Caries Res 2018) Although an
346 ~~expectant mother might question the safety of dental treatment during pregnancy, untreated oral disease~~
347 ~~may compromise the health of the pregnant female and the unborn child.(Pitiphat et al. 2008; Hilgers et~~
348 ~~al. 2003) The consequences of not treating an active infection during pregnancy outweigh the possible~~
349 ~~risks presented by most of the medications required for dental care.(Morgan et al. 2010) A recent~~
350 systematic review indicated facilitators and barriers to dental care during pregnancy include physiological
351 conditions, low importance of oral health, negative stigma regarding dentistry, fear or anxiety towards
352 dental treatment, mobility and safety, financial barriers, employment, time constraints, lack of
353 information, health professionals' barriers, family and friends' advice, and beliefs and myths regarding
354 the safety of dental treatment. (Rocha 2018) In addition, deferring elective dental treatment during a
355 healthy pregnancy is not justified.(Hilgers et al. 2003) Routine dental care for pregnant adolescents
356 should be encouraged.

357

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358 Pregnant adolescents should seek professional oral health care during the first trimester. After obtaining a
359 thorough medical history, the dental professional should perform a comprehensive evaluation which
360 includes a thorough dental history, dietary and fluoride use histories, clinical examination, and caries risk
361 assessment. The dental history should include discussion of preexisting oral conditions, current oral
362 hygiene practices and preventive home care, previous radiographic exposures, and tobacco and other
363 substance use.(USDHHS Healthy People 2020; USDHHS/CDC Preventing Smoking; Matthews 2001;
364 WHO 1999; USDHHS Preventing Tobacco Use; Aligne 2003) ~~The objectives of professional oral health~~
365 care during the first trimester include avoiding fetal hypoxia, premature labor/ fetal demise, and
366 teratogenic effects.(Shub et al. 2009) Blood pressure should be taken at each visit. Hypertension increases
367 the risk of bleeding during procedures. ~~Teens~~ Adolescents are at a higher risk than average mothers for
368 pregnancy-related high blood pressure (preeclampsia) and its complications. (Carey 2012) Preeclampsia
369 is a dangerous medical condition that combines high blood pressure in women who have never before had
370 high blood pressure with proteinuria and swelling of the hands and face.(WebMD 2016) If an abnormal
371 elevation in blood pressure is noted during a dental visit, the patient's physician should be notified. Blood
372 pressure greater than or equal to 140/90 mmHg is considered mild hypertension, whereas values greater
373 than or equal to 160/110 mmHg are considered severe. (Gaffield 2001) Acute-onset, severe hypertension
374 that persists for 15 minutes or more is considered an emergency. The physician should be notified
375 immediately as untreated severe hypertension can have significant morbidity (e.g., hemorrhagic stroke) or
376 mortality. (American College of Obstetricians 2015)

377
378 Preventive services must be a high priority for the adolescent pregnant patient. Ideally, a dental
379 prophylaxis should be performed during the first trimester and again during the third trimester if oral
380 home care is inadequate or periodontal conditions warrant professional care. During pregnancy, elevation
381 in sex steroid hormones occurs which may modify the gingival inflammatory response and result in an
382 exaggerated gingival inflammation in the presence of even relatively small amounts of plaque. AAPD BP
383 Classification of Perio 2019) Referral to a periodontist should be considered in the presence of
384 progressive periodontal disease. (McGaw 2002; Raber-Durlacher et al. 1994) While fluoridated dentifrice
385 and professionally-applied topical fluoride treatments can be effective caries preventive measures for the
386 expectant adolescent, ~~the AAPD does~~ evidence not support the use of fluoride supplements (tablets,
387 drops, lozenges, chewing gum) to benefit the fetus. (~~CDC 2001~~ Takahashi 2017)

388
389 Because the pregnant uterus is below the umbilicus, a pregnant woman is generally more comfortable for
390 treatment during the second trimester. Pregnant women are considered to have a full stomach due to

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391 delayed gastric emptying and, therefore, are at increased risk for aspiration, particularly during the last
392 trimester. (Creasy 2004; Whittle 1998; Hujuel 2005) In general, non-emergency dental treatment needed
393 during the third trimester should be postponed until after birth due to the risk of premature labor and
394 discomfort from lying on one's back for an extended period of time. (American Pregnancy Association)

395
396 Common invasive dental procedures may require certain precautions during pregnancy, particularly
397 during the first trimester. Elective restorative and periodontal therapies should be performed during the
398 second trimester. This may prevent any dental infections or other complications from occurring in the
399 third trimester. (Hilgers 2003) Dental treatment for a pregnant patient who is experiencing pain or
400 infection should not be delayed until after delivery. When selecting therapeutic agents for local
401 anesthesia, infection, postoperative pain, or sedation, the dentist must evaluate the potential benefits of the
402 dental therapy versus the risks to the pregnant patient and the fetus. The practitioner should select the
403 safest medication, limit the duration of the drug regimen, and minimize dosage.(CDA Foundation 2010)
404 Healthcare providers should avoid the use of aspirin, aspirin-containing products, erythromycin estolate,
405 and tetracycline in the pregnant patient.(New York State Department of Health 2006) Non-steroidal anti-
406 inflammatory drugs routinely are not recommended during pregnancy; if necessary, administration should
407 be avoided during the first and third trimesters and be limited to 48 to 72 hours.(California Dental
408 Association Foundation 2010)

409
410 Consultation with the prenatal medical provider should precede use of nitrous oxide/oxygen analgesia/
411 anxiolysis during pregnancy. Nitrous oxide inhalation should be limited to cases where topical and local
412 anesthetics alone are inadequate. Precautions must be taken to prevent hypoxia, hypotension, and
413 aspiration. (California Dental Association Foundation 2010) Due to the increased risk of pregnancy loss,
414 use of nitrous oxide may be contraindicated in the first trimester of pregnancy. (CDA Foundation 2010) If
415 more advanced behavior guidance regimens such as moderate sedation or general anesthesia are needed,
416 post-menarchal patients may be subjected to a pregnancy test prior to treatment if they have not disclosed
417 they are pregnant. Pregnancy testing should be offered to female patients of childbearing age for whom
418 the results would alter the patient's medical management. (ASA – Pregnancy testing 2016)

419
420 Because the pregnant uterus is below the umbilicus, the woman is generally more comfortable for
421 treatment during weeks 14 to 20 of gestation. Pregnant women are considered to have a full stomach due
422 to delayed gastric emptying and, therefore, are at increased risk for aspiration, particularly during the last
423 trimester.(Creasy and Resnik 2004; Whittle et al. 1998; Hujuel et al. 2005) Elective restorative and

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424 periodontal therapies during the second trimester may prevent any dental infections or other
425 complications from occurring in the third trimester. (Hilgers et al. 2003)

426 Patients requiring restorative care should be counseled regarding the risk and benefits and alternatives to
427 amalgam fillings restorations. (Whittle et al. 1998; Hujuel et al. 2005; US FDA 2009) Evidence is
428 insufficient to support or refute that mercury exposure from dental amalgams contributes to adverse
429 pregnancy outcomes. (Hujuel et al. 2005; US FDA 2009) Currently, there is no evidence that the exposure
430 of a fetus to mercury release from the mother's existing amalgam restorations fillings causes any adverse
431 effects. (Whittle et al. 1998; US FDA 2009, Lygre et al 2016) However, mercury vapor released during
432 the removal or placement of amalgam restorations may be inhaled and absorbed into the blood stream and
433 does cross the placental barrier. The FDA in 2020 stated that dental amalgam should be avoided in
434 pregnant women, women planning to become pregnant, women who are nursing, and children under the
435 age of six. (FDA Amalgam 2020) The dental practitioner should use rubber dam and high volume speed
436 suction during the placement or removal of amalgam to reduce the risk of vapor inhalation. (Whittle et al.
437 1998) The use of rubber dam and high speed suction can reduce the risk of vapor inhalation. (ADA FDA
438 2012) However, the American Dental Association has reaffirmed amalgam is a durable, safe, effective
439 restoration and that the FDA warning did not present any new information. (ADA Amalgam 2020) The
440 ADA recommends dentists discuss all restorative options with their patients, including the risks and
441 benefits to amalgam use. (ADA Amalgam 2020) Although there are no scientific studies to indicate issues
442 with bleaching, it is recommended that bleaching be avoided during pregnancy. (ADA Mouthhealthy.org,
443 American Pregnancy Association) Because use of tooth whitening products that contain or generate
444 hydrogen peroxide results in release of inorganic mercury from dental amalgams, these products should
445 be used with caution during pregnancy. (Whittle et al. 1998) In general, elective dental treatment should
446 be postponed until after delivery. (American Pregnancy Association)

447

448 The American College of Obstetricians and Gynecologists affirms that with shielding of the abdomen and
449 thyroid dental x-rays are safe during pregnancy. (ACOG 2017) Radiographs are an integral component of
450 a comprehensive dental examination and can help the oral health care provider in assessment of dental
451 disease and pathology and development of a treatment plan. However, because the effects of ionizing
452 radiation accumulate over time, the oral health care provider must weigh the risks and benefits of taking
453 radiographs in a pregnant patient. (JADA/FDA 2012) A radiographic examination should not precede a
454 clinical examination. (ADA/FDA 2012). During dental radiographic examination of all patients, including
455 pregnant patients, optimizing film and processing techniques, shielding the thyroid and abdomen,
456 choosing the fastest available image receptor (i.e., high-speed film, rare earth screen film systems, digital

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457 radiography), collimation of beam to size of receptor, and avoiding retakes help minimize radiation
458 exposure to the fetus. (ADA FDA 2004~~2012; National Council on Radiation Protection and Methods~~
459 ~~2003~~ACOG 2013, AAPD BP Prescribing radiographs) When a radiographic examination is conducted
460 properly, the amount of radiation striking a patient's abdomen is negligible. (ADA FDA 2014) The
461 American College of Radiology and Society of Pediatric Radiology have found that for diagnostic
462 radiology outside of the abdomen and pelvis, including the head and neck, the amount of radiation a fetus
463 is exposed to is a very low dose and, when standard precautions are taken, does not pose a significant risk
464 to the fetus. (American College of Radiology) The primary dental X ray beam may pass near or through
465 the thyroid gland, even with attention to proper radiographic techniques. The juvenile thyroid is among
466 the most sensitive organs to radiation induced tumors, both benign and malignant.~~(National Council on~~
467 ~~Radiation Protection and Methods 2003)~~ Risk decreases significantly with age at exposure, essentially
468 disappearing after age 20.~~(National Council on Radiation Protection and Methods 2003)~~ Evidence shows
469 that radiation exposure to the thyroid during pregnancy is associated with low birthweight.~~(ADA FDA~~
470 ~~2004)~~ Common dental projections rarely, if ever, deliver a measurable absorbed dose to the embryo or
471 fetus. (National Council on Radiation Protection and measurements 2003) Gonadal absorbed dose from a
472 typical dental x ray procedure is equivalent to about one hour of natural background radiation.~~(National~~
473 ~~Council on Radiation Protection and Measurements 2003)~~ The National Council on Radiation Protection
474 and Measurements recommends if dental treatment is to be deferred until after the delivery, so should the
475 dental radiographs. (National Council on Radiation Protection and measurements 2003) Once the decision
476 to obtain radiographs is made, it is the Dentist's Dentists should responsibility to follow the as low as
477 reasonably achievable (ALARA) principle) to minimize the patient's exposure. (ADA FDA 2012) The
478 use of cone-beam computed tomography (CBCT) is not addressed in this document, and oral health
479 providers should consult a patient's obstetrician/gynecologist prior to its use.

480
481 The vertical transmission of bacteria associated with dental caries from caregiver to child is well
482 documented (Li Y 1995, Berkowitz 2006). Suppression of the mother's reservoirs of Mutans streptococci
483 (MS) by dental rehabilitation and antimicrobial treatments may prevent or at least delay infant acquisition
484 of these cariogenic microorganisms. (Brambilla et al. 1998) MS, present in children with early childhood
485 caries, is predominantly acquired from mother's saliva.~~(Caufield 1997)~~ The transmission of cariogenic
486 bacteria from mother to infant is increased when the mother has poor oral health with untreated dental
487 caries. (Li et al. 2005) MS colonization of an infant may occur from the time of birth.~~(Li et al. 2005; Ge et~~
488 ~~al. 2008; Berkowitz et al. 1975; Stiles et al. 1976; Loesche 1993; Wan et al. 2003; Wan et al. 2001;~~
489 ~~Berkowitz 2006; Law and Seow 2007)~~ Therefore, improving oral health during pregnancy may delay or

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490 ~~prevent transmission from occurring. Improving oral health during pregnancy leads to a reduction in~~
491 ~~salivary MS in the offspring.(Brambilla et al. 1998)~~

492
493 Education is an important component of prenatal oral health care and may have a significant effect on the
494 oral health of both the mother and the child. Counseling for the pregnant adolescent includes topics
495 directed toward all adolescent patients (e.g., dietary habits, injury prevention, third molars), as well as
496 oral changes that may occur during pregnancy and infant oral healthcare. Since the pregnant adolescent
497 may be receptive to information that will improve the infant's health, anticipatory guidance, ~~a proactive~~
498 ~~developmentally based counseling technique~~, can be introduced to focus on the needs of the child at each
499 stage of life. Studies have documented that early oral health promotion starting during pregnancy can lead
500 to a sustained and long-term improvement of the oral health of children.(Murphey 2009; Meyer 2010)
501 Programs that promote oral health must continue to inform pregnant women and care providers about the
502 importance of dental care before, during, and after pregnancy. Oral health counseling during pregnancy
503 and dental cleanings is recommended.(Thompson et al. 2013) ~~Mobile phone texting components added as~~
504 ~~a supplement to the Teen Outreach Program (TOP), a youth development program for reducing teen~~
505 ~~pregnancy and school dropout, has proven helpful in disseminating and sharing information to minority~~
506 ~~youth.(Devine and Bull 2014) TOP can be used to address issues regarding oral health. Counseling for all~~
507 ~~pregnant patients should address~~ may include:

- 508 • relationship of maternal oral health with fetal health (California Dental Association
509 Foundation 2010) (e.g., possible association of periodontal disease with preterm birth and
510 pre-eclampsia, developmental defects in the primary dentition [Schroth 2014]).
- 511 • an individualized preventive plan including oral hygiene instructions, ~~rinses, and/or xylitol~~
512 ~~products~~ to decrease the likelihood of MS transmission postpartum. (Isokangas et al. 2000;
513 Söderling et al. 2000; Thorild et al. 2006)
- 514 • dietary considerations (e.g., maintaining a healthy diet, avoiding frequent exposures to
515 cariogenic foods and beverages, overall nutrient and energy needs) (California Dental
516 Association Foundation 2010; New York State Department of Health 2006) and vitamin
517 supplements. (Schroth et al. 2014; Division of Birth Defects CDC 2016; Wilcox et al. 2007)
- 518 • anticipatory guidance for the infant's oral health including the benefits of early establishment
519 of a dental home. (Murphey and Rew 2009; Meyer et al. 2010)
- 520 • anticipatory guidance for the adolescent's oral health to include injury prevention, oral
521 piercings, tobacco and substance abuse, sexually transmitted infections, sealants, and third
522 molar assessment. (AAPD Adolescent Oral Health)

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- 523 • oral changes that may occur secondary to pregnancy (McGaw 2002; Raber-Durlacher et al.
524 1994) (e.g., xerostomia, shifts in oral flora).
- 525 • individualized treatment recommendations based upon the specific oral findings for each
526 patient.

527 Recommendations: Oral health care providers should recommend that pregnant pediatric dental
528 patients have routine dental care during pregnancy, including preventive services such as dental
529 prophylaxis and fluoride treatments. Pregnant pediatric dental patients should be encouraged to have
530 good home care, including brushing two times daily with fluoridated toothpaste. If dental treatment
531 must be deferred until after delivery, radiographic assessment also should be deferred. All
532 radiographic procedures should be conducted in accordance with radiation safety practices.
533 Restorative and periodontal therapies may be completed during the second trimester to prevent any
534 dental infections or other complications from occurring in the third trimester. Tooth whitening and
535 cosmetic procedures should be postponed until after delivery. Consultation with the patient's
536 obstetrician or primary care provider may be warranted before the use of local anesthesia, nitrous
537 oxide analgesia, over-the-counter pain medications, or prescriptions are utilized. Oral health care
538 providers should evaluate a pregnant pediatric dental patient's blood pressure at every dental visit. A
539 referral to obstetrician or primary care provider is warranted if blood pressure is elevated.

540 **Legal considerations**

541 Dental practitioners must be familiar with federal and state statutes that govern consent for care for a
542 pregnant patient less than the age of majority. Statutes and case law concerning consent involving
543 pregnant patients less than 18 years of age vary from state to state. In some states, dentists are required to
544 obtain parental consent for non-emergency dental services provided to a child 17 years of age or younger
545 who remains under parental care.(Weber and Fernsler 2002) This would involve obtaining consent from
546 the parent who must be aware of the pregnancy in order to understand the risks and benefits of the
547 proposed dental treatment.(Hilgers et al. 2003) However, if the parent is unaware of the pregnancy, the
548 pregnant adolescent may be entitled to confidentiality regarding health issues such as the
549 pregnancy.(Hasegawa and Matthews 1994) In other states, there are mature minor laws that allow minors
550 to consent for their own health care when a dentist deems the minor competent to provide informed
551 consent. In addition, some states emancipate minors who are pregnant or by court order. Practitioners are
552 obligated to be familiar with and abide by the laws specific to where they practice and where the patient
553 resides.~~Dental practitioners must be familiar with federal and state statutes that govern consent for care~~
554 ~~for a pregnant patient less than the age of majority.~~ If a pregnant adolescent's parents are unaware of the
555 pregnancy, and state laws require parental consent for dental treatment, the practitioner should encourage

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556 the adolescent to inform them so appropriate informed consent for dental treatment can occur. The Health
557 Insurance Portability and Accountability Act (HIPAA) specifically addresses minor confidentiality.
558 (English and Ford 2004)

559 Recommendations: Oral health care providers should be aware of their state's regulations on consent and
560 caring for a pregnant pediatric dental patient.

561

562 Recommendations

563 ~~The AAPD recommends that all pregnant Pregnant adolescents seek professional oral health care during~~
564 ~~the first trimester. After obtaining a thorough medical history, the dental professional should perform a~~
565 ~~comprehensive evaluation which includes a thorough dental history, dietary history, clinical examination,~~
566 ~~and caries risk assessment. The dental history should include discussion of preexisting oral conditions,~~
567 ~~current oral hygiene practices and preventive home care, previous radiographic exposures, and tobacco~~
568 ~~use.(USDHHS Healthy People 2020; USDHHS/CDC Preventing Smoking; Matthews 2001; WHO 1999;~~
569 ~~USDHHS Preventing Tobacco Use; Aligne et al. 2003) The adolescent's dietary history should focus on~~
570 ~~exposures to carbohydrates, especially due to increased snacking, and acidic beverages/foods. During the~~
571 ~~clinical examination, the practitioner should pay particular attention to health status of the periodontal~~
572 ~~tissues. The AAPD's caries risk assessment guideline, utilizing historical and clinical findings, will aid~~
573 ~~the practitioner in identifying risk factors in order to develop an individualized preventive~~
574 ~~program.(AAPD Caries risk Assessment) Improving the oral health of pregnant women reduces~~
575 ~~complications of dental diseases during pregnancy to both the mother and the developing fetus.(Caulfield~~
576 ~~et al. 2012)~~

577 ~~Based upon the historical indicators, clinical findings, and previous radiographic surveys, radiographs~~
578 ~~may be indicated. Because risk of carcinogenesis or fetal effects is very small but significant, radiographs~~
579 ~~should be obtained only when there is expectation that diagnostic yield (including the absence of~~
580 ~~pathology) will influence patient care.(National Council on Radiation Protection and Measurements 2003)~~
581 ~~If dental treatment must be deferred until after delivery, radiographic assessment also should be deferred.~~
582 ~~All radiographic procedures should be conducted in accordance with radiation safety practices. These~~
583 ~~include optimizing the radiographic techniques, shielding the pelvic region and thyroid gland, and using~~
584 ~~the fastest imaging available.(National Council on Radiation Protection and Measurements 2003)~~

585 ~~Counseling for all pregnant patients should address:~~

- 586 • ~~relationship of maternal oral health with fetal health(California Dental Association Foundation~~
587 ~~2010) (e.g., possible association of periodontal disease with preterm birth and pre-eclampsia,~~
588 ~~developmental defects in the primary dentition[Schroth 2014]).~~

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- 589 • an individualized preventive plan including oral hygiene instructions, rinses, and/or xylitol
590 products to decrease the likelihood of MS transmission postpartum.(Isokangas et al. 2000;
591 Söderling et al. 2000; Thorild et al. 2006)
- 592 • dietary considerations (e.g., maintaining a healthy diet, avoiding frequent exposures to cariogenic
593 foods and beverages, overall nutrient and energy needs)(California Dental Association
594 Foundation 2010; New York State Department of Health 2006) and vitamin supplements.(Schroth
595 et al. 2014; Division of Birth Defects CDC 2016; Wilcox et al. 2007)
- 596 • anticipatory guidance for the infant’s oral health including the benefits of early establishment of a
597 dental home.(Murphey and Rew 2009; Meyer et al. 2010)
- 598 • anticipatory guidance for the adolescent’s oral health to include injury prevention, oral piercings,
599 tobacco and substance abuse, sealants, and third molar assessment.(AAPD Adolescent Oral
600 Health)
- 601 • oral changes that may occur secondary to pregnancy(McGaw 2002; Raber Durlacher et al. 1994)
602 (e.g., xerostomia, shifts in oral flora).
- 603 • individualized treatment recommendations based upon the specific oral findings for each patient.
- 604 Preventive services must be a high priority for the adolescent pregnant patient. Ideally, a dental
605 prophylaxis should be performed during the first trimester and again during the third trimester if oral
606 home care is inadequate or periodontal conditions warrant professional care. Referral to a periodontist
607 should be considered in the presence of progressive periodontal disease.(McGaw 2002; Raber Durlacher
608 et al. 1994) While fluoridated dentifrice and professionally applied topical fluoride treatments can be
609 effective caries preventive measures for the expectant adolescent, the AAPD does not support the use of
610 prenatal fluoride supplements to benefit the fetus.(CDC 2001)
- 611 A pregnant adolescent experiencing morning sickness or gastroesophageal reflux should be instructed to
612 rinse with a cup of water containing a teaspoon of sodium bicarbonate and to avoid tooth brushing for
613 about one hour after vomiting to minimize dental erosion caused by stomach acid exposure.(Boggess et
614 al. 2010) Women should be advised about the high sugar content and risk for caries associated with long
615 term frequent use of over the counter antacids. Where there is established erosion, fluoride may be used
616 to minimize hard tissue loss and control sensitivity. A daily neutral sodium fluoride mouth rinse or gel to
617 combat enamel softening by acids and control pulpal sensitivity may be prescribed.(Linnett and Seow
618 2001) A palliative approach to alleviate dry mouth may include increased water consumption or chewing
619 sugarless gum to increase salivation.(Steinberg 1999)
- 620 Common invasive dental procedures may require certain precautions during pregnancy, particularly
621 during the first trimester. Elective restorative and periodontal therapies should be performed during the

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622 second trimester. Dental treatment for a pregnant patient who is experiencing pain or infection should not
623 be delayed until after delivery. When selecting therapeutic agents for local anesthesia, infection,
624 postoperative pain, or sedation, the dentist must evaluate the potential benefits of the dental therapy
625 versus the risks to the pregnant patient and the fetus. The practitioner should select the safest medication,
626 limit the duration of the drug regimen, and minimize dosage. (California Dental Association Foundation
627 2010) Healthcare providers should avoid the use of aspirin, aspirin-containing products, erythromycin
628 estolate, and tetracycline in the pregnant patient. (New York State Department of Health 2006) Non-
629 steroidal anti-inflammatory drugs routinely are not recommended during pregnancy; if necessary,
630 administration should be avoided during the first and third trimesters and be limited to 48 to 72
631 hours. (California Dental Association Foundation 2010) Consultation with the prenatal medical provider
632 should precede use of nitrous oxide/oxygen analgesia/analgesia during pregnancy. Nitrous oxide
633 inhalation should be limited to cases where topical and local anesthetics alone are inadequate. Precautions
634 must be taken to prevent hypoxia, hypotension, and aspiration. (California Dental Association Foundation
635 2010)
636 Patients requiring restorative care should be counseled regarding the risk and benefits and alternatives to
637 amalgam fillings. (Whittle et al. 1998; Hujoel et al. 2005; US FDA 2009) The dental practitioner should
638 use rubber dam and high speed suction during the placement or removal of amalgam to reduce the risk of
639 vapor inhalation. (Whittle et al. 1998)

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1 Perinatal and Infant Oral Health Care

2

3 Latest Revision

4 ~~2016~~ 2021

5

6 Abbreviations

7 **AAPD:** American Academy Pediatric Dentistry

8 **ECC:** Early childhood caries

9 **FDA:** U.S. Food and Drug Administration

10 ~~**dfs:** Decayed and filled tooth surfaces~~

11 ~~**ITR:** Interim therapeutic restorations~~

12 ~~**MI:** Motivational interviewing~~

13 ~~**MS:** Mutans streptococci~~

14

15 Purpose

16 The American Academy of Pediatric Dentistry (**AAPD**) recognizes that perinatal and infant oral health
17 are the foundations upon which preventive education and dental care must be built to enhance the
18 opportunity for a child to have a lifetime free from preventable oral disease. Recognizing that dentists,
19 physicians, allied health professionals, and community organizations must be involved as partners to
20 achieve this goal, the AAPD proposes ~~guidelines~~best practices for perinatal and infant oral health care,
21 including caries risk assessment, anticipatory guidance, preventive strategies, and therapeutic
22 interventions, to be followed by the stakeholders in pediatric oral health.

23

24 Methods

25 Recommendations on perinatal and infant oral health care were developed by the Infant Oral Health
26 Subcommittee of the Clinical Affairs Committee and adopted in 1986.~~(AAPD 1986)~~ The *Guideline on*
27 *Perinatal Oral Health Care* was originally developed by the Infant Oral Health Subcommittee of the
28 Council on Clinical Affairs and adopted in 2009.~~(AAPD 2009)~~ This document is an update of the 2016
29 merger of those guidelines and an update of the previous versions, revised in 2014 and 2011
30 respectively. ~~(AAPD 2016)~~ This revision of the combined guideline included a search of the
31 PubMed®/MEDLINE database using the terms: infant oral health, infant oral health care, early childhood
32 caries, perinatal, perinatal oral health, and early childhood caries prevention; fields: all; limits: within the
33 last 10 years, humans, English, and clinical trials, resulting in 261 papers that were reviewed by title and

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34 abstract. From those, 26 papers were used to update this document. Papers for review were chosen from
35 the resultant list of articles and from references within selected articles and hand searches of the literature.
36 When data did not appear sufficient or were inconclusive, recommendations were based upon expert
37 and/or consensus opinion by experienced researchers and clinicians.

38

39 **Background**

40 **Role of oral health providers in perinatal and infant oral health care**

41 The perinatal period is the period beginning with the completion of the 20th to 28th week of gestation and
42 ending one to four weeks after birth. The infant period extends to the child's first birthday. Oral health
43 providers have an important role in perinatal and infant oral health care, particularly regarding the
44 establishment of a dental home, (AAPD Dental Home) educating new parents, and the timing of a child's
45 first dental visit. Oral health providers need knowledge regarding the child's perinatal period and first
46 year of life regarding common oral conditions, anticipatory guidance, and early dental caries preventive
47 care including oral cleaning, dietary recommendations, and optimal fluoride exposure.

48

49 **Common oral conditions in newborns and infants**

50 Bohn nodules are small developmental anomalies located along the buccal and lingual aspects of the
51 mandibular and maxillary ridges and in the hard palate of the neonate. These lesions arise from remnants
52 of mucous gland tissue. Dental lamina cysts may be found along the crest of the mandibular and maxillary
53 ridges of neonates. These lesions arise from epithelial remnants of the dental lamina. Epstein pearls are
54 keratin-filled cysts found in the mid-palatal raphe at the junction of the hard and soft palates. These three
55 developmental remnants generally disappear shortly after birth, and no treatment is necessary. (Dhar,
56 2020) Fordyce granules are very common aberrant yellow-white sebaceous glands most commonly on the
57 buccal mucosa or lips. No management is needed as these lesions are inconsequential and resolve on their
58 own.(Dhar, 2020) Ankyloglossia is characterized by an abnormally short lingual frenum that can hinder
59 the tongue movement and may interfere with feeding or speech. The frenum might spontaneously
60 lengthen as the child gets older. Surgical correction, on an individual basis, may be indicated for
61 functional limitations and symptomatic relief. (AAPD Policy on Frenulum, 2019)

62

63 Oropharyngeal candidiasis appears as white plaques covering the oropharyngeal mucosa which, if
64 removed, leaves an inflamed underlying surface. Candidiasis is usually self-limiting in the healthy
65 newborn infant, but topical application of nystatin to the oral cavity of the baby and to the nipples of
66 breast-feeding mothers may have benefit.(Dhar 2020) Primary herpetic gingivostomatitis presents with

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67 oral feature such as erythematous gingiva, mucosal hemorrhages, and clusters of small vesicles
68 throughout the mouth. Somatic signs may include fever, malaise, lymphadenopathy, and difficulty with
69 eating and drinking. Usually, symptoms regress within two weeks, and lesions heal without scarring.
70 (Dhar 2020) Fluids should be encouraged to prevent dehydration, and analgesics may make the child
71 more comfortable.(Dhar 2020) Oral acyclovir may be beneficial in shortening the duration of symptoms.
72 (Santosh 2020) Caution by practitioners and parents is necessary to prevent autoinoculation or
73 transmission of infection to the eyes, other body parts, and other individuals. Other less common viral
74 conditions with oral symptoms in infants are herpangina and hand-foot-mouth disease. (Dhar, 2020)
75

76 The prevalence of cleft lip with or without cleft palate in 2004-2006 was 10.6 per 10,000 live births in the
77 U.S. and for cleft palate alone was 6.4 per 10,000 live births in the U.S.(NIDRC, 2021) Cleft lip may vary
78 from a small notch in the vermilion border to a complete separation involving skin, muscle, mucosa,
79 tooth, and bone. Clefts may be unilateral or bilateral and may involve the alveolar ridge. Isolated cleft
80 palate occurs in the midline and may involve only the uvula or may extend into or through the soft and
81 hard palates to the incisive foramen. Rehabilitation for the child with a cleft lip or palate may require
82 years of specialized treatment by a cleft lip/palate team. Surgical closure of a cleft lip usually is
83 performed around three months of age; closure of the palate usually occurs around one year.(Dhar, 2020)
84

85 **Dental eruption (teething)**

86 Natal teeth are present at birth, whereas neonatal teeth erupt in the first month of life. Attachment of natal
87 and neonatal teeth generally is limited to the gingival margin due to little root formation or bony support.
88 These teeth may be a supernumerary or prematurely erupted primary tooth. Natal or neonatal teeth
89 occasionally result in pain and refusal to feed and can produce maternal discomfort because of abrasion or
90 biting of the nipple during nursing. Ulceration, bleeding, and discomfort of the tongue due to repetitive
91 rubbing across a natal tooth during swallowing and movement is called Riga-Fede disease.(Dhar 2020) If
92 the tooth is mobile with a danger of detachment and aspiration, extraction may be warranted. Decisions
93 regarding extraction of prematurely erupted primary teeth and smoothing the incisal edge should be made
94 on an individual basis.
95

96 Eruption of teeth (teething) can lead to intermittent localized discomfort, irritability, low-grade fever, and
97 excessive salivation; however, many children have no apparent difficulties. Treatment of symptoms
98 includes oral analgesics and teething rings for the child to ‘gum’.(Dhar 2020) Use of topical anesthetics
99 or homeopathic remedies to relieve discomfort should be avoided due to potential harm of these products

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100 in infants. Because of the risk of methemoglobinemia, benzocaine use is contraindicated in children
101 younger than two years of age. (US FDA, May 2018).

102 **Dental caries, consequences, and management**

103 The Centers for Disease Control and Prevention reports that dental caries is the most prevalent chronic
104 disease in our nation's children.(USDHHS Oral Health in America 2000) More than 28 percent of
105 children have caries by the time they reach kindergarten.(NIDCR 2014) Epidemiologic data from a 2011-
106 2012 national survey clearly indicate that early childhood caries (ECC) remains highly prevalent in poor
107 and near poor U.S. preschool children. For the overall population of preschool children, the prevalence of
108 ECC, as measured by decayed and filled tooth surfaces (dfs), is unchanged from previous surveys, but the
109 filled component (fs) has greatly increased indicating that more treatment is being provided.(Dye et al.
110 2015)

111 ECC and the more severe form of ECC (i.e., s ECC) begin soon after tooth eruption, developing on all
112 surfaces of primary teeth, progressing rapidly, and having a lasting detrimental impact on the
113 dentition.(Skeie et al. 2006; O'Sullivan and Tinanoff 1996) This disease affects the general population,
114 but is 32 times more likely to occur in infants who are of low socioeconomic status, who consume a diet
115 high in sugar, and whose mothers have a low education level.(Drury et al. 1999; Mobley et al 2009;
116 Edelstein and Chinn 2009) The consequences of ECC often include higher risk of new carious lesions in
117 both the primary and permanent dentitions(O'Sullivan and Tinanoff 1996; Al Shalan et al. 1997; Ghazal
118 et al. 2015) hospitalizations and emergency room visits,(Ladrillo et al. 2006; Griffin et al. 2000) high
119 treatment costs,(Rohde 2010) loss of school days,(Edelstein and Reisine 2015) diminished ability to
120 learn,(Blumenshine et al. 2008) and reduced oral health related quality of life.(Filstrup et al. 2003)

121 It has been reported that 89 percent of children age one year had an office based physician visit,
122 compared with only 1.5 percent who had a dental office visit.(National Children's Oral Health
123 Foundation) In a recent study, 99 percent of Medicaid enrolled children had well baby visits before age
124 one, whereas only two percent had a dental visit.(Chi et al. 2013) Since medical health care professionals
125 see new mothers and infants earlier and more often than dentists, it is essential that they be aware of the
126 multifactorial etiology and associated risk factors of ECC, give appropriate counseling regarding ECC
127 prevention to pregnant women and caregivers, and facilitate the establishment of a dental home.(Sinner et
128 al. 2014)

129 Because restorative care to treat ECC often requires the use of sedation and general anesthesia with
130 associated high costs and possible health risks,(Sinner et al. 2014) and because there is high recurrence of
131 lesions subsequent to the procedures,(Berkowitz et al. 2011) there is now more emphasis on prevention
132 and arrestment of the disease processes to manage ECC. Approaches include methods that have been

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133 referred to as (1) chronic disease management, which includes parent engagement to facilitate preventive
134 measures and temporary restorations to postpone advanced restorative care, (Edelstein and Ng 2015) (2)
135 active surveillance, which emphasizes careful monitoring of caries progression and establishment of a
136 prevention program in children with incipient lesions, (AAPD Caries Risk Assessment) and (3) interim
137 therapeutic restorations (ITR) that temporarily restore teeth in young children until a time when
138 traditional cavity preparation and restoration is possible. (AAPD ITR)

139 **Pregnancy and the perinatal period and anticipatory guidance**

140 The perinatal period is defined as the period around the time of birth, beginning with the completion of
141 the 20th to 28th week of gestation and ending one to four weeks after birth. The perinatal period plays a
142 crucial role for the well-being of pregnant women. (Brown 2008) Also, it is essential for and the health
143 and well-being of their newborn children. (WHO 2020) Mothers' poor oral health is associated with poor
144 oral health of their offspring (Shearer 2011) Yet, many women do not seek dental care during their
145 pregnancy, and those who do often confront unwillingness of dentists to provide care. (Bertness 2017) A
146 systematic review has shown the efficacy of prenatal dental education and preventive therapies in
147 reducing MS in children. (Xiao 2019) (Gaffield et al. 2001; Huebner et al 2009; Keirse and Plutzer 2010;
148 Kerpen and Burakoff 2009) Many expectant mothers are unaware of the implications of poor oral health
149 for their pregnancy and/or their unborn child. (Keirse and Plutzer 2010; Dimitrova 2009; Fadavi et al.
150 2009) Physicians, nurses, and other health care professionals, when aware of the risk factors for dental
151 caries, can help new parents make appropriate decisions regarding timely and effective oral health
152 interventions for their newborns. (Frese 2021)

153
154 Some medications may pose a risk to infants during the peri-natal period, lactating mothers, and women
155 and men of reproductive potential. Current U.S. Food and Drug Administration (FDA) recommendations
156 can assist health care providers when using in-office, prescribed, and over-the-counter medications for
157 these individuals. (U.S.FDA, 2014) While in 2020 the FDA recommended that dental amalgam should be
158 avoided in pregnant women, women planning to become pregnant, women who are nursing, and children
159 under the age of six (U.S. FDA, 2020), it is important to emphasize that dental visits during pregnancy are
160 safe, effective, and should be encouraged. (National Mat Child Oral Health Resource Center, 2012)
161 Identifying mothers with high levels of dental caries and poor oral health and educating them on the
162 importance of their own oral health and the future health of their unborn child can help change their
163 trajectory of oral health. Timely delivery of educational information and preventive therapies to these
164 parents may reduce the incidence of ECC, prevent the need for dental rehabilitation, and improve the oral
165 health of their children. (Lucey 2009; Meyer et al. 2010; Plutzer and Spence 2008) Physicians, nurses,

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166 and other health care professionals are far more likely to see expectant or new mothers and their infants
167 than are dentists. Therefore, it is essential that these providers be aware of oral anomalies and associated
168 risk factors of dental caries in order to make appropriate decisions regarding timely and effective
169 interventions for pregnant women and facilitate the establishment of a dental home for the child.(Harrison
170 2003; Lewis et al. 2000; Nowak and Warren 2000)

171 Newborns and infants frequently have non-nutritive habits, such as digit sucking or use of a pacifier.
172 Prolonged digit sucking can cause flaring of the maxillary incisor teeth, an open bite, and a posterior cross
173 bite. (Dogramaci 2016) However, there should be little concern about the effects of such oral habits
174 during infancy.

175 **Diet for newborns and infants**

176 Benefits of breastfeeding in a child's first year of life are clear (Salone 2013); however, breastfeeding and
177 baby bottle beyond 12 months, especially if frequent and/or nocturnal, are associated with ECC. (Peres
178 2018). Also, allowing a child to drink from a bottle, transportable covered cup, open cup, or box of juice
179 throughout the day may be harmful.(Heyman 2017) Importantly, frequent consumption of free sugars
180 (i.e., sugars added to food and beverages and sugars naturally present in honey, syrups, fruit juices and
181 fruit juice concentrates) promotes the carious process.(Moynihan 2014) Cohort studies provide evidence
182 that two key characteristics are critical perinatal/infant dietary practices to prevent dental caries: the age at
183 which sugar is introduced to a child and the frequency of its consumption. (Chaffee 2015; Feldens 2018)
184 The American Heart Association recommends that sugar in foods and drink should be avoided in children
185 under two years. (Vos, Kaar, Welsh 2017) Additionally, the American Academy of Pediatrics
186 recommends that 100 percent fruit juice should not be introduced before 12 months of age and be limited
187 to no more than four ounces a day for children between the ages of one and three years. (Heyman 2017).

188

189 **Dental caries risk in newborns and infants**

190 Early childhood caries (ECC) is defined as the presence of one or more decayed (non-cavitated or
191 cavitated lesions), missing or filled (due to caries) surfaces, in any primary tooth of a child under six years
192 of age. (Drury 1999) ECC, like other forms of caries, is a bacterial-mediated, sugar-driven, multifactorial,
193 dynamic disease that results in the phasic demineralization and remineralization of dental hard tissues.
194 (Pitts 2019) Traditional microbial risk markers for ECC include acidogenic-aciduric bacterial species,
195 namely mutans streptococci (MS) and Lactobacillus species.(Kanasi 2010) MS maybe transmitted
196 vertically from caregiver to child through salivary contact, affected by the frequency and amount of
197 exposure.(Douglass 2008). Horizontal transmission (e.g., between other members of a family or children
198 in daycare) also occurs.(Berkowitz 2006) Dental caries in primary teeth may lead to chronic pain,

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199 infections, and other morbidities. ECC has major impact on the quality of life of children and their
200 families and is an unnecessary health and financial burden to society.(Pitts 2019)

201
202 Prevention for ECC needs to begin in infancy. Physicians, nurses, and other health care workers may have
203 more opportunities to educate the parent/caregivers than dental professionals because of the frequency of
204 contact with the family in the first year of the child's life.(Chi 2013) Therefore, they need to be aware of
205 caries risk and protective factors and use this information to promote primary care preventive messages
206 that include: limiting sugar intake in foods and drink; avoiding night-time bottle feeding with milk or
207 drinks containing sugars; avoiding baby bottle usage and breastfeeding beyond 12 months, especially if
208 frequent and/or nocturnal, and having the child's teeth brushed twice daily with a 'smear' of fluoridated
209 toothpaste.(Wright 2014) Additionally, for children who are at high risk for dental caries, professionally-
210 applied fluoride varnish and dietary fluoride supplements (for infants living in non-fluoridated areas) may
211 be part of an individualized preventive plan. (AAPD Caries Risk Assessment 2019) However, a growing
212 number of caregivers are hesitant about professionally-applied topical fluorides. (Chi 2018) Fluoride
213 hesitancy mirrors vaccination hesitancy observed in pediatric medicine.(Chi 2014) Inaccurate information
214 about fluoride may be shared among caregivers within online social networks. (Seymour 2015)

215
216 Caries risk assessment for infants determines the patient's relative risk for dental disease and allows for
217 the institution of appropriate strategies as the primary dentition begins to erupt. Its goal is to prevent
218 disease by identifying and minimizing causative factors (e.g., dietary habits, plaque accumulation, lack of
219 topical or systemic fluoride, frequent use of sugar containing medications) and optimizing protective
220 factors (e.g., fluoride exposure, oral hygiene practices, sealants).(AAPD Periodicity) Caries risk
221 assessment also allows health care professionals to identify and refer high caries risk patients for
222 appropriate dental management.(AAPD Caries risk Assessment)

223 Even the most judiciously designed and implemented caries risk assessment can fail to identify all infants
224 at risk for developing ECC. The early establishment of a dental home, including ECC prevention and
225 management, is the ideal approach to infant oral health care.(AAP 2008; Davey and Rogers 1984) The
226 inclusion of oral health education into the curriculum of medical, dental, nursing, and allied health
227 professional programs can facilitate the acceptance of the age one dental visit.(Douglass et al. 2005; Fein
228 et al. 2009) Recent studies, noting that a majority of pediatricians and general dentists were not advising
229 patients to see a dentist by one year of age, point to the need for increased infant oral health care
230 education in the medical and dental communities.(Brickhouse et al. 2008; Malcheff et al. 2009; Köhler et
231 al. 1984)

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232 Anticipatory guidance to reduce the risk of dental caries should include counseling regarding brushing of
233 child's teeth twice daily with the appropriate amount of fluoridated toothpaste, diet analysis, and
234 counseling to reduce the consumption of sugar-containing beverages.(AAPD Periodicity) The use of
235 fluoride for the prevention and control of caries is documented to be both safe and effective.(CDC 2001;
236 AAPD Fluoride Therapy) Optimal exposure to fluoride is important to all dentate infants and
237 children.(Milgrom et al. 2009) Systemically administered fluoride should be considered for all children
238 who do not receive fluoride by consuming fluoridated water (less than 0.7 part per million) in after
239 determining all other dietary sources of fluoride exposure.(AAPD Fluoride Therapy) The correct amount
240 of fluoridated toothpaste should be used twice daily by all children regardless of risk. No more than a
241 smear or rice-sized amount of fluoridated toothpaste should be used for children under age three.(ADA
242 2014) Professionally applied fluoride varnish should be considered for children at risk for caries.(AAPD
243 Caries risk Assessment)
244 Practitioners should counsel parents that high frequency consumption of sugars by bottle-feeding, sippy
245 cup use, or between meal consumption of sugars increases the risk of caries.(Tinanoff et al. 2002) The
246 American Academy of Pediatrics has recommended children one through six years of age consume no
247 more than four to six ounces of 100 percent fruit juice per day, from a cup (i.e., not a bottle or covered
248 cup).(AAP 2001) Epidemiological research shows that human milk and breast feeding of infants provide
249 general health, nutritional, developmental, and psychological advantages while significantly decreasing
250 risk for a large number of acute and chronic diseases.(AAP 2012) Frequent night time bottle feeding with
251 milk and ad libitum breastfeeding are associated, but not consistently implicated, with ECC.(Reisine and
252 Douglass 1998)
253 Parents also should be counseled that prolonged nonnutritive oral habits may contribute to deleterious
254 changes in the child's occlusion and facial development and that there are serious health consequences of
255 tobacco use and exposure to secondhand smoke.(AAPD Periodicity) Furthermore, practitioners should
256 provide age-appropriate injury prevention counseling for orofacial trauma.(AAPD Periodicity)

257 **Anticipatory Guidance**

258 Anticipatory guidance in the perinatal and infant period includes assessment of any growth and
259 development issues that the parents should be aware of or need referral to the child's medical provider.
260 AAPD BP Periodicity Schedule) Assessment of caries risk that should be considered in counselling the
261 parents regarding the child's fluoride exposure, including consumption optimally fluoridated water,
262 appropriate frequency and quantity of brushing with fluoridated toothpaste, and need for professional
263 topical fluoride applications. (AAPD BP Fluoride) Anticipatory guidance during this infant period also
264 entails oral hygiene instruction, dietary counselling regarding sugar consumption, frequency of periodic

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265 oral examinations (AAPD Periodicity Schedule), and information regarding non-nutritive habits that if
266 prolonged may result in flaring of the maxillary incisor teeth, open bite, and a posterior cross bite.
267 (Dogramaci and Rossi-Fedele, 2016). Counselling regarding safety and prevention of orofacial trauma
268 would include discussions of play objects, pacifiers, car seats, electrical cords, and injuries due to falls
269 when learning to walk.

270 Recommendations

- 271 1. Advise expecting and new parents regarding the importance of their own oral health and the possible
272 transmission of cariogenic bacteria from parent/primary caregiver to the infant.
- 273 2. Encourage establishment of a dental home that includes medical history, dental examination, risk
274 assessment, and anticipatory guidance for infants by 12 months of age.
- 275 3. Provide caries preventive information regarding: high frequency sugar consumption; brushing twice-
276 daily with optimal amount fluoridated toothpaste; safety and efficacy of optimally-fluoridated
277 community water; and for children at risk for dental caries, fluoride varnish and dietary fluoride
278 supplements (if not consuming optimally-fluoridated water).
- 279 4. Assess caries risk to facilitate the appropriate preventive strategies as the primary dentition begins to
280 erupt.
- 281 5. Provide information to parents regarding common oral conditions in newborns and infants, non-
282 nutritive oral habits (e.g., digit sucking, use of a pacifier), teething (including use of analgesics and
283 avoidance of topical anesthetics), growth and development, and orofacial trauma (including play
284 objects, pacifiers, car seats, electric cords, and falls when learning to walk).
- 285 6. When ankyloglossia results in functional limitations or causes symptom, the need to surgical
286 intervention should be assessed on an individual basis.
- 287 7. When a patient presents with a prematurely erupted primary tooth (i.e., natal or neonatal tooth),
288 decisions regarding intervention should be individualized, based on the interference with feeding, the
289 risk of detachment and aspiration, and any medical or contributing considerations.

290 **Management of perinatal and infant oral health**

291 *Oral health care for pregnant and lactating women.* The perinatal period is an opportune time to educate
292 and perform dental treatment on expectant mothers. (Silk et al. 2008; Boggess 2008; dela Cruz et al. 2004)
293 Pregnancy care visits provide a teachable moment for physicians, dentists, and nurses to educate women
294 about the following:

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- 295 • diet including the adequate quality and quantity of nutrients for the mother to be and the unborn
296 child. This education also should include information regarding the caries process and food
297 cravings that may increase the mother's caries risk.
- 298 • comprehensive oral examination, dental prophylaxis, and treatment during pregnancy. Dental
299 treatment during pregnancy, including dental radiographs with proper shielding and local
300 anesthetic, is safe in all trimesters and optimal in the second trimester. Due to possible patient
301 discomfort, elective treatment sometimes may be deferred until after delivery.
- 302 • proper oral hygiene, using a fluoridated toothpaste, chewing sugar free gum, and eating small
303 amounts of nutritious food throughout the day to help minimize their caries risk.
- 304 • continued breast feeding along with complementary foods for a period of one year or
305 longer.(AAP 2012) The transfer of drugs and therapeutics into breastmilk should be considered,
306 especially in infants younger than six months of age.(Sachs 2013)
- 307 *Oral health care for the infant.* Parents should be encouraged establish a dental home for infants by 12
308 months of age that includes the following:
- 309 • an initial visit with thorough medical (infant) and dental (parent and infant) histories, a thorough
310 oral examination, performance of an age appropriate tooth and gum cleaning demonstration, and
311 fluoride varnish treatment if indicated.(AAPD Periodicity)
- 312 • assessing the infant's risk of developing caries and determining a prevention plan, anticipatory
313 guidance regarding the effects of diet on the dentition, use of fluoride, and interval for periodic
314 re-evaluation.
- 315 • caries management of infants and toddlers with known risk factors for ECC. This should be
316 provided by practitioners who have the training and expertise to manage both the young child and
317 the disease process.
- 318 • injury prevention counseling to prevent orofacial trauma. Discussions should include play
319 objects, pacifiers, car seats, and electric cords.(AAPD Periodicity)
- 320 • counseling regarding teething. While many children have no apparent difficulties, teething can
321 lead to intermittent localized areas of discomfort, irritability, and excessive salivation. Treatment
322 of symptoms includes oral analgesics and chilled teething rings for the child.⁵⁸ Use of topical
323 anesthetics, including over the counter teething gels, to relieve discomfort should be avoided due
324 to potential toxicity of these products in infants.(US FDA)
- 325 • discussion regarding atypical frenum attachments that may be associated with problems with
326 breast feeding. In some cases, frenuloplasty or frenectomy may be a successful approach to

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327 facilitate breast feeding; however, there is a need for more evidence-based research to determine
328 indications for treatment.(AAPD Oral Surgery)

329 • counseling regarding non-nutritive oral habits (e.g., digit or pacifier sucking, bruxism, abnormal
330 tongue thrust) which may apply forces to teeth and dentoalveolar structures. It is important to
331 discuss the need for early sucking and the need to wean infants from these habits before
332 malocclusion or skeletal dysplasias occur.(AAPD Periodicity)

333 The desired goal of oral health counseling is for improved oral health behaviors. Motivational
334 interviewing techniques (MI) has been successful in promoting change in health behaviors.(Douglass and
335 Clark 2015) MI is a personalized approach that raises caregiver and child awareness of the problems,
336 setting oral health goals, and co-evaluating if current behaviors are consistent with the goals.

337

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1 Prescribing Dental Radiographs for Infants, Children, 2 Adolescents, and Individuals with Special Health Care Needs

3
4 Latest Revision

5 ~~2017~~ 2021

6
7 Abbreviations

8 **AAOMR:** American Academy of Oral and Maxillofacial Radiology

9 **AAPD:** American Academy of Pediatric Dentistry

10 **ADA:** American Dental Association

11 **CBCT:** Cone-beam computed tomography

12 **FDA:** Food and Drug Administration

13

14 Purpose

15 The American Academy of Pediatric Dentistry (**AAPD**) intends these recommendations to help
16 practitioners make clinical decisions concerning appropriate selection of dental radiographs as part of an
17 oral evaluation of infants, children, adolescents, and individuals with special health care needs. The
18 recommendations can be used to optimize patient care, minimize radiation burden, and allocate health
19 care resources responsibly.

20

21 Methods

22 In 1981, the Ad Hoc Committee on Pedodontic Radiology of the American Academy of Pedodontics
23 developed guidance on radiographic examination of pediatric dental patients. (AAPD 1991) Six years
24 later, the Food and Drug Administration (FDA) published recommendations (Joseph 1987) developed by
25 an expert dental panel, which included a representative of the AAPD, convened “to reach a consensus on
26 standardizing dental radiographic procedures”(AAPD Guidelines for Prescribing Radiographs 1985). In
27 2002, the American Dental Association (**ADA**) initiated a review of that document. The AAPD, along
28 with other dental specialty organizations, participated in the review and revision of these guidelines. The
29 FDA accepted the revision in November 2004, (ADA/USDHHS 2004) and the AAPD endorsed it the
30 following spring. This review includes a new search of the PubMed[®]/MEDLINE database using the
31 terms: dental radiology, dental radiographs, dental radiography, cone-beam computed tomography AND
32 guidelines, recommendations; fields: all; limits: within the last 10 years, humans, and English. The ADA

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33 Council on Scientific Affairs has published updates to their recommendations for dental
34 radiographs,(ADA 2006; ADA/USDHHS 2012) and the AAPD continues to endorse the ADA/ FDA's
35 recommendations.

36

37 Background

38 Radiographs are valuable aids in the oral health care of infants, children, adolescents, and individuals with
39 special health care needs. They are used to diagnose and monitor oral diseases, evaluate dentoalveolar
40 trauma, as well as monitor dentofacial development and the progress of therapy. The recommendations in
41 the ADA/FDA guidelines were developed to serve as an adjunct to the dentist's professional judgment.
42 The timing of the initial radiographic examination should not be based upon the patient's age, but upon
43 each child's individual circumstances. Radiographic screening for the purpose of detecting disease before
44 clinical examination should not be performed.(ADA/USDHHS 2012) Because each patient is unique, the
45 need for dental radiographs can be determined only after consideration of the patient's medical and dental
46 histories, completion of a thorough clinical examination, and assessment of the patient's vulnerability to
47 environmental factors that affect oral health. AAPD's recommendations for assessing risk for caries
48 development in children ages 0-5 years and ≥ 6 years can be found in Caries-risk Assessment and
49 Management for Infants, Children, and Adolescents.(AAPD Caries-risk Assessment) Review of prior
50 radiographs, when available from within the same practice or through record transfer, also contributes to
51 the decision of radiographic necessity.

52

53 Radiographs should be taken to substantiate a clinical diagnosis and guide the practitioner in making an
54 informed decision that ~~only when there is an expectation that the diagnostic yield will affect patient care.~~
55 The AAPD recognizes that there may be clinical circumstances for which a radiograph is indicated, but a
56 diagnostic image cannot be obtained. In cases where diagnostic radiographs cannot be obtained due to a
57 lack of cooperation, technical issues or a health care facility lacking in intraoral radiographic capabilities,
58 the practitioner should inform the patient or guardian of these limitations and document these discussions
59 in the patients record. The decision to treat the patient without radiographs will depend upon the urgency
60 of the treatment needs, availability and appropriateness of alternative treatment settings ~~For example, the~~
61 ~~patient may be unable to cooperate or the dentist may have privileges in a health care facility lacking~~
62 ~~intraoral radiographic capabilities. If radiographs of diagnostic quality are unobtainable, the dentist should~~
63 ~~confer with the parent to determine appropriate management techniques (e.g., preventive/restorative~~
64 ~~interventions, advanced behavior guidance modalities, deferral, referral), giving consideration to the~~
65 relative risks and benefits of the various treatment options for the patient.

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66
67 Because the effects of radiation exposure accumulate over time, every effort must be made to minimize
68 the patient's exposure. Good radiological practices are important in minimizing or eliminating
69 unnecessary radiation in diagnostic dental imaging. Examples of good radiologic practice include: 1) use
70 of the fastest image receptor compatible with the diagnostic task (F-speed film or digital),
71 Photostimulable Phosphor Plate (PSP), Charge Coupled Device (CCD), 2) collimation of the beam to the
72 size of the receptor whenever feasible, (NCRP report), (Oral Radiology Principles and Interpretation) 3)
73 proper film exposure and processing techniques, 4) use of protective aprons and thyroid collars, ~~when~~
74 ~~appropriate~~ and 5) limiting the number of images to the minimum necessary to obtain essential diagnostic
75 information.(ADA/USDHHS 2012) The dentist must weigh the benefits of obtaining radiographs against
76 the patient's risk of radiation exposure. Some of the newer panoramic machines are capable of producing
77 extra oral bitewings. The radiation dose is similar to a traditional panoramic radiograph, although it is 3-
78 11 times more than the traditional intra oral bitewing. Therefore, the extra oral bitewing should be
79 prescribed based upon case specific needs and not as an alternative to intra oral radiographs.(Willey D,
80 et.al)

81
82 New imaging technology (f.i.e., cone beam computed tomography ~~{[CBCT]}~~) have added three-
83 dimensional capabilities that have many applications in dentistry. The use of CBCT has been valuable as
84 an adjunct diagnostic tool in assessing periapical pathosis in endodontics, oral pathology, anomalies in the
85 developing dentition (e.g., impacted, ectopic, or supernumerary teeth), oral maxillofacial surgery (e.g.,
86 cleft palate), dental and facial trauma, and orthodontic and surgical preparation for orthognathic surgery.
87 For all procedures using CBCT, the clinical benefits must be balanced against the potential risks.
88 Considering the cumulative effect of ionizing radiation, and that children are two to 10 times more prone
89 to radiation induced carcinogenesis than an adult, the clinician needs to be aware of the inherent risks
90 associated with cone beam tomography and the as low as reasonably achievable (ALARA) principle in
91 patient selection. (Image Gently. Org)The American Academy of Oral and Maxillofacial Radiology
92 (AAOMR) has published position statements which summarize the potential benefits and risks of
93 maxillofacial CBCT use in orthodontic and endodontic diagnosis, treatment, and outcomes and provides
94 clinical guidance to dental practitioners.(AAOMR 2013; Special Committee etc. 2015) The AAOMR's
95 position statements support and affirm the position of the ADA Council on Scientific Affairs in that the
96 selection of CBCT imaging must be justified based on individual need.(AAOMR 2013; Special
97 Committee etc. 2015; ADA JADA 2012) Because this technology has potential to produce vast amounts
98 of data and imaging information beyond initial intentions, it is important to interpret all information

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99 obtained, including that which may be beyond the immediate diagnostic needs or abilities of the
100 practitioner and CBCT should be referred for radiological and diagnostic interpretation .

101

102 Recommendations

103 The recommendations of the ADA/FDA guidelines are contained within the accompanying Table 1 (see
104 ~~PDF~~). “These recommendations are subject to clinical judgment and may not apply to every patient. They
105 are to be used by dentists only after reviewing the patient’s health history and completing a clinical
106 examination. Even though radiation exposure from dental radiographs is low, once a decision to obtain
107 radiographs is made it is the dentist’s responsibility to follow the as low as reasonably achievable
108 (ALARA principle) to minimize the patient’s exposure.”(ADA/USDHHS 2012)

109

110 Intraoral imaging should be maintained as the standard diagnostic tool. The use of CBCT should be
111 considered when conventional radiographs are inadequate to complete diagnosis and treatment planning
112 and the potential benefits outweigh the risk of additional radiation dose. It must not be routinely
113 prescribed for diagnosis or screening purposes in the absence of clinical indication. Basic principles and
114 guidelines for the use of CBCT include: 1) use of appropriate image size or field of view, 2) assess the
115 radiation dose risk, 3) minimize patient radiation exposure and, 4) maintain professional competency in
116 performing and interpreting CBCT studies. (AAOMR 2013; Special Committee etc. 2015; ADA JADA
117 2012; SEDENTEXCT Project) When using CBCT, the resulting imaging is required to be supplemented
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119

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Table. 1 RECOMMENDATIONS FOR PRESCRIBING DENTAL RADIOGRAPHS(ADA/USDHHS 2012)				
Patient Age and Dental Developmental Stage				
Type of Encounter	Child with Primary Dentition (prior to eruption of first permanent tooth)	Child with Transitional Dentition (after eruption of first permanent tooth)	Adolescent with Permanent Dentition (prior to eruption of third molars)	Adult, Dentate or Partially Edentulous
New Patient* being evaluated for oral diseases.	Individualized radiographic exam consisting of selected periapical/occlusal views and/ or posterior bitewings if proximal surfaces cannot be visualized or probed. Patients without evidence of disease and with open proximal contacts may not require a radiographic exam at this time.	Individualized radiographic exam consisting of posterior bitewings with panoramic exam or posterior bitewings and selected periapical images.	Individualized radiographic exam consisting of posterior bitewings with panoramic exam or posterior bitewings and selected periapical images. A full mouth intraoral radiographic exam is preferred when the patient has clinical evidence of generalized oral disease or a history of extensive dental treatment.	
Recall Patient* with clinical caries or at increased risk for caries.**	Posterior bitewing exam at 6-12 month intervals if proximal surfaces cannot be examined visually or with a probe.			Posterior bitewing exam at 6-18 month intervals.
Recall Patient* with no clinical caries and not at increased risk for caries.**	Posterior bitewing exam at 12-24 month intervals if proximal surfaces cannot be examined visually or with a probe.		Posterior bitewing exam at 18-36 month intervals.	Posterior bitewing exam at 24-36 month intervals.

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<p>Patient (New and Recall) for monitoring of dentofacial growth and development, and/or assessment of dental/skeletal relationships.</p>	<p>Clinical judgment as to need for and type of radiographic images for evaluation and/or monitoring of dentofacial growth and development or assessment of dental and skeletal relationships.</p>	<p>Clinical judgment as to need for and type of radiographic images for evaluation and/or monitoring of dentofacial growth and development, or assessment of dental and skeletal relationships. Panoramic or periapical exam to assess developing third molars.</p>	<p>Usually not indicated for monitoring of growth and development. Clinical judgment as to the need for and type of radiographic image for evaluation of dental and skeletal relationships.</p>
<p>Patient with other circumstances including, but not limited to, proposed or existing implants, other dental and craniofacial pathoses, restorative/ endodontic needs, treated periodontal disease and caries</p>	<p>Clinical judgment as to need for and type of radiographic images for evaluation and/or monitoring in these conditions.</p>		

180

*** Clinical situations for which radiographs may be indicated include, but are not limited to:**

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A. Positive Historical Findings

1. Previous periodontal or endodontic treatment
2. History of pain or trauma
3. Familial history of dental anomalies
4. Postoperative evaluation of healing
5. Remineralization monitoring
6. Presence of implants, previous implant-related pathosis or evaluation for implant placement

B. Positive Clinical Signs/Symptoms

1. Clinical evidence of periodontal disease
2. Large or deep restorations
3. Deep carious lesions
4. Malposed or clinically impacted teeth
5. Swelling
6. Evidence of dental/facial trauma
7. Mobility of teeth
8. Sinus tract ("fistula")
9. Clinically suspected sinus pathosis
10. Growth abnormalities
11. Oral involvement in known or suspected systemic disease
12. Positive neurologic findings in the head and neck
13. Evidence of foreign objects
14. Pain and/or dysfunction of the temporomandibular joint
15. Facial asymmetry
16. Abutment teeth for fixed or removable partial prosthesis
17. Unexplained bleeding
18. Unexplained sensitivity of teeth
19. Unusual eruption, spacing or migration of teeth
20. Unusual tooth morphology, calcification or color
21. Unexplained absence of teeth
22. Clinical tooth erosion
23. Peri-implantitis

181 **** Factors increasing risk for caries may be assessed using the ADA Caries Risk Assessment forms (0–6 years of age(ADA Caries**
 182 **form 0-6) and over 6 years of age(ADA Caries form >6)).**

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184

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1 Record-keeping

2

3 Latest Revision

4 ~~2017~~ 2021

5

6 Abbreviations

7 **AAPD:** American Academy Pediatric Dentistry.

8 **EDR:** Electronic dental record

9 **EHR:** Electronic health record

10 **HIPAA:** Health Insurance Portability and Accountability Act.

11 **PHI:** Protected health information.

12 **TMD:** Temporomandibular disorder.

13 **TMJ:** Temporomandibular joint.

14

15 **Keywords:** Dental records, Health Insurance Portability and Accountability Act, Electronic
16 health records, Medical history taking

17

18 Purpose

19 The American Academy of Pediatric Dentistry (**AAPD**) recognizes the patient record is an essential
20 component of the delivery of competent and quality oral health care. It serves as an information source for
21 the care provider and patient, as well as any authorized third party. This document will assist the
22 practitioner in assimilating and maintaining a comprehensive, uniform, and organized record addressing
23 patient care. However, it is not intended to create a standard of care.

24

25 Methods

26 This best practice was developed by the Council on Clinical Affairs and adopted in 2004. (AAPD record
27 keeping 2004) This document is a revision of the previous version, last revised in 2012~~7~~. (AAPD Record
28 keeping 2017) This revision included a new literature search of the PubMed[®]/MEDLINE database using
29 the terms: dental record, electronic patient record, problem-oriented dental record, medical history taking,
30 medical record, record keeping, ~~and~~ Health Insurance Portability and Accountability Act (**HIPAA**),
31 telehealth in dentistry, data breach, medical necessity, problem-focused record, and record transfer/

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32 sharing of images; fields: all; limits: within the last 405 years, humans, and English. See Appendix I for
33 search strategy. Papers for review were chosen from this list and from the references within selected
34 articles and dental textbooks. When data did not appear sufficient or were inconclusive, recommendations
35 were based upon expert and/or consensus opinion by experienced researchers and clinicians.

36

37 Background

38 The patient record provides all privileged parties with the history and details of patient assessment and
39 communications between dentist and patient, as well as specific treatment recommendations, alternatives,
40 risks, and care provided. The patient record is an important legal document in third party relationships.
41 Poor or inadequate documentation of patient care consistently has been~~is~~ reported as a major contributing
42 factor in unfavorable legal judgments against dentists.(Speidel and Jerrold 2004; Brown 2015) Therefore,
43 the AAPD recognizes that recommendation on record-keeping may provide dentists the information
44 needed to compile an accurate and complete patient chart that can be interpreted by a knowledgeable
45 third-party.

46

47 An electronic dental patient-record (EDR) is becoming more commonplace, and perhaps will become
48 mandatory.(Speidel and Jerrold, 2004; Heid et al. 2002; Atkinson et al. 2002, Acharya 2017) Health
49 information systems and electronic health records (EHR) are being implemented as a means to improve
50 the quality and efficiency of health care.(Balgrosky 2015) Advantages include quality assurance by
51 allowing comparative analysis of groups of patients or providers, medical and dental history profiles for
52 demographic data, support for decision making based on signs and symptoms, administrative
53 management for patient education and recall, and electronic data interchange with other professional and
54 third parties. In addition, an EHR enables quality improvement to be implemented in individual or group
55 practices more readily. Quality improvement is the process of evaluating clinical practice, measuring
56 effectiveness, and implementing changes to improve patient outcomes. (Ng MW 2016) Quality
57 improvement strategies support and evaluate care delivery and allow changes to be made in clinical
58 practice. Most electronic dental billing systems do not easily allow for entry of diagnostic codes.
59 Clinicians can enter ‘dummy’ codes to represent diagnoses and outcomes to evaluate clinical outcomes
60 more easily. (Ng MW 2016)

61

62 HIPAA is the Health Insurance Portability and Accountability Act. (US Dept of Health and Human
63 Services, 2017) Originally passed by Congress in 1996, it has evolved significantly since then. Its

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64 primary purposes are to provide privacy and security of individually-identifiable health information, but it
65 also provides for data breach notifications and additional requirements for covered entities. (US Dept of
66 Health and Human Services, 2017) The requirements of HIPAA are applicable to dental offices, rather
67 numerous, and complex. The USDHHS recommends that dentists and their staff participate in regular
68 education and training on HIPAA requirements to maintain familiarity with changing regulations
69 regarding patient privacy. (US Dept of Health and Human Services, 2017)

70

71 The software must contain all the essential elements of a traditional paper record. Data security is
72 important in record-keeping and, with the widespread use of EHR, security requires evaluation of every
73 data interface to ensure data and patient information protection, including data that is stored in the cloud.
74 (Zeadally S 2016) A requirement of the Security Rule of HIPAA is to perform regular security risk
75 analyses of electronic systems that store and transmit protected health information (PHI). (Plunkett L
76 2016) Daily back up of the office software system should be performed and stored in an electronic data
77 base that is retrievable by off-site office personnel allows for the continuity of care and business
78 operations in the event that patient records are lost or damaged. To be compliant with HIPAA, software
79 systems, including back-up hard drives should be encrypted in case of a data breach. Correspondence
80 with other care providers via email, facsimile, and other forms of communication may be encrypted to
81 protect PHI, and providers should follow regulations and mandates on this topic. (Schulte D 2016)
82 Impermissible use or disclosure of PHI is also considered a data breach subject to state and federal laws
83 regarding security breach notification. (CDA Risk Management Staff 2016) Record access is intended
84 only for those who require it to perform their duties. If a computer accessing patient information is placed
85 where people other than the patient can view the screen, a privacy filter can decrease risk of compromise.
86 Screen closure after a period of inactivity will help protect privacy if the computer is left unattended.
87 (Hadden 2017)

88

89 The elements of record keeping addressed in this document are general charting considerations; initial
90 patient record; components of a patient record; patient medical and dental histories; comprehensive and
91 limited clinical examinations; treatment planning and informed consent; progress notes; correspondence;
92 consultations, and ancillary documents; and confidential notes. Additionally, appendices to this guideline
93 illustrate items for consideration in the development of patient medical and dental histories and
94 examination forms. These lists, developed by experts in pediatric dentistry and offered to facilitate
95 excellence in practice, should be modified as needed by individual practitioners. These samples do not
96 establish a standard of care. In issuing this information, the AAPD is not engaged in rendering legal or

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97 ~~other professional advice. If such services are required, competent legal or other professional counsel~~
98 ~~should be sought.~~

99

100 Recommendations

101 The elements of record-keeping addressed in this document are general charting considerations; initial
102 patient record; components of a patient record; patient medical and dental histories; comprehensive and
103 limited clinical examinations; treatment planning and informed consent; progress notes; correspondence,
104 consultations, and ancillary documents; teledentistry, records transfer, record correction and retention,
105 and accessibility to records. (Amos 2017) Forms completed by the parent should be available in
106 languages commonly found in the area where a treatment facility is located. (HHS Guidance- Written
107 Translation). In issuing this information, the AAPD is not engaged in rendering legal or other professional
108 advice. If such services are required, competent legal or other professional counsel should be sought.

109

110 General charting considerations

111 The dental record must be authentic, accurate, well thought out, legible, and objective. Each patient
112 should have an individual dental record. A well-documented record reflects a patients' history and care,
113 allowing for continuity of care. (Ngo E 2016) Chart entries should contain the initials or name of the
114 individual making the note. Documentation is the responsibility of many dental team members, including
115 the dentist, hygienist, dental assistant, front desk staff, and others. (Spindler J 2015) Abbreviations should
116 be standardized for the practice. After data collection, a list is compiled that includes medical
117 considerations, psychological/ behavioral considerations ~~constraints~~, and the oral health needs to be
118 addressed. Problems are listed in order of importance in a standardized fashion making it less likely that
119 an area might be overlooked. The plan identifies a general course of treatment for each problem. This
120 plan can result in the need for additional information, consultation with other practitioners, patient
121 education, and preventive strategies. Documentation should include everything that was accomplished
122 during an appointment including, but not limited to, discussion of medical history changes, assessments
123 performed, and discussions with the parent and/or patient and should be made at the time of the
124 appointment or soon thereafter. (Spindler J 2015; Amos 2017) If a practitioner needs to add or clarify a
125 note, a separate entry in the chart should be made. (Spindler J 2015; Hadden 2017) Templates are widely
126 available. These have shown to increase compliance when compared to hand-written notes. (McAndrew
127 2012) Clinicians should be aware of accuracy when completing templates, as incomplete sentences,
128 unpopulated fields in templates, and conflicting statements have been noted. (D'Cruz 2018)

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129

130 **Initial patient record**

131 The parent's/patient's initial contact with the dental practice, usually via telephone or by web-based form,
132 allows both parties an opportunity to address the patient's primary oral health needs and to confirm the
133 appropriateness of scheduling an appointment with that particular practitioner. ~~During~~ This conversation
134 or form the receptionist may record may elicit basic patient information such as:

- 135 • patient's name, nickname, and date of birth.
- 136 • sex assigned at birth and gender identity.
- 137 • name, address, and telephone number of parent.
- 138 • name of referring party.
- 139 • significant medical history.
- 140 • chief complaint.
- 141 • availability of medical/dental records (including radiographs) pertaining to patient's condition.
- 142 • preferred language.

143

144 Such information constitutes the initial dental record. At the first visit to the dental office, additional
145 information would be obtained and a permanent dental record developed.

146

147 **Components of a patient record**

148 The dental record must include each of the following specific components: (Amos,2017)

- 149 • medical history.
- 150 • dental history.
- 151 • clinical assessment.
- 152 • diagnosis; or differential diagnosis
- 153 • treatment recommendations.
- 154 • parental consent.
- 155 • progress notes.
- 156 • acknowledgment of receipt of Notice of Privacy Practices/HIPAA consent. ~~(Sikas 2003;~~
157 USDHHS HIPPA Privacy Regulations)

158 When applicable, patient assent should be included in the patient record. Practitioners should refer to state
159 guidelines regarding regulations for patient assent. (Katz 2016)

160

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161 When applicable, the following should be incorporated into the patient’s record as well: (Amos 2017;
162 Dean 2016; Brecher et al. 2019)

- 163 • radiographic images or other images obtained and their interpretation/assessment.
- 164 • caries risk assessment.
- 165 • periodontal risk assessment.
- 166 • ~~parental consent/patient assent.~~
- 167 • sedation/general anesthesia records.
- 168 • traumatic injury records.
- 169 • orthodontic records.
- 170 • consultations/referrals.
- 171 • laboratory orders.
- 172 • test results.
- 173 • additional ancillary records.
- 174 • Post-treatment instructions and prescriptions.

175

176 **Medical history** (~~Little et al. 2013; Dean 2016; Weir 2015;Cooke & Brewer 2019;~~ AAPD Adolescent
177 Oral Healthcare)

178 An accurate, comprehensive, and up-to-date medical history is necessary for correct diagnosis, ~~and~~
179 effective treatment planning, and patient safety. Familiarity with the patient’s medical history is essential
180 to decreasing the risk of aggravating a medical condition while rendering ~~dental~~ oral health care.

181 Additionally, a thorough history can aid the diagnosis of dental as well as medical conditions. The
182 practitioner, or staff under the supervision of the practitioner, must obtain a medical history from the
183 parent (if the patient is under the age of 18, as defined by AAPD) before commencing patient care.

184 (AAPD Overview) When the parent cannot provide adequate details regarding a patient’s medical history,
185 if the patient is medically compromised or if the dentist providing care is unfamiliar with the patient’s
186 medical diagnosis, consultation with the medical health care provider may be indicated.

187

188 Documentation of the patient’s medical history includes the following elements of information, with
189 elaboration of positive findings:

- 190 • medical conditions and/or illnesses.
- 191 • name and, if available, telephone number of primary and specialty medical care providers.
- 192 • current therapies (e.g., physical, occupational, speech)
- 193 • hospitalizations/surgeries.

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- 194 • anesthetic experiences.
- 195 • current medications.
- 196 • allergies/reactions to medications.
- 197 • other allergies/sensitivities.
- 198 • immunization status.
- 199 • review of systems.
- 200 • family history.
- 201 • social history.

202

203 ~~Appendix I provides suggestions for specific information that may be included in the written medical~~
204 ~~questionnaire or during discussions with the patient/parent.~~ The history form should provide the
205 parent/legal guardian additional space for information regarding positive historical findings, as well any
206 medical conditions not listed. There should be areas on the form indicating the date of completion, the
207 signature of the person providing the history (along with his/her relationship to the patient), and the
208 signature of the staff member reviewing the history with the parent/legal guardian. Records of patients
209 with significant medical conditions should be marked “~~M~~medical ~~A~~Alert” in a conspicuous yet
210 confidential manner. A sample of a pediatric medical history form can be found in the AAPD Resource,
211 Pediatric Medical History (AAPD Pediatric Medical History).

212 https://www.aapd.org/globalassets/media/policies_guidelines/r_medhistoryform.pdf

213

214 **Supplemental history for infants/toddlers**(AAPD Perinatal and Infant Oral Health Care; AAPD
215 Pediatric Medical History)

216 The very young patient can present with unique developmental and social concerns that impact the health
217 status of the oral cavity. Information regarding these considerations may be collected via a supplemental
218 history questionnaire for infants/toddlers. Topics to be discussed may include a history of
219 prematurity/perinatal complications, developmental considerations, feeding and dietary practices, timing
220 of first tooth appearance, and tooth brushing initiation and timing as well as toothpaste use. Assessment
221 of developmental milestones (e.g., gross/fine motor skills, language, social interactions) is crucial for
222 early recognition of potential delays and appropriate referral to therapeutic services.(Scharf et al. 2016)
223 As a majority of infants and toddlers of employed ~~parents~~ mothers receive child_care on a regular basis
224 ~~from persons other than their parents~~,(Laughlin 2013) and because the primary caretaker influences the
225 child’s risk for caries, the questionnaire also should ascertain childcare arrangements. Data gathered from
226 this questionnaire will benefit the clinical examination, caries risk assessment, preventive homecare plan,

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227 and anticipatory guidance counseling. A sample form is available on the AAPD website at

228 http://www.aapd.org/media/Policies_Guidelines/RS_MedHistoryForm.pdf.

229 https://www.aapd.org/globalassets/media/policies_guidelines/r_medhistoryform.pdf

230

231 **Supplemental history for adolescents**(AAPD Adolescent Oral Health Care, AAPD Pediatric Medical
232 History ;[Brecher et al. 2019](#))

233 The adolescent can present particular psychosocial characteristics that impact the health status of the oral
234 cavity, care seeking, and compliance. Integrating positive youth development (Dean 2016) into the

235 practice, the practitioner should obtain additional information confidentially from teenagers. Topics to be

236 discussed may include nutritional and dietary considerations, eating disorders, alcohol and substance

237 misuse~~abuse~~, tobacco ~~usage~~, electronic cigarette and inhalant usage, over-the-counter medications and

238 supplements, and body art (e.g., intra- and extra-oral piercings, tattoos), as well as the use of oral

239 contraceptives and pregnancy for the female adolescent. A sample confidential history form is available

240 on AAPD's website at http://www.aapd.org/media/Policies_Guidelines/RS_MedHistoryForm.pdf.

241 https://www.aapd.org/globalassets/media/policies_guidelines/r_medhistoryform.pdf

242

243 **Medical update**(AAPD Pediatric Medical History)

244 At each patient visit, the history should be consulted and updated. Recent medical attention for illness or

245 injury, newly diagnosed medical conditions, allergy, and changes in medications should be documented.

246 A written update should be obtained at each recall visit and updated in the EDR.

247

248 **Dental history**(Dean 2016; ~~Weir 2016~~; AAPD Perinatal and Infant Oral Health; AAPD Periodicity)

249 A thorough dental history is essential to guide the practitioner's clinical assessment, make an accurate

250 diagnosis, and develop a comprehensive preventive and therapeutic program for each patient. The dental

251 history should address the following:

252 • chief complaint.

253 • previous dental experience.

254 • date of last dental visit/radiographs.

255 • oral hygiene practices.

256 • fluoride use/exposure history.

257 • dietary habits (including breastfeeding, bottle/no-spill training cup use in young children).

258 • oral habits.

259 • sports activities.

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- 260 • previous orofacial trauma.
- 261 • temporomandibular joint (TMJ) history.
- 262 • family history of caries.
- 263 • social development.

264
265 ~~Appendix II provides suggestions for specific information that may be included in the written dental~~
266 ~~questionnaire or during discussions with the patient/parent. A sample dental history form is available on~~
267 ~~AAPD's website at https://www.aapd.org/globalassets/media/policies_guidelines/r_medhistoryform.pdf.~~

268
269 **Comprehensive clinical examination**(Little et al. 2017³; Dean 2016; AAPD Acquired TMD)
270 ~~The clinical examination is tailored to the patient's chief complaint (e.g., initial visit to establish a dental~~
271 ~~home, acute traumatic injury, second opinion, etc.).~~ A visual examination should precede other diagnostic
272 procedures. Components of a comprehensive oral examination include:

- 273 • general health/growth assessment/body mass index calculation (e.g., height, weight, vital signs).
- 274 • pain assessment.
- 275 • extraoral soft tissue examination.
- 276 • TMJ assessment.
- 277 • intraoral soft tissue examination.
- 278 • oral hygiene and periodontal health assessment.
- 279 • assessment of the developing occlusion.
- 280 • intraoral hard tissue examination.
- 281 • radiographic assessment, if indicated. (AAPD Radiographs, Aps and Lee, 2018.)
- 282 • caries risk assessment. (AAPD Caries-risk Assessment)
- 283 • ~~assessed~~assessment of cooperative potential/ behavior of child. (AAPD Behavior Guidance)

284
285 ~~Appendix III provides suggestions for specific information that may be included in the oral examination.~~

286
287 The dentist may employ additional diagnostic tools to complete the oral health assessment. Such
288 diagnostic aids may include electric or thermal pulp testing, ~~photographs,~~ percussion, transillumination,
289 caries detection devices, salivary tests, photographs, cone-beam computed tomography (CBCT),
290 laboratory tests, and study casts. ~~The speech~~ Speech may be evaluated and provide additional diagnostic
291 information in children who are able to talk.

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292

293 To enhance patient diagnosis and treatment documentation, the practitioner should consider including
294 photographs of the child's oral condition in the child's record. Photographs may be indicated to:

- 295 • facilitate diagnosis;
- 296 • verify presence or characteristics of a condition (e.g. decalcification, molar-incisor
297 hypomineralization) that may not be documented adequately by other means (e.g., radiographs);
- 298 • monitor a finding for clinical changes;
- 299 • document acute traumatic injuries, particularly if abuse may be suspected;
- 300 • facilitate education and treatment planning;
- 301 • document teledentistry consultation; and
- 302 • facilitate determination of medical necessity by third party payors.

303 If the photograph identifies the patient and will be included in dental record, a written informed consent
304 should be obtained as part of a general consent for treatment. In addition, if the photographs are intended
305 for use other than in dental record, such as a publication, a separate written informed consent must be
306 obtained. Practitioners should consult HIPAA rule and state regulations. (Harting 2015; Nettrour J 2018)
307 Photographs, along with adequate diagnostic radiographs, can enhance the documentation of medical
308 necessity of treatment.

309

310 **Examinations of a limited nature**

311 If a patient is seen for limited care, a consultation, an emergency, or a second opinion, a medical and
312 dental history must be obtained, along with a hard and soft tissue examination as deemed necessary by the
313 practitioner. Documentation should clearly state the limited scope of the evaluation. The parent should be
314 informed of the limited nature of the treatment and counseled to seek routine comprehensive care after the
315 resolution of the acute issue. The AAPD's ~~Assessment of~~ Assessment of Acute Traumatic Injuries: Assessment and
316 Documentation form(AAPD Assessment of Acute Traumatic Injuries) provides greater details on
317 diagnostic procedures and documentation for emergent traumatic injury care.

318

319 **Treatment recommendations and informed consent**(AAPD Informed Consent)

320 Once the clinician has obtained the medical, ~~and~~ dental, and social histories and evaluated the ~~facts~~
321 information obtained during the diagnostic procedures, the diagnoses should be derived and a sequential
322 prioritized treatment plan developed. The treatment plan would include specific information regarding the
323 teeth and surfaces to be treated, the nature selected of the procedures/materials to be used, number of

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324 appointments/ time frame needed to accomplish this care, behavior guidance techniques beyond basic
325 communicative techniques that may be employed, and fee for proposed procedures. The dentist is
326 obligated to educate the parent on the need for and benefits of the recommended care, as well as risks,
327 alternatives, and expectations if no intervention is provided. When deemed appropriate, the patient should
328 be included in these discussions. (Katz 2016; AAPD Informed Consent) The dentist should not attempt to
329 decide what the parent will accept or can afford. After the treatment ~~options are~~plan is presented, the
330 parent should have the opportunity to ask questions regarding the proposed care and have concerns
331 satisfied prior to giving informed consent. Informed consent may include various forms and be procedure-
332 specific. (Look at informed consent document). (AAPD Informed Consent) For adult patients with special
333 health care needs, ~~it is important to~~ determine who legally can provide consent for treatment is
334 essential.(AAPD Informed Consent) The practitioner should document interpreters or translation services
335 used to aid communication (e.g., in person, by telephone). Documentation should include that questions
336 were encouraged and answered and the parent appeared to understand and accepted the proposed
337 procedures. Any special restrictions and/or concerns voiced by ~~of~~ the parent should be documented. The
338 people present during the discussion may be documented. If the parent refuses treatment and a treatment
339 refusal form is signed, it should be retained in the record. (Spindler J 2015) A signed dental informed
340 consent for sedation and general anesthesia should be maintained in the record. A signed informed
341 consent should not preclude or replace a detailed discussion regarding recommended treatment and
342 treatment modalities.

343

344 **Progress notes**

345 An entry must be made in the patient's record that accurately and objectively summarizes each visit. The
346 entry must minimally contain the following information:

- 347 • date of visit.
- 348 • reason for visit/chief complaint.
- 349 • radiographic exposures and interpretation, if any.
- 350 • treatment rendered including, but not limited to, teeth restored and materials used, the type and
351 dosage of anesthetic agents(AAPD Use of Local Anesthesia), medications, and/or nitrous
352 oxide/oxygen,(AAPD Use of Nitrous Oxide) type/duration of protective stabilization,(AAPD
353 Protective Stabilization) treatment complications, and adverse outcomes.
- 354 • the behavior/ response to treatment of the child
- 355 • post-operative instructions and prescriptions as needed.

356

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357 In addition, the entry generally should document:

- 358 • changes in the medical history, if any.
- 359 • adult accompanying child.
- 360 • presence of the parent or guardian in the operatory, if applicable
- 361 • significant conversations with the parent/guardian regarding limitations, prognosis, behavior
- 362 challenges, or other issues that might be out of the ordinary
- 363 • verification of compliance with preoperative instructions.
- 364 • reference to supplemental documents.
- 365 • patient behavior guidance.
- 366 • planned treatment for next visit.

367

368 A standardized format may provide the practitioner a way to record the essential aspects of care on a
 369 consistent basis. One example of documentation is the SOAP note.(Chasteen et al. 1996) SOAP is an
 370 acronym for subjective (**S**) or what the patient says or reports ~~he patient's response and feeling to~~
 371 ~~treatment~~, objective (**O**) or the observations of the clinician or test results, assessment (**A**) or diagnosis/
 372 differential diagnosis of the problem, ~~and procedures accomplished~~ and plans (**P**) for what and how
 373 treatment will be provided. ~~subsequent problem-resolving activities.~~ The signature or initials of the office
 374 staff member documenting the visit should be entered. The dentist has the ultimate responsibility for all
 375 entries made in the chart and may counter-sign all treatment progress note entries.

376

377 When sedation or general anesthesia is employed, additional documentation on a time-based record is
 378 required, as discussed in the AAPD's *Guidelines for Monitoring and Management of Pediatric Patients*
 379 *Before, During, and After Sedation for Diagnostic and Therapeutic Procedures: Update 2016.* (Cote and
 380 Wilson 2016)

381

382 Progress notes should also ~~should document include~~ telephone conversations, and email and text
 383 correspondence regarding the patient's care. Information including complications from treatment,
 384 questions/ concerns regarding treatment plan should be documented. Appointment history (i.e.,
 385 cancellations, failures, tardiness, rescheduled appointments) may be retained in the record. (Spindler J
 386 2015) Documentation should also include non-compliance with treatment recommendations, and
 387 educational materials utilized (both video and written). Any referrals made should be included, along with
 388 identification of the staff member making the entry in the dental record.

389

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390 **Teledentistry**

391 Dentists are encouraged to understand their state’s regulations regarding documentation and consent
392 requirements for teledentistry. Documentation of a teledentistry patient visit should include a thorough
393 description of the encounter in accordance with state regulations as part of the patient record. Security
394 measures and privacy of protected patient information should be maintained in compliance with state and
395 federal laws. (AAPD Policy on Teledentistry)

396

397 **Orthodontic treatment**

398 The AAPD’s Recommendation on Management of the Developing Dentition and Occlusion in Pediatric
399 Dentistry(AAPD Management of Developing Dentition) provides general recommendations on the
400 documentation of orthodontic care. Signs and/or symptoms of TMJ disorders should be recorded when
401 they occur before, during, or after orthodontic treatment.(Machen 1989) During orthodontic treatment,
402 progress notes should include deficiencies in oral hygiene, loose bands and brackets, patient complaints,
403 decalcification/ caries, root resorption, and cancellations and failures.

404

405 **Correspondence, consultations, and ancillary documents**

406 The primary care dentist often consults with other health care providers in the course of delivery of
407 comprehensive oral health care, especially for patients with special health care needs or complex oral
408 conditions. Communications with medical care providers or dental specialists should be incorporated into
409 the dental record. Written referrals to other care providers should include the specific nature of the
410 referral, as well as pertinent patient history and clinical findings. Reports received from other health care
411 providers should be incorporated into the patient’s chart. A progress note should be made ~~on~~ noting
412 correspondence sent or received regarding a referral, indicating documentation filed elsewhere in the
413 patient’s chart. Copies of test results, prescriptions, laboratory work orders, and other ancillary documents
414 should be maintained as part of the dental record.

415

416 **Record transfer**

417 If a parent requests a record transfer to another office, documentation of this request and what was sent
418 should be maintained in the chart. An example of a transfer form can be found in the Resource: Record
419 Transfer. (AAPD Record transfer).

420

421 **Correction of records and records retention**

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422 For all dental records, whether electronic or paper, adherence to general guidelines helps avoid problems
423 from a medico-legal standpoint. An individual should never allow others to use his password to access
424 electronic files. Changes to a record should not be made after a patient complaint or a practitioner learns
425 of pending legal action related to patient care. When changes must be made in a paper dental record,
426 corrections should be clearly identified by: drawing a single line through the error and placing one's
427 initials/signature and date after the changes. If an electronic record is used, corrections should be noted by
428 a separate clarifying/ correcting entry in the chart. (Ngo, Patel et al, 2016)

429

430 The length of time for retention of records of child patients varies greatly by jurisdiction. The clinician
431 should be aware of his specific jurisdiction's requirements and keep the records safely secured for the
432 specified time. When the time of retention is completed, the records must be securely destroyed, so that
433 all personal information is protected. (Spindler J 2015)

434

435 **Accessibility to records (Cures Act 2020):**

436 In 2020, new federal rules implemented the bipartisan 21st Century Cures Act that, in part, “. . . promotes
437 patient access to their electronic health information, supports provider needs, advances innovation, and
438 addresses industry-wide information blocking practices” (Sweeney, 2020). The rules forbid health care
439 organizations, information technology vendors, and others from restricting patients' access to their
440 electronic health care data, or “information blocking”. Although HIPAA gave patients the legal right to
441 review their medical records, the new ruling goes further by giving them the right to access their
442 electronic health records rapidly and conveniently via secure online portals. Providers must share not only
443 test results, medication lists, and referral information but also notes written by clinicians. (Blease, et al.,
444 2020) The effects on most dentists in the short term remains unclear. (ADA News, 2020)

445

446 **Appendices***

447 ~~*The information included in the following samples, developed by the AAPD, is provided as a tool for~~
448 ~~pediatric dentists and other dentists treating children. It was developed by experts in pediatric dentistry~~
449 ~~and is offered to facilitate excellence in practice. However, these samples do not establish a standard of~~
450 ~~care. In issuing this information, the AAPD is not engaged in rendering legal or other professional advice.~~
451 ~~If such services are required, competent legal or other professional counsel should be sought.~~

452

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453 **Appendix I—Medical history***

454 Name and nickname

455 Date of birth

456 Gender

457 Race/ethnicity

458 Name, address, and telephone number of all physicians

459 Date of last physical examination

460 Immunization status

461 Summary of health problems

462 Any health conditions that necessitate antibiotics or other medications prior to dental treatment

463 ~~Allergies/sensitivities/reactions~~

464 ~~Anesthetics, local and general~~

465 ~~Sedative agents~~

466 ~~Drug or medications~~

467 ~~Environmental (including latex, food, dyes, metal, acrylic)~~

468 Medications (including over the counter medications, vitamins, and homeopathic and herbal supplements)—dose, frequency, reactions

470 Hospitalizations—reason, date, and outcome

471 Surgeries—reason, date, and outcome

472 Significant injuries—description, date, and outcome

473 General

474 ~~Complications during pregnancy and/or birth~~

475 ~~Prematurity~~

476 ~~Congenital anomalies~~

477 ~~Cleft lip/palate~~

478 ~~Inherited disorders~~

479 ~~Nutritional deficiencies~~

480 Problems of growth or stature

481 Head, ears, eyes, nose, throat

482 ~~Lesions in/around mouth~~

483 ~~Chronic adenoid/tonsil infections~~

484 ~~Chronic ear infections~~

485 ~~Ear problems~~

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- 486 ~~Hearing impairments~~
- 487 ~~Eye problems~~
- 488 ~~Visual impairments~~
- 489 ~~Sinusitis~~
- 490 ~~Speech impairments~~
- 491 ~~Apnea/snoring~~
- 492 ~~Mouth breathing~~
- 493 Cardiovascular
- 494 ~~Congenital heart defect/disease~~
- 495 ~~Heart murmur~~
- 496 ~~Infective endocarditis~~
- 497 ~~High blood pressure~~
- 498 ~~Rheumatic fever~~
- 499 ~~Rheumatic heart disease~~
- 500 Respiratory
- 501 ~~Asthma—medications, triggers, last attack, hospitalizations~~
- 502 ~~Tuberculosis~~
- 503 ~~Cystic fibrosis~~
- 504 ~~Frequent colds/coughs~~
- 505 ~~Respiratory syncytial virus~~
- 506 ~~Reactive airway disease/breathing problems~~
- 507 ~~Smoking~~
- 508 Gastrointestinal
- 509 ~~Eating disorder (e.g., anorexia, bulimia, pica)~~
- 510 ~~Ulcer~~
- 511 ~~Excessive gagging~~
- 512 ~~Gastroesophageal/acid reflux disease~~
- 513 ~~Hepatitis~~
- 514 ~~Jaundice~~
- 515 ~~Liver disease~~
- 516 ~~Intestinal problems~~
- 517 ~~Prolonged diarrhea~~
- 518 ~~Unintentional weight loss~~

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- 519 ~~Lactose intolerance~~
- 520 ~~Dietary restrictions~~
- 521 Genitourinary
- 522 ~~Bladder infections~~
- 523 ~~Kidney infections~~
- 524 ~~Pregnancy~~
- 525 ~~Systemic birth control~~
- 526 ~~Sexually transmitted infections~~
- 527 Musculoskeletal
- 528 ~~Arthritis~~
- 529 ~~Scoliosis~~
- 530 ~~Bone/joint problems~~
- 531 ~~Temporomandibular disorders (TMD) — joint popping, clicking, locking, difficulties opening or chewing~~
- 532 Integumentary
- 533 ~~Herpetic/ulcerative lesions~~
- 534 ~~Eczema~~
- 535 ~~Rash/hives~~
- 536 ~~Dermatologic conditions~~
- 537 Neurologic
- 538 ~~Fainting~~
- 539 ~~Dizziness~~
- 540 ~~Autism spectrum disorder~~
- 541 ~~Developmental disorders~~
- 542 ~~Learning problems/delays (e.g., enrollment in specialized school or individualized education plan)~~
- 543 ~~Mental disability~~
- 544 ~~Brain injury~~
- 545 ~~Cerebral palsy~~
- 546 ~~Convulsions/seizures~~
- 547 ~~Epilepsy~~
- 548 ~~Headaches/migraines~~
- 549 Hydrocephaly
- 550 ~~Shunts — ventriculoperitoneal, ventriculoatrial, ventriculovenous~~
- 551 Psychiatric

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- 552 ~~Maltreatment (e.g., physical abuse, sexual abuse, dental neglect, bullying)~~
- 553 ~~Alcohol and chemical dependency~~
- 554 ~~Emotional disturbance~~
- 555 ~~Hyperactivity/attention deficit hyperactivity disorder~~
- 556 ~~Pediatric acute-onset neuropsychiatric syndrome (PANS)~~
- 557 ~~Obsessive compulsive disorder~~
- 558 ~~Psychiatric problems/treatments or medications~~
- 559 Endocrine
- 560 ~~Diabetes~~
- 561 ~~Growth delays~~
- 562 ~~Hormonal problems~~
- 563 ~~Precocious puberty~~
- 564 ~~Thyroid problems~~
- 565 Hematologic/lymphatic/immunologic
- 566 ~~Anemia~~
- 567 ~~Blood disorder~~
- 568 ~~Transfusion~~
- 569 ~~Excessive bleeding~~
- 570 ~~Bruising easily~~
- 571 ~~Hemophilia~~
- 572 ~~Sickle cell disease/trait~~
- 573 ~~Cancer, tumor, other malignancy~~
- 574 ~~Immune disorder~~
- 575 ~~Chemotherapy~~
- 576 ~~Radiation therapy~~
- 577 ~~Hematopoietic cell (bone marrow) transplant~~
- 578 Infectious
- 579 ~~Measles~~
- 580 ~~Mumps~~
- 581 ~~Rubella~~
- 582 ~~Scarlet fever~~
- 583 ~~Varicella (chicken pox)~~
- 584 ~~Mononucleosis~~

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- 585 ~~Cytomegalovirus (CMV)~~
- 586 ~~Pertussis (whooping cough)~~
- 587 ~~Human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS)~~
- 588 ~~Sexually transmitted infections~~
- 589 ~~Lyme disease~~
- 590 ~~Zika virus~~
- 591 Family history
- 592 ~~Genetic disorders~~
- 593 ~~Problems with general anesthesia~~
- 594 ~~Serious medical conditions or illnesses~~
- 595 Social concerns
- 596 ~~Chronic passive smoke exposure~~
- 597 ~~Religious or philosophical objections to treatment~~
- 598 ~~Legal custody/guardianship status~~

599

600 **Appendix II—Dental History***

- 601 ~~Previous dentist, address, telephone number~~
- 602 ~~Date of last dental examination~~
- 603 ~~Date of last dental radiographs, number and type taken, if known~~
- 604 ~~Date of last fluoride treatment~~
- 605 Prenatal/natal history
- 606 ~~Family history of caries, including parents and siblings~~
- 607 ~~History of smoking in the home~~
- 608 ~~Medications or disorders that would impair salivary flow~~
- 609 ~~Injuries to teeth and jaws, including TMJ trauma~~
- 610 ~~When/where/how~~
- 611 ~~Treatment required~~
- 612 Dental pain and infections
- 613 ~~Habits (past and present) such as finger, thumb, pacifier, tongue or lip sucking, bruxism, clenching~~
- 614 Snoring
- 615 Diet and dietary habits
- 616 ~~Breast feeding—frequency, weaned/when~~
- 617 ~~Bottle feeding/no spill training (sippy) cup use~~

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- 618 ~~Frequency~~
- 619 ~~Content—Formula, milk water, juice~~
- 620 ~~Weaned/when~~
- 621 ~~Sugar sweetened or sugar containing beverages (e.g., sodas, fruit juice, sports drinks)—amount,~~
- 622 ~~frequency~~
- 623 ~~Snacks—type, frequency~~
- 624 ~~Meals—balanced, frequency, restricted or special diet~~
- 625 Oral hygiene
- 626 ~~Frequency of brushing, flossing, oral rinse use~~
- 627 ~~Assisted/supervised~~
- 628 Fluoride exposure
- 629 ~~Primary source of drinking water—home, daycare, other~~
- 630 ~~Water—tap, bottled, well, filtered/reverse osmosis~~
- 631 ~~Systemic supplementation—tablets, drops~~
- 632 ~~Topical—toothpaste, rinses, prescription~~
- 633 Previous orthodontic treatment
- 634 Behavior of child during past dental treatment
- 635 Behavior anticipated for future treatment
- 636
- 637 **Appendix III—Clinical Examination***
- 638 General health/growth assessment
- 639 ~~Growth appropriate for age~~
- 640 ~~Height/weight/frame size/body mass index (BMI)~~
- 641 ~~Vital signs—pulse, blood pressure~~
- 642 Extraoral examination
- 643 ~~Facial features~~
- 644 ~~Nasal breathing~~
- 645 ~~Lip posture~~
- 646 ~~Symmetry~~
- 647 ~~Pathologies~~
- 648 ~~Skin health~~
- 649 TMJ/TMD(AAPD Acquired TMD)
- 650 ~~Signs of clenching/bruxism~~
- 651 ~~Headaches from TMD~~

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- 652 ~~Pain~~
- 653 ~~Joint sounds~~
- 654 ~~Limitations or disturbance of movement or function~~
- 655 ~~Intra-oral soft tissue examination~~
- 656 ~~Tongue~~
- 657 ~~Roof of mouth~~
- 658 ~~Frenulae~~
- 659 ~~Floor of mouth~~
- 660 ~~Tonsils/pharynx~~
- 661 ~~Lips~~
- 662 ~~Pathologies noted~~
- 663 ~~Oral hygiene and periodontal assessment(Greenwell 2001; Califano 2003)~~
- 664 ~~Oral hygiene, including an index or score~~
- 665 ~~Gingival health, including an index or score~~
- 666 ~~Probing of pocket depth, when indicated~~
- 667 ~~Marginal discrepancies~~
- 668 ~~Calculus~~
- 669 ~~Bone level discrepancies that are pathologic~~
- 670 ~~Recession/inadequate attached gingiva~~
- 671 ~~Mobility~~
- 672 ~~Bleeding/suppuration~~
- 673 ~~Furcation involvement~~
- 674 ~~Assessment of the developing occlusion~~
- 675 ~~Facial profile~~
- 676 ~~Canine relationships~~
- 677 ~~Molar relationships~~
- 678 ~~Overjet~~
- 679 ~~Overbite~~
- 680 ~~Midline~~
- 681 ~~Crossbite~~
- 682 ~~Alignment~~
- 683 ~~Spacing/crowding~~
- 684 ~~Centric relation/centric occlusion discrepancy~~

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- 685 ~~Influence of oral habits~~
- 686 ~~Appliances present~~
- 687 ~~Intraoral hard tissue examination~~
- 688 ~~Teeth present~~
- 689 ~~Supernumerary/missing teeth~~
- 690 ~~Dental development status~~
- 691 ~~Over-retained primary teeth~~
- 692 ~~Ankylosed teeth~~
- 693 ~~Ectopic eruption~~
- 694 ~~Anomalies/pathologies noted~~
- 695 ~~Tooth size, shape discrepancies~~
- 696 ~~Tooth discoloration~~
- 697 ~~Enamel hypoplasia/fluorosis~~
- 698 ~~Congenital defects~~
- 699 ~~Existing restorations~~
- 700 ~~Defective restorations~~
- 701 ~~Caries~~
- 702 ~~Pulpal pathology(AAPD Pulp Therapy; AAPD Use of Vital Pulp Therapies)~~
- 703 ~~Traumatic injuries~~
- 704 ~~Third molars~~
- 705 ~~Radiographic examination(Burke and Stigers 2011Aps and Lee, 2018)~~
- 706 ~~Developmental anomalies~~
- 707 ~~Eruptive patterns/tooth positions/root resorption~~
- 708 ~~Crestal alveolar bone level~~
- 709 ~~Pulpal/furcation/periapical pathology~~
- 710 ~~Caries—presence, proximity to pulp space, demineralization/remineralization~~
- 711 ~~Existing pulpal therapy/restorations~~
- 712 ~~Traumatic injury~~
- 713 ~~Calculus deposits~~
- 714 ~~Occlusal disease~~
- 715 ~~Explanation of inability to obtain diagnostic image when indicated~~
- 716 ~~Caries risk assessment~~
- 717

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718 **Appendix I: Search strategy:**

719 ("Record keeping" OR "clinical documentation" OR "clinician documentation" OR "clinician
720 compliance" OR "Documentation/standards"[MeSH Major Topic] OR "Telemedicine/standards"[MeSH
721 Major Topic] OR "Forms and Records Control"[MeSH Major Topic] OR "record transfer" OR "image
722 sharing" OR "Health Information Exchange"[MeSH Major Topic] OR "Health Services Needs and
723 Demand"[MeSH Major Topic] OR "medical necessity" OR "data breach" OR "Telemedicine OR
724 "telemedicine"[MeSH Major Topic] OR "Telehealth" OR "dental telehealth" OR "quality assurance" OR
725 "Health Insurance Portability and Accountability Act"[MeSH Major Topic] OR "Health Insurance
726 Portability and Accountability Act" OR "Medical History Taking"[MeSH Major Topic] OR "medical
727 history taking" OR "medical history taking" OR "problem-oriented dental record") AND ("Electronic
728 Health Records"[MeSH Major Topic] OR "electronic health record" OR "electronic health records" OR
729 "medical record" OR "medical records" OR "medical recording" OR "medical records"[MeSH Major
730 Topic] OR "patient record" OR "patient records" OR "electronic patient record" OR "Dental
731 Records"[MeSH Major Topic] OR "dental records" OR "dental record") AND ((y 5[Filter]) AND
732 (english[Filter])) AND ((y 5[Filter]) AND (english[Filter])) AND ((y 5[Filter]) AND (english[Filter]))
733 AND ((y 5[Filter]) AND (humans[Filter]) AND (english[Filter])) AND ((y 5[Filter]) AND
734 (humans[Filter]) AND (english[Filter])) AND ((y 5[Filter]) AND (humans[Filter]) AND
735 (english[Filter])) AND ((y 5[Filter]) AND (humans[Filter]) AND (english[Filter])) AND ((y 5[Filter])
736 AND (humans[Filter]) AND (english[Filter])) AND ((y 5[Filter]) AND (humans[Filter]) AND
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739

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1 Management of the Developing Dentition and Occlusion in 2 Pediatric Dentistry

3 Latest Revision

4 2019, 2021 (revision restricted to section on Ankylosis, pp. 398-399)

6 *Ankylosis*

7 **General considerations and principles of management:** Ankylosis is a condition in which the
8 cementum of a tooth's root fuses directly to the surrounding bone.⁸⁹ The periodontal ligament is replaced
9 with osseous tissue, rendering the tooth immobile to eruptive change.⁸⁹ An ankylosed tooth stays at the
10 same vertical level, yet in a growing child appears to submerge as the other teeth continue to erupt.
11 Ankylosis can occur in the primary and permanent dentitions, with the most common incidence involving
12 primary molars. The incidence is reported to be between seven and 14 percent in the primary dentition.⁹⁰
13 In the permanent dentition, ankylosis occurs most frequently following luxation injuries.⁹¹

14
15 Ankylosis is common in anterior teeth following trauma ~~and is referred to as replacement resorption.~~
16 ~~Periodontal ligament cells are destroyed, and the cells of the alveolar bone perform most of the healing.~~
17 (e.g. avulsion) or injury to periodontal ligament cells and is the process of pathological fusion of the
18 external root surface of the tooth to the surrounding alveolar bone.¹⁰⁰ The degree of replacement
19 resorption and infraocclusion contribute to the severity of ankylosis. Over time, normal bony activity may
20 result in the replacement of root structure with osseous tissue.^{90,91} Ankylosis can occur rapidly or
21 gradually, in some cases as long as five years post trauma. It also may be transient if only a small bony
22 bridge forms and then is resorbed with subsequent osteoclastic activity.^{92,100}

23
24 Ankylosis can be verified by clinical and radiographic means. Submergence of the tooth or infraocclusion
25 is the primary recognizable sign, but the diagnosis also can be made through percussion and palpation.⁹³
26 ~~Radiographic examination also may reveal the loss of the periodontal ligament and bony bridging.~~⁸⁹ ~~Lack~~
27 of physiologic mobility and the presence of a dull tone upon percussion with a metal instrument such as a
28 dental mirror handle in comparison to adjacent teeth are indicative of ankylosis. Intraoral radiographic

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29 examination, while limited in its two-dimensional view, may show the loss of the periodontal ligament,
30 external resorption and alveolar replacement.⁸⁹

31

32 ~~Treatment considerations: With ankylosis of a primary molar, exfoliation usually occurs normally.~~
33 ~~Extraction is recommended if prolonged retention of the primary molar is noted. If a severe marginal~~
34 ~~ridge discrepancy develops, extraction should be considered to prevent the adjacent teeth from tipping~~
35 ~~and producing space loss^{4,93} or vertical occlusal discrepancies.⁹⁴ Replacement resorption of permanent~~
36 ~~teeth usually results in the loss of the involved tooth.⁹⁰ Mildly to moderately ankylosed primary molars~~
37 ~~without permanent successors may be retained and restored to function in arches without crowding.⁹⁴~~
38 ~~Extraction of these molars can assist in resolving crowded arches in complex orthodontic cases.⁹⁵~~

39 Management of an ankylosed primary molar with a successor consist of maintaining it until an
40 interference with eruption, tipping or drift of adjacent teeth occurs. If associated problems occur, the
41 practitioner should extract the ankylosed primary molar and place a lingual arch or other fixed appliance
42 if needed. Management of ankylosed primary molars without successors should take into consideration
43 the patient's age, specific tooth condition, comprehensive orthodontic treatment plan including future
44 prosthodontic considerations, and parental preferences. If severe infraocclusion is anticipated, ankylosed
45 primary molars without a permanent successor should either undergo extraction before a large vertical
46 occlusal discrepancy develops or decoronation to maintain alveolar width and prevent further loss of
47 vertical height.^{94,94A} Decoronation is the removal of the clinical crown and root structure below the soft
48 tissue level and necessitates removal of the remaining vital pulp tissue. It reduces the chance of ridge
49 resorption and the need for bone grafting^{94, 94A,94C} following a surgical extraction. Decoronation helps
50 preserve bone until an implant can be placed.^{94B} Extraction of ankylosed primary molars without a
51 succedaneous tooth can assist in resolving crowded arches in complex orthodontic cases.^{94A,95}

52 Consultation with other dental specialists (e.g., orthodontists, prosthodontists) may assist clinicians in
53 their treatment decision making. Surgical luxation of ankylosed permanent posterior teeth with forced
54 orthodontic eruption has been described as an alternative to extraction.⁹⁷ Management of ankylosed
55 permanent anterior teeth can include build-up of minor infraocclusion, intentional repositioning (surgical
56 or orthodontic) with splinting, autotransplantation, decoronation^{91,98,99} or extraction with prosthetic
57 rehabilitation. In permanent incisor decoronation, the tooth undergoes endodontic treatment and then
58 removal of the clinical crown and the cervical portion of the root to a level two millimeters below
59 marginal bone height followed by reflecting, repositioning, and suturing a mucoperiosteal flap over the
60 root.¹⁰¹ Additional research on decoronation in management of ankylosed **permanent anterior teeth** is
61 needed.¹⁰⁰

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62

63 **Treatment objectives:** Treatment of ankylosis should result in the continuing normal development of the
64 permanent dentition. In the case of replacement resorption of a permanent tooth, timely intervention,
65 surgical procedures and prosthetic replacement should be planned.

66

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1 Policy on Teledentistry

2

3 Adopted

4 2021

5

6 Abbreviation

7 AAPD: American Academy of Pediatric Dentistry

8 Purpose

9 The American Academy of Pediatric Dentistry (AAPD) recognizes the need for improved access to
10 services for infants, children, adolescents, and individuals with special health care needs when
11 circumstances (e.g. disasters, pandemics) create temporary or emergent barriers to care. The AAPD
12 advocates for teledentistry as a valuable tool to improve access to care for pediatric patients when
13 engagement of traditional services in a timely manner is not feasible due to local unforeseen
14 circumstances.

15

16 Methods

17 This policy was developed by the Council on Clinical Affairs. A PubMed®/MEDLINE search was
18 performed using the terms: telehealth, teledentistry; fields: all; limits: within the last 10 years, humans,
19 English, birth through age 18. Additionally, websites for the American Dental Association, AAPD,
20 American Academy of Pediatrics and American Telemedicine Association were reviewed. Expert
21 opinions and best current practices were relied upon when clinical evidence was not available.

22

23 Background

24 Telehealth broadens healthcare delivery for patients in remote and underserved communities (Irving et al
25 2018, Kopycka-Kedzierawski et al 2013, Kopycka-Kedzierawski et al 2018, McLaren et al 2017) .

26 Teledentistry involves the use of telehealth modalities to deliver dental care. Teledentistry has many
27 benefits in improving access to oral healthcare for infants, children, adolescents, and individuals with
28 special healthcare needs in a cost-effective manner (Irving et al 2018). Additionally, telehealth and
29 teledentistry are useful in time-sensitive injuries such as trauma or when unexpected circumstances result
30 in difficulties accessing care.

31

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32 Telehealth, including teledentistry, occurs in numerous formats, including asynchronous (also known as
33 store and forward) or synchronous (live video) modalities, mobile health care utilizing mobile technology,
34 and remote patient monitoring (ADA Policy on Teledentistry 2020, Burke et al 2015, Kopycka-
35 Kedzierawski et al 2018). Asynchronous modalities in telehealth utilize the transmission of health
36 records, including photographs, videos, and radiographs, to a practitioner so that he may assess the patient
37 (Irving et al 2018, ADA Policy on Teledentistry 2020, Kopycka-Kedzierawski et al 2018). Asynchronous
38 modalities do not occur in real-time. Synchronous telehealth modalities include a real-time two-way
39 visual interaction between a practitioner and patient (ADA Policy on Teledentistry 2020, Kopycka-
40 Kedzierawski et al 2018). Mobile health care utilizes mobile technology such as cellular telephones to
41 promote oral health behaviors and monitor oral health (ADA Policy on Teledentistry 2020, Kopycka-
42 Kedzierawski et al 2018). Remote patient monitoring is the electronic transmission of health and medical
43 data from individuals outside a hospital or clinic to providers in an alternate location to facilitate
44 monitoring and surveillance of diseases (ATA Telehealth 2020).

45
46 Teledentistry has many benefits and reduces barriers to accessing oral healthcare (Irving et al 2018, ADA
47 Policy on Teledentistry 2020). Virtual appointments via teledentistry can result in improved access to
48 specialty care for patients in rural communities (Irving et al 2018). Using teledentistry allows providers to
49 collaborate for multidisciplinary care, such as a cleft team. Teledentistry heightens continuity of care as
50 well as augmenting oral health instruction, diet counseling, and nutrition education (Irving et al 2018).
51 Also, teledentistry is widely accepted by patients, their families, and dental providers through utilization
52 of technology that is economical and already part of daily life for many (Irving et al 2018).

53
54 Studies find teledentistry to be as reliable as visual clinical examinations for screenings, orthognathic
55 evaluations, indications for oral surgery, and managing odontogenic infections (Irving et al 2018,
56 Alabdullah et al 2018). Examinations conducted via teledentistry result in valid treatment decisions by
57 dental providers (Alabdullah et al 2018). Consultations via teledentistry for pediatric patients increase
58 access to dental specialists (Kopycka-Kedzierawski et al 2013, McLaren et al 2017). While teledentistry
59 has acceptable value in the detection of caries, more well-designed research is needed to investigate its
60 effectiveness instead of its efficacy (Estai, et al, 2016).

61
62 Statutes and case law of individual states govern the practice of dentistry, including teledentistry. Some
63 states may require dentists to be licensed in the state in which their patient is receiving service (ADA
64 Policy on Teledentistry 2020). As with traditional delivery of dental services, consent for and

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65 documentation of teledentistry in accordance with state guidelines are essential. Documentation of a
66 teledentistry visit would be similar to that of an in-person visit, encompassing a thorough description of
67 the encounter. Security measures and privacy of protected patient information are necessary to ensure
68 compliance with state and federal laws (ADA Policy on Teledentistry 2020, Burke et al 2015, ATA
69 Operating Procedures on Pediatric Telehealth 2017). Review of applicable regulations can help
70 practitioners determine their compliance regarding licensure, documentation, and electronic security for
71 teledentistry. The care delivered through teledentistry is an adjunct to in-person care and expected to
72 conform to evidence-based dentistry (ADA Policy on Teledentistry 2020).

73

74 Policy Statement

75 The AAPD encourages the use of teledentistry as an adjunct to in-person clinical care to improve access
76 to care for infants, children, adolescents, and individuals with special health care needs. The AAPD
77 advocates that teledentistry services:

- 78 • gain recognition as a subset of telehealth.
- 79 • complement but do not serve as a substitute for the establishment of a dental home.
- 80 • Provide an important adjunct when access to providers is limited (e.g. during a disaster or
81 pandemic) .
- 82 • be consistent with evidence-based guidelines and recommendations promulgated by organizations
83 or agencies with recognized expertise and stature.
- 84 • be included as an essential component of health care benefits plans with reimbursement rates on
85 par with in-person delivery of care (ADA Policy on Teledentistry 2020).

86 The AAPD recognizes that teledentistry is an expanding and increasingly beneficial technology. Further
87 research and development of teledentistry policy and technology are needed on a state and national level
88 to facilitate widespread implementation.

89

90

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