Behavior Guidance for the Pediatric Dental Patient

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Abstract

This best practice provides health care personnel, parents, and others with information for predicting and guiding behavior in children during dental procedures. Successful treatment of pediatric dental patients depends on effective communication and developing customized behavior guidance plans dependent on the patient's treatment needs and the skills of the dentist. Behavior guidance is a continual process from basic to advanced techniques, using nonpharmacological and pharmacological options. When considering behavior guidance options, the following factors should be included and documented: medical history, temperament, informed consent (including risks, benefits, and alternatives), pain assessment, acuity of treatment needs, previous behavior during treatment, previous behavior guidance techniques used, and any alternative treatment options including no treatment or deferred care. Basic behavior guidance includes communication guidance, positive previsit imagery, direct observation, tell-show-do, ask-tell-ask, voice control, nonverbal communication, positive reinforcement and descriptive praise, distraction, and desensitization. For anxious patients and those with special health care needs, additional behavior guidance options include sensory-adapted dental environments, animal-assisted therapy, picture-exchange communication systems, and nitrous oxide-oxygen inhalation. Advanced behavior guidance includes protective stabilization, sedation, and general anesthesia. Each option should be assessed for objectives, indications, contraindications, and precautions. Knowledge of these options will aid health care professionals in providing appropriate patient-specific and family-centered behavior guidance for infants, children, adolescents, and persons with special health care needs.

This document was developed through a collaborative effort of the American Academy of Pediatric Dentistry Councils on Clinical Affairs and Scientific Affairs to offer updated information and recommendations to inform health care providers, parents, and others about the behavior guidance techniques used and behavioral influences impacting contemporary pediatric dental care.

KEYWORDS: PEDIATRIC DENTISTRY; DENTAL ANXIETY; ANESTHESIA, GENERAL; SEDATION; BEHAVIOR THERAPY; NITROUS OXIDE

Purpose

The American Academy of Pediatric Dentistry (**AAPD**) recognizes that dental care is medically necessary for the purpose of preventing and eliminating orofacial disease, infection, and pain, restoring the form and function of the dentition, and correcting facial disfiguration or dysfunction.[1] Behavior guidance techniques, both nonpharmalogical and pharmalogical, are used to alleviate anxiety, nurture a positive dental attitude, and perform quality oral health care safely and efficiently for infants, children, adolescents, and persons with special health care needs. Tailoring of techniques to the needs of the individual patient and the skills of the practitioner can allow for improved clinical outcomes. The AAPD offers these recommendations to inform health care providers, parents, and other interested parties about influences on the behavior of pediatric dental patients and the many behavior guidance techniques used in contemporary pediatric dentistry. Information regarding pain management, protective stabilization, and pharmacological behavior management for pediatric dental patients is provided in greater detail in additional AAPD best practices documents.[2-6]

Methods

Recommendations on behavior guidance were developed by the Clinical Affairs Committee Behavior Management Subcommittee and adopted in 1990.[7] This document by the Council of Clinical Affairs is a revision of the previous version, last revised in 2020.[8] This update reflects a review of proceedings[9,10] from the most recent AAPD conferences on behavior guidance, other dental and medical literature related to behavior guidance of the pediatric patient, and sources of recognized professional expertise and stature including both the academic and practicing pediatric dental communities and the standards[11(p25,26)] of the Commission on Dental Accreditation. In addition, a search of the PubMed/MEDLINE electronic database was performed (see Appendix 1). Articles were screened by viewing titles and abstracts. A narrative review was performed to extract the data and used to summarize research on behavior guidance for infants and children through adolescents, including those with special health care needs. An additional 50 articles on mind-body therapies were hand-searched, and a proportion of them was reviewed by the workgroup for inclusion in this document. The information presented in this best practice document aligns with the recent AAPD clinical practice guideline *Nonpharmacological Behavior Guidance for the Pediatric Dental Patient*[12] which offers evidence for the efficacy of various nonpharmacological behavior guidance techniques.

ABBREVIATIONS
AAPD: American Academy of Pediatric Dentistry. **AAT:** Animal-assisted therapy. **ITR:** Interim therapeutic restoration. **MeSH:** Medical subject heading. **PDAT:** Publication date. **SDF:** Silver diammine fluoride. **Tiab:** Title and abstract.

This document extends the discussion of behavior guidance to include objectives, indications, and contraindications of both nonpharmacological and pharmacological techniques. When data did not appear sufficient or were inconclusive, recommendations were based upon expert and/or consensus opinion by experienced researchers and clinicians.

Background

Dental practitioners are expected to recognize and effectively treat childhood dental diseases that are within the knowledge and skills acquired during their professional education. Safe and effective treatment of these diseases requires an understanding of modifying the child's and family's response to care and an ability to modify treatment approaches accordingly. Behavior guidance is a continuum of interaction involving the dental team (ie, dentist and staff), the patient, and parent directed toward communication and education before and during the delivery of care. Goals of behavior guidance are to: 1) establish communication, 2) alleviate the child's dental fear and anxiety, 3) promote patient's and parents' awareness of the need for good oral health and the process by which it is achieved, 4) promote the child's positive attitude toward oral health care, 5) build a trusting relationship between the dental team and the child/parent, and 6) provide quality oral health care in a comfortable, minimally-restrictive, safe, and effective manner. Behavior guidance techniques range from establishing or maintaining communication to stopping unwanted or unsafe behaviors.[13] Knowledge of the scientific basis of behavior guidance and skills in communication, empathy, tolerance, cultural sensitivity, and flexibility are requisite to proper implementation. Behavior is never meant to be punishment for misbehavior, power assertion, or any strategy that hurts, shames, or belittles a patient. General considerations for use of any behavior guidance technique include alternative behavior guidance modalities; the oral health needs of the patient; the effect on the quality of dental care and the patient's well-being; the patient's emotional and cognitive development; the patient's medical and physical status; and the safety of the patient, parent, and dental team.

Predictors of child behaviors

Patient attributes

The ability to assess the child's developmental level, dental attitudes, and temperament allows a provider to anticipate the child's reaction to care. The response to the demands of oral health care is complex and determined by many factors. Factors that may contribute to noncompliance during the dental appointment include fears, general or situational anxiety, a previous unpleasant and/or painful dental/medical experience, pain, inadequate preparation for the encounter, and parenting practices.[13-18] In addition, cognitive age, developmental delay, inadequate coping skills, general behavioral considerations, negative emotionality, maladaptive behaviors, physical/mental disability, and acute illness or chronic disease are potential reasons for noncompliance during the dental appointment.[13-18]

Behavioral challenges often are more readily recognized than dental fear/anxiety due to associations with general behavioral considerations (eg, activity, impulsivity) versus temperamental traits (eg, shyness, negative emotionality).[19(p345)] Only a minority of children with uncooperative behavior have dental fears, and not all fearful children present with disruptive behavior in the dental setting.[14,20,21] Dental anxiety in children is an expected occurrence due to an unfamiliar environment and expectations. Apprehension to dental care may range from a true dental phobia to mild situational anxiety. Although anxiety may wane as patients mature, about 15% of pediatric patients have persistent anxiety or develop dental anxiety as adults.[22] Prevention of dental anxiety through thoughtful behavior guidance practices aids in the development of patients with diminished fear and apprehension.[22] Fears may occur when there is a perceived lack of control or potential for pain, especially when a child is aware of a dental problem or has had a painful health care experience. If the level of fear is incongruent with the circumstances and the patient is not able to control impulses, disruptive behavior is likely to occur.[19(p345)]

Cultural and linguistic factors also may play a role in patient cooperation and selection of behavior guidance techniques.[23-25] Since every culture has its own beliefs, values, and practices, understanding different cultures will help providers communicate better with patients and promotes a sense of genuine caring. Availability of translation services is essential for those families who have limited English proficiency.[26,27] A federal mandate requires translation services for non-English speaking families be available at no cost to the family in health care facilities that receive federal funding for services.[28] As is true for all patients/families, active listening helps the dental team address the patient's/parents' concerns in a sensitive and respectful manner.[25]

Parental influences

Parents influence their child's behavior at the dental office in several ways. Positive attitudes toward oral health care may lead to the early establishment of a dental home. Early preventive care leads to less dental disease, decreased treatment needs, and fewer opportunities for negative experiences.[29,30] Parents who have had negative dental experiences as a patient may transmit their own dental anxiety or fear to their child thereby adversely affecting the child's attitude and response to care.[14,17,31,32] Additionally, past and current stressors experienced by parents can negatively impact child behavior. Parental adverse childhood events can be associated with increased negative behaviors in children, including increased hyperactivity and aggression.[33] Long-term economic hardship can result in parental depression, anxiety, irritability, substance abuse, and violence, which in turn can affect a child's behavior.[25] Parental depression may result in parenting changes, including decreased supervision, caregiving, and discipline for the child, thereby placing the child at risk for a wide variety of adjustment issues including emotional and behavior problems.[25] Through provision of compassionate care, dentists can promote parental

resilience and aid families in finding additional supports when needed.[33]

Parenting styles vary across families and cultures and may influence the behavior of children during dental visits.[16] As establishment of a dental home by 12 months of age continues to grow in acceptance, parents will expect to be with their infants and young children during examinations as well as during treatment. Parental involvement, especially in their children's health care, has changed dramatically in recent years.[30,34] Frequently, parental expectations for the child's response to care (eg, no tears) are unrealistic, while expectations for the dentist who guides their behavior are great.[18] A desire to be present during their child's treatment does not mean parents intellectually distrust the dentist; it might mean they are uncomfortable if they visually cannot verify their child's safety. Understanding the changing emotional needs of parents is important because of the growth of a latent but natural sense to be protective of their children.[35,36] Encouraging parents' questions, honoring parents' wishes, and maintaining openness while setting realistic expectations will build confidence and trust between the provider and parent.[18,30,36-39]

Orientation to dental environment

The nonclinical office staff plays an important role in behavior guidance. The parent's initial contact with the dental practice allows both parties to determine whether the practice is likely to be able to address the child's primary oral health needs.[40] The scheduling coordinator or receptionist often will be the first point of contact with a prospective patient and family, either through the internet or a telephone conversation, and welcoming language can foster helpful communication. Determining the chief complaint and any special health care or cultural/linguistic needs can provide insight into patient or family anxiety or stress. Consideration of appointment scheduling will benefit the parent/patient and practitioner by building a trusting relationship that promotes the patient's positive attitude toward oral health care. Appointment scheduling can be tailored to the needs of the individual patient's circumstances and the skills of the practitioner. Having established policies on scheduling rather than leaving scheduling to chance can facilitate purposeful and efficient visits. Schedulers can help set expectations for the initial visit by providing relevant information and may suggest a preappointment visit to the office to meet the dental team and tour the facility.[19(pp348,349)] Schedulers also can confirm the office's location, offer directions, and ask if there are any further questions. These initial encounters with the practice can help to allay fears and better prepare the family and patient for the first visit.

From a behavioral standpoint, many factors are important when appointment times are determined.[19(p353)] Appointment-related concerns include patient age, presence of a special health care need, the need for sedation, distance the parent/patient travels, length of appointment, additional staffing requirements, parent's work schedule, and time of day.[19(p353)] Urgent treatment is a priority, however, and may supersede these factors when acute needs necessitate timely care.[41] Prolonging the duration of an appointment beyond a patient's tolerance level solely for the practitioner's convenience can negatively affect a child's behavior.[19(p353)]

Reception staff are usually the first team members the patient meets upon arrival at the office. The caring and assuring manner in which the child is welcomed into the practice at the first and subsequent visits sets the tone for each appointment.[18,42] A child-friendly reception area (eg, age-appropriate toys and games) can provide a distraction for young patients. These first impressions may influence future behaviors.

Patient assessment

An evaluation of the child's cooperative potential is essential for treatment planning. No single assessment method or tool is completely accurate in predicting a patient's behavior, but awareness of the multiple influences on a child's response to care can aid in treatment planning.[43] Initially, information can be gathered from the parent through questions regarding the child's cognitive level, temperament/personality characteristics,[20,44-48] anxiety and fear,[14,20,49,50] reaction to strangers,[51] and behavior at previous medical/dental visits, as well as how the parent anticipates the child will respond to future dental treatment. Later, the dentist can evaluate cooperative potential by observation of and interaction with the patient. Whether the child is approachable, somewhat shy, or definitely shy and withdrawn may influence the success of various communicative techniques. Assessing the child's development, past experiences, and current emotional state allows the dentist to develop a behavior guidance plan to accomplish the necessary oral health care.[19(pp346,347)] During delivery of care, attention to physical and/or emotional indicators of stress allows for alterations of the behavioral treatment plan as needed.[23-26,52]

Childhood adverse events such as bullying, domestic violence, neglect, family separation, and racism may have a negative effect on patient behavior in a dental setting.[23,24,53,54] Adverse childhood events can impact function and behavior, including changes in auditory processing, interpretation of facial expressions, and ability to express emotions, and may lead to a heightened sense of danger.[55] Poor conduct—stimulated by certain sounds, smells, sensations, or emotional states—may lead to maladaptive behaviors.[55] Trauma-informed care can be described as "a framework that involves understanding, recognizing, and responding to the effects of all types of trauma and seeking to employ practices that do not traumatize or retraumatize."[56] Employing a trauma-informed care approach when assessing patient behavior, engaging and empowering families, promoting resilience, making referrals, and choosing purposeful behavior guidance modalities will help to ensure the physical and emotional safety of the child.[57,58]

Dentist/dental team behaviors

The behaviors of the dental team are the primary tools used to guide the behavior of the pediatric patient. The dental team's attitudes and communication skills are critical to creating

a positive dental visit for the child and to gain trust from the child and parent.[30] Attentiveness to communication styles throughout interactions with patients and families is important.[59] Communication (ie, imparting or interchange of thoughts, opinions, or information) may occur by a number of means but, in the dental setting, is accomplished primarily through dialogue, tone of voice, facial expression, and body language.[60-62] Communicating with empathy, offering reassurance, and giving clear and specific instructions can help reduce anxiety and encourage patient cooperation.[63]

Communicating with children poses special challenges for the dentist and the dental team. A child's cognitive development will dictate the level and amount of information interchange that can take place. With a basic understanding of the cognitive development of children, the dental team can use appropriate vocabulary and body language consistent with the patient's intellectual development.[60-62]

Communication may be impaired when the dental team's expressions and body language are inconsistent with the intent of the message being conveyed. When body language conveys uncertainty, anxiety, or urgency, the dentist cannot effectively communicate confidence or a calm demeanor.[60-62] In addition, the operatory may contain distractions (eg, another child crying) that, for the patient, produce anxiety and interfere with communication. Dentists and other members of the dental team may find it advantageous to discuss certain information (eg, postoperative instructions, preventive counseling) away from the operatory and its many distractions.[18]

The communicative behavior of dentists is a major factor in patient satisfaction.[60,64] Dentists' actions that are reported to correlate with low parent satisfaction include rushing through appointments, not taking time to explain procedures, barring parents from the examination room, and generally being impatient.[63] However, when a provider offers compassion, empathy, and genuine concern, acceptance of care may be better.[63] While some patients may express a preference for a provider of a specific gender, female and male practitioners have been found to treat patients and parents in a similar manner.[65]

The clinical staff is an extension of the dentist in behavior guidance. A collaborative approach helps assure that both the patient and parent have a positive dental experience. All dental team members are encouraged to expand their skills and knowledge through dental literature, video presentations, and/or continuing education courses.[66]

Informed consent

A purposeful behavior guidance decision includes a review of the patient's medical, dental, and social histories followed by an evaluation of current behavior. Decisions regarding the use of behavior guidance techniques other than communicative management cannot be made solely by the dental team and include the parent, as well as the child when possible. The practitioner, as the expert on dental care (ie, the timing and techniques by which treatment can be delivered), is obligated to effectively communicate behavior guidance and dental treatment options, including potential benefits and risks, and help the parent decide what is in the child's best interest.[30] Successful completion of diagnostic and therapeutic services is viewed as a partnership of dentist, parent, and child.[30,67,68] The conversation allows questions from the parent and patient in order to clarify issues and to verify the parents' and child's comprehension. Communication in the family's preferred language, with assistance of a trained interpreter if needed, is critical to verify their comprehension of the proposed treatment and ability to provide informed consent.[13,28,69]

Communicative behavior guidance, by virtue of being a basic element of communication, requires no specific consent. All other behavior guidance techniques require informed consent consistent with the AAPD's *Informed Consent*[69] and applicable state laws. A signature on the consent form does not necessarily constitute informed consent. Informed consent implies that information (including discussion of risks, benefits, and alternatives) was provided to the parent, questions were answered, and permission was obtained prior to administration of treatment.[13] If the parent refuses treatment after discussions of the risks, benefits, and alternatives of the proposed treatment and behavior guidance techniques, obtaining an informed refusal form that is signed by the parent and retained in the patient's record is prudent.[70] If the dentist believes the informed refusal violates proper standard of care, he can recommend the patient seek another opinion and/or dismiss the patient from the practice.[69]

In the event of an unanticipated behavioral reaction to dental treatment, protecting the patient and staff from harm is incumbent on the practitioner. Following immediate intervention to assure safety, if a new behavior guidance plan is developed to complete care, a new informed consent for the alternative methods is indicated.[69,71,72]

Pain assessment and management during treatment

Pain has a direct influence on behavior and can be assessed and managed throughout treatment.[73] Anxiety may be a predictor of increased pain perception.[74] Findings of pain or a painful past health care visit are important considerations in the patient's medical/dental history that will help the dentist anticipate possible behavior concerns.[2,73] Prevention or reduction of pain during treatment can nurture the relationship between the dentist and the patient, build trust, allay fear and anxiety, and enhance positive dental attitudes for future visits.[75-79] Pain can be assessed using self report and behavioral and biological measures. In addition, several pain assessment instruments are available to use with dental patients.[2] The subjective nature of pain perception, varying patient responses to painful stimuli, and lack of objective pain assessment tools may hinder the dentist's attempts to diagnose and intervene during procedures.[31,78-82] Observations of changes in patient behavior (eg, facial expressions, crying, complaining, body movement) as well as monitoring of biologic measures (eg, heart rate, sweating) during treatment will help providers evaluate pain.[2,75,78] The child's self-described pain is a critical component of pain

assessment, and parental observations of their child's pain are supplementary.[31,79-81,83] Listening to the child at the first sign of distress will facilitate assessment and any needed procedural modifications.[79] Misinterpreting or ignoring behavioral changes induced by painful stimuli can cause sensitization for future appointments as well as psychological trauma.[84]

Documentation of patient behaviors

Recording the child's behavior serves as an aid for future appointments.[80] A commonly used behavior rating systems in both clinical dentistry and research is the Frankl Scale.[85] This scale (see Appendix 2) separates observed behaviors into 4 categories ranging from definitely negative to definitely positive.[85] In addition to the rating scale, an accompanying descriptor (eg, "+, nonverbal") can help practitioners better plan for subsequent visits.

Treatment deferral

Dental disease usually is not life-threatening, and the type and timing of dental treatment can be deferred in certain circumstances. When a child's cognitive abilities or behavior prevents routine delivery of oral health care using communicative guidance techniques, the urgency of dental needs influences a prioritzed plan of treatment.[71,72] In some cases, treatment deferral may be considered as an alternative to treating the patient under sedation or general anesthesia. However, rapidly advancing disease, trauma, pain, or infection usually dictates prompt treatment. Deferring some or all treatment or employing therapeutic interventions (eg, silver diammine fluoride [**SDF**],[86,87] interim therapeutic restoration [**ITR**],[88,89] Hall-technique crown[88], fluoride varnish) until the child is able to cooperate may be appropriate when based upon an individualized assessment of the risks and benefits of that option. In select cases where ITR or SDF is employed, regular reevaluations are recommended,[86,87] and retreatment may be needed.[90,91]

Treatment deferral also may be considered in cases when nonurgent treatment is in progress and the patient's behavior becomes hysterical or uncontrollable. Under such circumstances, a brief suspension of the procedure would permit the practitioner to discuss alternative approaches with the patient/parent. If treatment deferral is reasonable and preferred, steps to bring the incomplete procedure to a safe and prompt conclusion would be initiated.[72]

Behavior guidance techniques

Since children exhibit a broad range of physical, intellectual, emotional, and social development and a diversity of attitudes and temperament, having a wide range of behavior guidance techniques to meet the needs of the individual child and being tolerant and flexible in their implementation is essential for practitioners.[16,24] Behavior guidance is not an application of individual techniques created to deal with children, but rather a comprehensive, continuous method meant to develop and nurture the relationship between the patient and dental team, which ultimately builds trust and allays fear and anxiety. Some of the behavior guidance techniques in this document are intended to maintain communication, while others are intended to modify inappropriate behavior and establish communication. As such, these techniques cannot be evaluated on an individual basis as to validity but ideally are assessed within the context of the child's total dental experience. Techniques must be integrated into an overall behavior guidance approach individualized for each child. Consequently, behavior guidance is as much an art as it is a science.

Recommendations

Basic behavior guidance

Communication and communicative guidance

Communicative management and appropriate use of commands are applied universally in pediatric dentistry with both the cooperative and uncooperative child. At the beginning of a dental appointment, asking questions and active/reflective listening can help establish rapport and trust.[38,62] The dentist may establish teacher/student roles in order to educate the patient and deliver quality dental treatment safely.[19(pp352),30] Once a procedure begins, bidirectional communication should be maintained, and the dentist should consider the child as an active participant in the care provided.[92] With this 2-way interchange of information, the dentist also can provide 1-way guidance of behavior through directives. Use of self-disclosing assertiveness techniques[62] (eg, "I need you to open your mouth so I can check your teeth", "I need you to sit still so we can take an X-ray") tells the child exactly what is required to be cooperative. The dentist can ask the child *yes* or *no* questions where the child can answer with a thumbs up/thumbs down response. Also, observation of the child's body language is necessary to confirm that the patient understands and so that comfort and pain level can be assessed.[62,77,78] Communicative guidance comprises a host of specific techniques that, when integrated, enhance the level of cooperation of the patient. Rather than being a collection of singular techniques, communicative guidance is an ongoing subjective process that becomes an extension of the personality of the dentist. Associated with this process are the specific techniques of previsit imagery,[93] direct observation,[94,95] tell-show-do,[38] ask-tell-ask,[26] voice control,[19(p352),30,41(pp359,360),42] nonverbal communication,[38,41(pp358,359),67] positive reinforcement,[19(p359),41(pp359),60-62] distraction (eg, audiovisual, imagination, clinic design), memory restructuring,[96,97] desensitization,[98] parental presence/absence,[36,38,39] enhanced control,[99-101] sensory-adapted dental environment,[98,102,103] animal-assisted therapy,[104] picture-exchange communication system,[105,106] cognitive behavior therapy,[100,107-110] and nitrous oxide/oxygen[4,38] inhalation. The dentist should consider the cognitive and psychological development of the patient, as well as the presence of other communication deficits (eg, hearing disorder), when choosing specific communicative guidance techniques.

Positive previsit imagery

Description: Patients preview positive photographs or images of dentistry and dental treatment before the dental appointment.[93]

Objectives: The objectives of positive previsit imagery are to

- provide children and parents with visual information on what to expect during the dental visit; and
- provide children with context to be able to ask providers relevant questions before dental procedures commence.

Indications: Use with any patient.

Contraindication: None.

Direct observation

Description: Patients are shown a video or are permitted to directly observe a young cooperative patient undergoing dental treatment.[93,95]

Objectives: The objectives of direct observation are to

- familiarize the patient with the dental setting and specific steps involved in a dental procedure; and
- provide an opportunity for the patient and parent to ask questions about the dental procedure in a safe environment.

Indications: Use with any patient.

Contraindications: None.

Tell-show-do

Description: The technique involves explanations of procedures in phrases appropriate to the developmental level of the patient (tell); demonstrations for the patient of the visual, auditory, olfactory, and tactile aspects of the procedure in a carefully defined, nonthreatening setting (show); and then, without deviating from the explanation and demonstration, completion of the procedure (do). The tell-show-do technique operates with communication skills (verbal and nonverbal) and positive reinforcement.[30,38,41(pp357,358),42]

Objectives: The objectives of tell-show-do are to

- teach the patient important aspects of the dental visit and familiarize the patient with the dental setting and armamentarium; and
- shape the patient's response to procedures through desensitization and well-described expectations.

Indications: Use with any patient.

Contraindications: None.

Ask-tell-ask

Description: This technique involves inquiring about the patient's visit and feelings toward or about any planned procedures (ask); explaining the procedures through demonstrations and nonthreatening language appropriate to the cognitive level of the patient (tell); and again inquiring if the patient understands and how she feels about the impending treatment (ask). If the patient continues to have concerns, the dentist can address them, assess the situation, and modify the procedures or behavior guidance techniques if necessary.[26]

Objectives: The objectives of ask-tell-ask are to

- assess anxiety that may lead to noncompliant behavior during treatment;
- teach the patient about the procedures and their implementation; and
- confirm the patient is comfortable with the treatment before proceeding.

Indications: Use with any patient able to dialogue.

Contraindications: None.

Voice control

Description: Voice control is a deliberate alteration of voice volume, tone, or pace to influence and direct the patient's behavior. While a change in cadence may be readily accepted, use of an assertive voice may be considered aversive to some parents unfamiliar with this technique. An explanation before its use may prevent misunderstanding.[19(p352),30,41(p359,360),42]

Objectives: The objectives of voice control are to

- gain the patient's attention and compliance;
- avert negative or avoidance behavior; and
- establish appropriate adult-child roles.

Indications: Use with any patient.

Contraindications: Patients who are hearing impaired.

Nonverbal communication

Description: Nonverbal communication is the reinforcement and guidance of behavior through appropriate contact, posture, facial expression, and body language.[30,38,41(p358,359),42,67]

Objectives: The objectives of nonverbal communication are to

- enhance the effectiveness of other communicative guidance techniques; and
- gain or maintain the patient's attention and compliance.

Indications: Use with any patient.

Contraindications: None.

Positive reinforcement and descriptive praise

Description: In the process of establishing desirable patient behavior, constructive feedback is essential. Positive reinforcement rewards desired behaviors thereby strengthening the likelihood of recurrence of those behaviors. Social reinforcers include positive voice modulation, facial expression, verbal praise, and celebratory gestures (eg, high-five, fist bump) by all members of the dental team. Descriptive praise emphasizes specific cooperative behaviors[62] (eg, "Thank you for sitting still", "You are doing a great job keeping your hands in your lap") rather than a generalized praise (eg, "Good job"). Nonsocial reinforcers include tokens and toys.

Objective: The objective of positive reinforcement is to reinforce desired behavior.[19(p359),38,41(pp358,359),60-62]

Indications: Use with any patient.

Contraindications: None.

Distraction

Description: Distraction is the technique of diverting the patient's attention from what may be perceived as an unpleasant

procedure. Distraction may be achieved by imagination (eg, stories), clinic design, and audio (eg, music) and/or visual (eg, television, virtual reality eyeglasses) effects.[38,111] Giving the patient a short break during a stressful procedure can be an effective use of distraction before considering more advanced behavior guidance techniques.[60-62]

Objectives: The objectives of distraction are to

- decrease the perception of unpleasantness; and
- avert negative or avoidance behavior.

Indications: Use with any patient.

Contraindications: None.

Memory restructuring

Description: Memory restructuring is a behavioral approach in which memories associated with a negative or difficult event (eg, first dental visit, local anesthesia, restorative procedure, extraction) are restructured into positive memories using information suggested after the event has taken place.[97] This approach was utilized with children who received local anesthesia at an initial restorative dental visit and showed a change in local anesthesia-related fears and behaviors at subsequent treatment visits.[96,97] Restructuring involves 4 components: (1) visual reminders; (2) positive reinforcement through verbalization; (3) concrete examples to encode sensory details; and (4) sense of accomplishment. A visual reminder could be a photograph of the child smiling at the initial visit (ie, prior to the difficult experience). Positive reinforcement through verbalization could be asking if the child had told her parent what a good job she had done at the last appointment. The child is asked to role-play and to tell the dentist what she had told the parent. Concrete examples to encoding sensory details include praising the child for specific positive behavior such as keeping her hands on her lap or opening her mouth wide when asked. The child then is asked to demonstrate these behaviors, which leads to a sense of accomplishment.

Objectives: The objectives of memory restructuring are to

- restructure difficult or negative past dental experiences; and
- improve patient behaviors at subsequent dental visits.

Indications: Use with patients who had a negative or difficult dental visit.

Contraindications: None.

Desensitization to dental setting and procedures

Description: Systematic desensitization is a psychological technique that can be applied to modify behaviors of anxious patients in the dental setting.[98] It is a process that diminishes emotional responsiveness to a negative, aversive, or positive stimulus after progressive exposure to it. Patients are exposed gradually through a series of sessions to components of the dental appointment that cause them anxiety. Patients may review information regarding the dental office and environment at home with a preparation book or video or by viewing the practice website. Parents may model actions (eg, opening mouth and touching cheek) and practice with the child at home using a dental mirror. Successful approximations would continue with an office tour during nonclinical hours and another visit in the dental operatory to explore the environment. After successful completion of each step, an appointment with the dentist and staff may be attempted.[98]

Objectives: The objective of systematic desensitization [41(p361)] are for the patient to

- proceed with dental care after habituation and successful progression of exposure to the environment;
- identify his fears;
- develop relaxation techniques for those fears; and
- be gradually exposed, with developed techniques, to situations that evoke his fears and diminish the emotional responses.

Indications: Use with patients who have experienced fear-invoking stimuli, anxiety, and/or neurodevelopmental disorders (eg, autism spectrum disorder).

Contraindications: None.

Enhancing control

Description: Enhancing control is a technique used to allow the patient, especially an anxious/fearful one, to assume an active role in the dental experience. The dentist provides the patient a signal (eg, raising a hand) to use if he becomes uncomfortable or needs to briefly interrupt care. The patient should practice this gesture before treatment is initiated to emphasize it is a limited movement away from the operatory field. When the patient employs the signal during dental procedures, the dentist should quickly respond with a pause in treatment and acknowledge the patient's concern. Enhancing control has been shown to be effective in reducing intraoperative pain.[100,101]

Objective: The objective is to allow a patient to have some measure of control during treatment in order to contain emotions and deter disruptive behaviors.[99,112]

Indications: Use with patients who can communicate.

Contraindications: None, but if used prematurely, fear may increase due to an implied concern about the impending procedure.

Communication techniques for parents (and age-appropriate patients)

Because parents are the legal guardians of minors, successful bidirectional communication between the dental team and the parent is essential to assure effective guidance of the child's behavior.[69] Socioeconomic status, stress level, marital discord, dental attitudes aligned with a different cultural heritage, and linguistic skills may present challenges to open and clear communication.[25,26,113] Communication techniques such as ask-tell-ask, teach back, and motivational interviewing can reflect the dental team's caring for and engaging in a patient-/parent-centered approach.[26] These techniques are presented in Appendix 3.

Parental presence/absence

Description: The presence or absence of the parent sometimes can be used to gain cooperation for treatment. Parents can play a critical role in their child's dental treatment by providing emotional support and encouragement. In this behavior guidance technique, the parent is asked by the provider to leave the operatory if a child does not cooperate for dental treatment. If the patient agrees to and demonstrates improved behavior, the parent is asked to return as a positive reward for the child's cooperation.[36] Implementation of this strategy must be discussed beforehand and mutually agreed to by the parent and provider.

Objectives: The objectives of parental presence/absence for parents are to

- participate in examinations and treatment;
- offer physical and psychological support; and
- observe the reality of their child's treatment.

The objectives of parental presence/absence for practitioners are to

- gain the patient's attention and improve compliance;
- avert negative or avoidance behaviors;
- establish appropriate dentist-child roles;
- enhance effective communication among the dentist, child, and parent;
- minimize anxiety and achieve a positive dental experience; and
- facilitate rapid informed consent for changes in treatment or behavior guidance.

Indications: Use with any patient.

Contraindications: Parents who are unwilling or unable to extend effective support.

Additional considerations for dental patients with anxiety or special health care needs

Sensory-adapted dental environments

Description: The sensory-adapted dental environments intervention includes adaptions of the clinical setting (eg, dimmed lighting, moving projections such as fish or bubbles on the ceiling, soothing background music, application of wrap/blanket around the child to provide deep pressure input) to produce a calming effect.[98,103]

Objectives: The objectives of sensory-adapted dental environments[102] are to enhance relaxation, and avert negative or avoidance behaviors.

Indications: Use with patients having autism spectrum disorder, sensory processing difficulties, other disabilities, or dental anxiety.[114]

Contraindications: None.

Animal-assisted therapy (AAT)

Description: AAT has been beneficial in a variety of settings including the dental environment.[115] It is a goal-oriented intervention which utilizes a trained animal in a health care setting to improve interactions or decrease a patient's anxiety, pain, or distress. Unlike animal-assisted activities (eg, a pet entertains patients in the waiting area), AAT appointments are scheduled for specific time and duration to include an animal that has undergone temperament testing, rigorous training, and certification. The animal, which is available for companionship during the dental visit, can help break communication barriers and enable the patient to establish a safe and comforting relationship, thereby reducing treatment-related stress. For each visit, the goals and results of the intervention should be documented.

Objectives: The objectives of AAT[102] include to

- enhance interactions between the patient and dental team.
- calm or comfort an anxious or fearful patient.
- provide a distraction from a potentially stressful situation.
- decrease perceived pain.

The health and safety of the animal and its handler need to be maintained.[104]

Indications: Use AAT as an adjunctive technique to decrease a patient's anxiety, pain, or emotional distress.

Contraindications: The contraindications for the patient are

- allergy or other medical condition (eg, asthma, compromised immune system) aggravated by exposure to the animal; and
- lack of interest in or fear of the therapy animal.

A contraindication for the animal and handler would be any situation that presents a significant risk to one's health or safety.[116]

Picture-exchange communication system

Description: Picture-exchange communication system is a visual alternative and augmentive technique developed for individuals with limited to no verbal communication abilities and may work particularly well for those with autism and complex communication needs.[106] The individual shares a picture card with a recognizable symbol to express directly a request or thought.[106] Because each image corresponds directly to 1 object, person, or concept, clarity in the resulting communication is enhanced.[106] The patient is able to initiate communication, and no special training is required by the recipient.

Objective: The objective is to allow individuals with limited to no verbal communication abilities to express requests or thoughts using symbolic imagery.[105] A prepared picture board may be present for the dental appointment so the dentist can communicate the steps required for completion (eg, pictures of a dental mirror, handpiece). The patient may have symbols (eg, a stop sign) to request a brief interruption in the procedure.[105]

Indications: Use with patients who have limited to no verbal communication abilities as an adjunctive approach to improving exchange of ideas.[98,117]

Contraindications: None.

Mind-body therapies

Description: Mind-body therapies in children, including biofeedback, breathing exercises, and hypnosis, may help decrease pain and reduce anxiety in the clinical setting.[107,118,119] Both

cognitive and behavioral therapies can reduce physiologic responses to stress, distress, and perceived pain.[100,108-110] Biofeedback uses electric or electromechanical processes to acquire physiologic data for an individual and then provides auditory, visual, kinesthetic, and other types of therapeutic feedback to the patient.[107] In the context of the dental setting, hypnosis involves steering of attention toward specific ideas and images to influence cognition, emotions, and resultant behavior.[120] Breathing exercises, such as deep inhalation and slow exhalation, can induce relaxation when done alone[121] or as a component of meditation practice[107].

Objective: The objective is to replace negative thoughts or maladaptive behaviors with more positive attitudes, beliefs, and adaptive behaviors.[108]

Indications: Use with children who have situational anxiety and are receptive to mind-body strategies to decrease stress during dental procedures.

Contraindications: None.

Nitrous oxide/oxygen inhalation

Description: Nitrous oxide/oxygen inhalation is a safe and effective technique to reduce anxiety and enhance effective communication. Its onset of action is rapid, the effects easily are titrated and reversible, and recovery is rapid and complete. Additionally, nitrous oxide/oxygen inhalation mediates a variable degree of analgesia, amnesia, and gag reflex reduction. The need to diagnose and treat, as well as the safety of the patient and practitioner, should be considered before the use of nitrous oxide/oxygen analgesia/anxiolysis. If nitrous oxide/oxygen inhalation is used in concentrations greater than 50% or in combination with other sedating medications (eg, benzodiazepines, opioids), the likelihood for moderate or deep sedation increases.[122] In these situations, the clinician must be prepared to institute the guidelines for moderate or deep sedation.[6] Detailed information concerning the indications, contraindications, and additional clinical considerations appear in the AAPD's *Use of Nitrous Oxide for Pediatric Dental Patients*[4] and *Guidelines for Monitoring and Management of Pediatric Patients Before, During, and After Sedation for Diagnostic and Therapeutic Procedures*[6] by the AAPD and the American Academy of Pediatrics.

Objectives: The objectives of nitrous oxide/oxygen inhalation include to

- reduce or eliminate anxiety.
- enhance communication between the patient and dental team.
- instill a positive attitude toward dental care.[123(p25)]
- raise the pain reaction threshold.
- to reduce untoward movement.
- help control a hyperactive gag reflex that can interfere with dental care.[123(p26),124]
- decrease patient fatigue and increase operator efficiency for longer appointments.[123(pp25-26),125]
- provide an amnesic effect,[126,127] thus creating a more positive outlook toward dental care.

Use with other agents (eg, benzodiazepines, opioids) can potentiate their sedative effects but risks CNS depression.[124]

Indications: Indications for use of nitrous oxide/oxygen inhalation analgesia/anxiolysis include

- a fearful or anxious patient.
- certain patients with muscular tone disorders prone to unintentional movement.[124]
- a patient whose strong or hypersensitive gag reflex interferes with dental care.[128]
- a patient for whom profound local anesthesia or analgesia cannot be obtained.[129]
- a cooperative child undergoing a lengthy dental procedure who would benefit from alleviating treatment fatigue.

Contraindications: Contraindications for use of nitrous oxide/oxygen inhalation may include

- chronic obstructive pulmonary diseases.[123(pp29-30),124,130-132(p82)]
- current upper respiratory tract infections (eg, cold, cough, tonsillitis)[124,133(p121)]; sinusitis[124,130]; or other conditions (eg, seasonal allergies) that inhibit nasal breathing.[130]
- recent middle ear disturbance or infection (eg, acute otitis media).[123(p30),124,130,133(p121)]
- recent (within 14 days) ear, nose, and/or throat operations.[124,130]
- raised intraocular pressure (eg, glaucoma), up to 3 months post retinal surgical procedure.[124,126]
- severe emotional disturbances or drug-related dependencies.[123(pp31-32);124,130,132(p82)]
- first trimester of pregnancy.[132(p82),134]
- treatment with bleomycin sulfate.[123(p31),124,135]
- untreated cobalamin (vitamin B-12) deficiency.[123(p31)124,136]

Advanced behavior guidance

Most children can be managed effectively using the techniques outlined in basic behavior guidance. Such techniques should form the foundation for all behavior guidance provided by the dentist. Children, however, occasionally present with behavioral considerations that require more advanced techniques. These children often cannot cooperate due to lack of psychological or emotional maturity and/or mental, physical, or medical disability. The advanced behavior guidance techniques commonly used and taught in advanced pediatric dental training programs include protective stabilization, sedation, and general anesthesia.[66] The use of general anesthesia or sedation for dental rehabilitation may improve quality of life in children. It is unclear if these behavior guidance techniques address factors that contribute to the initial dental fear and anxiety.[137-140] Protective stabilization, active or passive, may not always be accepted by parents who may be more accepting of pharmacologic behavior guidance.[141]

Consideration of advanced behavior guidance techniques requires the practitioner to thoroughly assess the patient's medical, dental, and social histories and temperament. Attention must be paid to the oral health needs of the patient and the effect of the chosen behavior guidance modality on the quality

of dental care. Risks, benefits, and alternatives should be discussed prior to obtaining an informed consent for the recommended technique.[69,142] Skillful diagnosis of behavior and safe and effective implementation of these techniques necessitate knowledge and experience that generally are beyond the core knowledge students receive during predoctoral dental education. While most predoctoral programs provide didactic exposure to treatment of very young children (ie, aged 0 through 2 years), patients with special health care needs, and patients requiring advanced behavior guidance techniques, hands-on experience is lacking.[66,143] Dentists considering the use of advanced behavior guidance techniques should seek additional training through a residency program, a graduate program, and/or an extensive continuing education course that involves both didactic and experiential mentored training.

Protective stabilization

Description: Protective stabilization is the term utilized in dentistry for the physical limitation of a patient's movement by a person or restrictive equipment, materials, or devices for a finite period of time[144] in order to safely provide examination, diagnosis, and/or treatment.[145] Other terms such as medical immobilization and medical immobilization/protective stabilization have been used as descriptors for procedures categorized as protective stabilization.[66,144] Active immobilization involves restriction of movement by another person such as the parent, dentist, or dental auxiliary.[66] Passive immobilization utilizes a restraining device.[66]

Stabilization devices (passive restraint) placed around the chest may restrict respirations. They must be used with caution, especially for patients with special medical conditions and/or for patients who will receive medications (eg, local anesthetics, sedatives) that can depress respirations. Because of the associated risks and possible consequences of protective stabilization, the dentist is encouraged to evaluate thoroughly the rationale for its use for each patient visit and consider possible alternatives.[71,146] Consultation with a medical provider may be indicated prior to use of protective stabilization if there are concerns for adverse outcomes due to a patient's medical history. Careful, continuous monitoring of the patient's physical and psychological well-being is mandatory during protective stabilization.[71,146]

Partial or complete stabilization of the patient sometimes is necessary to protect the patient, practitioner, staff, or parent from injury while providing dental care. The dentist always should choose the least-restrictive safe and effective protective stabilization.[71,146] The use of a mouth prop in a compliant child is not considered protective stabilization.

Protective stabilization, with or without a restrictive device, led by the dentist and performed by the dental team requires informed consent from a parent. Informed consent must be obtained and documented in the patient's record prior to use of protective stabilization. Furthermore, when the patient reasonably can understand, an explanation to the patient regarding the need for restraint, with an opportunity for the patient to respond, should occur.[69,71,147]

Objectives: The objectives of patient stabilization are to

- reduce or eliminate untoward movement;
- protect patient, staff, dentist, or parent from injury; and
- facilitate delivery of quality dental treatment.

Indications: Protective stabilization is indicated for[5]

- a patient who requires immediate diagnosis and/or urgent limited treatment (eg, toddler with acute dental trauma) and cannot cooperate due to developmental levels (emotional or cognitive), lack of maturity, or mental or physical conditions.
- a patient who requires urgent care and uncontrolled movements risk the safety of the patient, staff, dentist, or parent without the use of protective stabilization.
- a previously cooperative patient who quickly becomes uncooperative and cooperation cannot be regained by basic behavior guidance techniques in order to protect the patient's safety and efficiently complete a procedure and/or stabilize the patient.
- an uncooperative patient whose treatment needs are limited (eg, requires only a single quadrant of care) and sedation or general anesthesia may not be an option because the patient does not meet sedation criteria or because of a long operating room wait time, financial considerations, and/or parental preferences after other options have been discussed.
- a sedated patient who requires limited stabilization to help reduce untoward movement during treatment.
- a patient with special health care needs who exhibits uncontrolled movements that would be harmful to the patient or clinician or significantly interfere with the quality of care.[3]

Contraindications: Protective stabilization is contraindicated for

- a cooperative nonsedated patient.
- an uncooperative patient when there is not a clear need to provide treatment at that particular visit.
- a patient who cannot be immobilized safely due to associated medical, psychological, or physical conditions.
- a patient with a history of physical or psychological trauma, including physical or sexual abuse or other trauma that would place the individual at greater psychological risk during restraint.
- a patient with non-emergent treatment needs in order to accomplish full mouth or multiple quadrant dental rehabilitation.
- a practitioner's convenience.
- a dental team without the requisite knowledge and skills in patient selection and restraining techniques to prevent or minimize psychological stress and/or decrease risk of physical injury to the patient, parent, and staff.

Precautions: The following precautions are recommended.

- The patient's medical history must be reviewed carefully to ascertain any medical conditions or medications that

can compromise physiologic function, may contraindicate the use of protective stabilization, or are associated with specific risk factors. These include
  - cardiac instability.[148(p253)]
  - pulmonary and respiratory instability.[148(p253)]
  - musculoskeletal alignment issues or weakness.[148(p253)]
  - joint hypermobility.[148(p253)]
  - bone fragility.[148(p253)]
  - cutaneous vulnerability to mechanical stress.
  - psychological instability.[148(p253)]
  - thermoregulation disorders.[148(p253)]
  - psychotropic medications.[149]
- Tightness and duration of the stabilization must be monitored and reassessed at regular intervals.
- Stabilization around extremities or the chest must not actively restrict circulation or respiration.
- Observation of body language and pain assessment must be continuous to allow for procedural modifications at the first sign of distress.
- Stabilization should be terminated as soon as possible in a patient who is experiencing severe stress or hysterics to prevent possible physical or psychological trauma.

The dental provider should acknowledge and abide by the principle to "do no harm" when considering completion of excessive amounts of treatment while the patient is immobilized with protective stabilization.[150] The physical and psychological health of the patient should override other factors (eg, practitioner convenience, financial compensation).[150]

Documentation: The patient's record must include
- indication for stabilization;
- type of stabilization;
- informed consent for protective stabilization;
- reason for parental exclusion during protective stabilization (when applicable);
- the duration of application of stabilization;
- behavior evaluation/rating during stabilization;
- any untoward outcomes, such as skin markings; and
- management implication for future appointments.

Sedation

Description: Procedural sedation is a drug-induced state along a continuum ranging from minimal (anxiolysis) and moderate (depression of consciousness during which patients respond purposefully to verbal commands or after light tactile sensation) to deep (depression of consciousness during which patients cannot be easily aroused but respond purposefully after repeated verbal or painful stimulation).[6] Sedation can be used safely and effectively with patients who are unable to cooperate due to lack of psychological or emotional maturity and/or mental, physical, or medical conditions. Background information and documentation for the use of sedation is detailed in the *Guideline for Monitoring and Management of Pediatric Patients Before, During, and After Sedation for Diagnostic and Therapeutic Procedures*.[6]

The need to diagnose and treat, as well as the safety of the patient, practitioner, and staff, should be considered for the use of sedation.

Objectives: The goals of sedation are to
- guard the patient's safety and welfare;
- minimize physical discomfort and pain;
- control anxiety, minimize psychological trauma, and maximize the potential for amnesia;
- modify behavior and/or movement so as to allow the safe completion of the procedure; and
- return the patient to a state in which discharge from medical/dental supervision is safe, as determined by recognized criteria.[6]

Indications: Sedation is indicated for
- fearful/anxious patients for whom basic behavior guidance techniques have not been successful.
- patients who cannot cooperate due to a lack of psychological or emotional maturity and/or mental, physical, or medical conditions.
- patients for whom the use of sedation may protect the developing psyche and/or reduce medical risk.

Contraindications: The use of sedation is contraindicated for
- the cooperative patient with minimal dental needs.
- predisposing medical and/or physical conditions which would make sedation inadvisable.

Documentation: The patient's record shall include[6]
- informed consent that is obtained from the parent and documented prior to the use of sedation;
- pre- and postoperative instructions and information provided to the parent;
- health evaluation;
- a time-based record that includes the name, route, site, time, dosage, and effect on patient of administered drugs;
- the patient's level of consciousness, responsiveness, heart rate, blood pressure, respiratory rate, and oxygen saturation prior to treatment, at the time of treatment, and postoperatively until predetermined discharge criteria have been attained;
- adverse events (if any) and their treatment; and
- time and condition of the patient at discharge.

General anesthesia

Description: General anesthesia is a controlled state of unconsciousness accompanied by a loss of protective reflexes, including the ability to maintain an airway independently and respond purposefully to physical stimulation or verbal command. Depending on the patient, general anesthesia can be administered in a hospital or an ambulatory setting, including the dental office. Practitioners who provide in-office general anesthesia (dentist and the anesthesia provider) should be familiar with and follow the recommendations found in the AAPD's *Use of Anesthesia Providers in the Administration of Office-Based Deep Sedation/General Anesthesia to the Pediatric Dental Patient*.[3]

Because laws and codes vary from state to state, each practitioner must be familiar with his state guidelines regarding office-based general anesthesia. The need to diagnose and treat, as well as the safety of the patient, practitioner, and staff should be considered for the use of general anesthesia. Anesthetic and sedative drugs are used to help ensure the safety, health, and comfort of children undergoing procedures. Increasing evidence from research studies suggests the benefits of these agents should be considered in the context of their potential to cause harmful effects.[151] Additional research is needed to identify any possible risks to young children.[152]

The decision to use general anesthesia must take into consideration

- alternative modalities;
- the age of the patient;
- risk/benefit analysis;
- treatment deferral;
- dental needs of the patient;
- the effect on the quality of dental care;
- the patient's emotional development;
- the patient's medical status; and
- barriers to care (eg, finances).

Objectives: The goals of general anesthesia are to

- provide safe, efficient, and effective dental care;
- eliminate anxiety;
- eliminate untoward movement and reaction to dental treatment;
- aid in treatment of the mentally-, physically-, or medically-compromised patient; and
- minimize the patient's pain response.

Indications: General anesthesia is indicated for patients

- who cannot cooperate due to a lack of psychological or emotional maturity and/or mental, physical, or medical disability.
- for whom local anesthesia is ineffective because of acute infection, anatomic variations, or allergy.
- who are extremely uncooperative, fearful, or anxious.
- who are precommunicative or noncommunicative.
- requiring significant surgical procedures that can be combined with dental procedures to reduce the number of anesthetic exposures.
- for whom the use of general anesthesia may protect the developing psyche and/or reduce medical risk.
- requiring immediate, comprehensive oral/dental care (eg, due to dental trauma, severe infection/cellulitis, acute pain).

Contraindications: The use of general anesthesia is contraindicated for

- a healthy, cooperative patient with minimal dental needs.
- a very young patient with minimal dental needs that can be addressed with therapeutic interventions (eg, ITR, fluoride varnish, SDF) and/or treatment deferral.
- patient/practitioner convenience.
- predisposing medical conditions which would make general anesthesia inadvisable.

Documentation: Prior to the delivery of general anesthesia, appropriate documentation shall address the rationale for use of general anesthesia, informed consent, instructions provided to the parent, dietary precautions, and preoperative health evaluation. Because laws and codes vary from state to state, each practitioner must be familiar with her state guidelines. For information regarding requirements for a time-based anesthesia record, refer to the AAPD's *Use of Anesthesia Providers in the Administration of Office-based Deep Sedation/General Anesthesia to the Pediatric Dental Patient*.[3]

References appear after Appendices.

Appendices

Appendix 1. SEARCH STRATEGIES PubMed/MEDLINE—date limit August 2023

Search #1. (ped & dental) 3712 results

((((((*behavior management* [**Tiab**] OR *behavior guidance* [Tiab] OR *child behavior* [Tiab] OR *dental anxiety* [Tiab] OR *personality test* [Tiab] OR *patient cooperation* [Tiab] OR *dentist-patient relations* [Tiab] OR *behavior assessment* [Tiab] OR *temperament assessment* [Tiab] OR *personality assessment* [Tiab] OR *treatment deferral* [Tiab] OR *treatment delay* [Tiab] OR *compliance* [Tiab] OR *adherence* [Tiab] OR *protective stabilization* [Tiab] OR *immobilization* [Tiab] OR *restraints* [Tiab] OR *sedation* [Tiab] OR *general anesthesia* [Tiab] OR *restraint, physical* [**MeSH**] OR *protective devices* [MeSH] OR *immobilization* [MeSH] OR *behavior control* [MeSH] OR *child behavior* [MeSH] OR *dental anxiety* [MeSH] OR *personality tests* [MeSH] OR *patient compliance* [MeSH] OR *dentist-patient relations* [MeSH] OR *personality assessment* [MeSH] OR *patient compliance* [MeSH] OR *anesthesia, general* [MeSH] OR *conscious sedation* [MeSH])))) AND (((*dental* [Tiab] OR *dental health services* [MeSH] OR *dentistry* [Tiab] OR *dentistry* [MeSH] OR *dental care* [Tiab] OR *dental care* [MeSH] OR *dentist* [Tiab] OR *dentists* [MeSH] OR *dental care for children* [MeSH] OR *pediatric dentistry* [MeSH]))))) AND (((infant [MeSH] OR *infant* [Tiab]) OR (*child* [MeSH] OR *child* [Tiab]) OR (*adolescent* [MeSH] OR *adolescent* [Tiab]) OR *pediatrics* [MeSH] OR *pediatrics* [Tiab] OR *pediatric* [Tiab])))) AND ((*2009/01/01* [**PDAT**]: *3000/12/31* [PDAT]) AND English [filter] NOT (*animals* [MeSH] NOT *humans* [MeSH]))

Search #2. (ped & medical) 1631 results

((*behavior management* [Tiab] OR *behavior guidance* [Tiab] OR *toxic stress* [Tiab] OR *protective stabilization* [Tiab] OR *restraints* [Tiab] OR *restraint, physical* [majr] OR *behavior control* [Majr])) AND ((((*infant* [MeSH] OR *infant* [Tiab]) OR (child [MeSH] OR *child* [Tiab]) OR (*adolescent* [MeSH] OR *adolescent* [Tiab]) OR *pediatrics* [MeSH] OR *pediatrics* [Tiab] OR *pediatric* [Tiab])) AND (((*2009/01/01* [PDAT]: *3000/12/31* [PDAT]) AND English [filter] NOT (*animals* [MeSH] NOT *humans* [MeSH])))))

Search #3. (adults & dentists) 88 results

(((*personality test* OR *personality tests* [MeSH] OR *personality assessment* [MeSH] OR *personality* [Tiab] OR *gender shifts* [Tiab] OR *gender equality* OR ((*women, working* [MeSH] OR *dentists, women* [MeSH]) AND *practice patterns, dentists'* [MeSH])))) AND (*dentist* [Tiab] OR *dentist* [Tiab] OR *Dentists* [MeSH])) AND ((*2009/01/01* [PDAT]: *3000/12/31* [PDAT]) AND English [filter] NOT (*animals* [MeSH] NOT *humans* [MeSH]))

Search #4. (adults & parents) 332 results

(((((*dental* [Tiab] OR *dental health services* [MeSH] OR *dentistry* [Tiab] OR *dentistry* [MeSH] OR *dental care* [Tiab] OR *dental care* [MeSH] OR *dentist* [Tiab] OR *dentists* [MeSH] OR *dental care for children* [MeSH] OR *pediatric dentistry* [MeSH])))) AND ((*parents* [Tiab] OR *fathers* Tiab] OR *mothers* [Tiab] OR *parental* [Tiab] OR *parent* [Tiab] OR *father* [Tiab] OR *mother* [Tiab] or *mothers* [MeSH] OR *fathers* [MeSH] OR *parents* [MeSH]))) AND (*behavior management* [Tiab] OR *behavior guidance* [Tiab] OR *dentist parent relations* [Tiab] OR *informed consent* [Tiab] OR *family compliance* [Tiab] OR *parent compliance* [Tiab] OR *family adherence* [Tiab] OR *parent adherence* [Tiab] OR *parenting style* [Tiab] OR *dentist-patient relations* [Tiab] OR *dentist-patient relations* [MeSH] OR *behavior control* [MeSH] OR patient compliance [MeSH] OR *informed consent* [MeSH])) AND (((*2009/01/01* [PDAT]: *3000/12/31* [PDAT]) AND English [filter] NOT (*animals* [MeSH] NOT *humans* [MeSH])))

Appendices continued on the next page.

Appendix 2. FRANKL BEHAVIORAL RATING SCALE

1	_ _	Definitely negative. Refusal of treatment, forceful crying, fearfulness, or any other overt evidence of extreme negativism.
2	_	Negative. Reluctance to accept treatment, uncooperative, some evidence of negative attitude but not pronounced (sullen, withdrawn).
3	+	Positive. Acceptance of treatmen, cautious behavior at times, willingness to comply with the dentist, at times with reservation, but patient follows the dentist's directions cooperatively.
4	++	Definitely positive. Good rapport with the dentist, interest in the dental procedures, laughter and enjoyment.

Appendix 3. SAMPLE COMMUNICATION TECHNIQUES FOR PATIENTS & PARENTS[1] BEHAVIORAL RATING SCALE

When clinicians share information, they predominantly TELL information, often in too much detail, and in terms that sometimes alarm patients. Information sharing is most effective when it is sensitive to the emotional impact of the words used. By using a technique of ask-tell-ask, it is possible to improve the patients' understanding and promote adherence. According to the adult learning theory, it is important to stay in dialogue (not monologue), begin with an assessment of the patient's or parents' needs, tell small chunks of information tailored to those needs, and check on the patient's understanding, emotional reactions, and concerns. This is summarized by the 3 step format **Ask-Tell-Ask**.

ASK to assess patient's emotional state and their desire for information. TELL small amounts of information in simple language, and ASK about the patient's understanding, emotional reactions, and concerns. Many conversations between clinicians and parents sound like **Tell-Tell-Tell**, a process known as doctor babble, because clinicians seem to talk to themselves, rather than have a conversation with parents or patients.

The Ask-Tell-Ask format maintains dialogue with patients and their parents. The important areas for sharing include:

ASK to assess patient needs:

1. **Make sure the setting is conducive**.
2. **Assess the patient's physical and emotional state**. If patients are upset or anxious, address their emotions and concerns before trying to share information. Sharing information when the patient is sleepy, sedated, in pain, or emotionally distraught is not respectful and the information won't be remembered.
3. **Assess the patient's informational needs**. Find out what information the patient wants, and in what format. Some patients want detailed information about their conditions, tests, and proposed treatments; recommendations for reading; websites; self-help groups; and/or referrals to other consultants. Others want an overview and general understanding. Patients may want other family members to be present for support or to help them remember key points. Reaching agreement with the patient about what information to review may require negotiation if the clinician understands the issues, priorities, or goals differently than the patient. Also, some patients may need more time, and so it might be wise to discuss the key points and plan to address others later or refer them to other staff or health educators. Instead of asking, *"Do you have any questions?"* to which patients often reply, "*No*," instead ask, "*What questions or concerns do you have?*" Be sure to ask, "*Anything else?*"
4. **Assess the patient's knowledge and understanding.** Find out what previous knowledge or relevant experience patients have about a symptom or about a test or treatment.
5. **Assess the patient's attitudes and motivation.** Patients will not be interested in hearing your health information if they are not motivated or if they have negative attitudes about the outcomes of their efforts, so ask about this directly. Start by asking general questions about attitudes and motivation: "*So – tell me how you feel about all of this?*" "*This is a complicated regimen. How do you think you will manage?*" If patients are not motivated, ask why and help the patient work through the issues.

TELL information:

1. **Keep each bit of information brief.** It is difficult to understand and retain large amounts of information, especially when one is physically ill, upset, or fearful.
2. **Use a systematic approach.** For example, name the problem, the next step, what to expect, and what the patient can do.
3. **Support the patient's prior successes.** Explicitly mention and appreciate patients' previous efforts and accomplishments in coping with previous problems or illness.
4. **Personalize the information.** Personalize your information by referring to the patient's personal and family history.
5. **Use simple language; avoid jargon.** Be mindful of how key points are framed.
6. **Choose words that do not unnecessarily alarm.** Words and phrases a practitioner takes for granted may be misinterpreted or alarm patients and families.
7. **Use visual aids, and share supplemental resources.** Find reliable resources and educational aids to meet the needs of your patients.

ASK: Continue to assess needs, comprehension, and concerns.

After each bit of telling, stop and check in with patients. When finished with information sharing, make a final check. This step closes the feedback loop with patients and helps the practitioner understand what patients hear, whether they are taking home the intended messages, and how they feel about the situation. The second ASK section consists of the following items:

1. **Check for patients' comprehension.** ASK about the patients' understanding. This ASK improves patient recall, satisfaction, and adherence.
2. **Check for emotional responses and respond appropriately.** Letting patients know their concerns and worries have been heard is compassionate, improves outcomes, and takes little time.
3. **Check about barriers.** Patients may face external obstacles as well as internal emotional responses that inhibit them from overcoming obstacles.

Teach Back

A strategy called teach back is similar. The dentist or dental staff asks the patient to **teach back** what he has learned. This may be especially effective for patients with low literacy who cannot rely on written reminders. It is important to present the process as part of the normal routine. This pertains to explanations or demonstrations: "*I always check in with my patients to make sure that I've demonstrated things clearly. Can you show me how you're going to floss your teeth*?" If the patient's demonstration is incorrect, the dentist may say, "*I'm sorry, I guess I didn't explain things all that well: let me try again*." Then go over the information again and ask the patient to teach it back to you again.

Motivational Interviewing

Motivational interviewing facilitates behavior change by helping patients or parents explore and resolve their ambivalence about change. It is done in a collaborative style which supports the autonomy and self-efficacy of the patient and uses the patient's own reasons for change. It increases the patient's confidence and reduces defensiveness. Motivational interviewing keeps the responsibility to change with the patient and/or parent, which helps to decrease staff burnout. In dentistry, it is useful in counseling about brushing, flossing, fluoride varnish, reducing sugar sweetened beverages, and smoking cessation. Open-ended questions, affirmations, reflective listening, and summarizing (OARS) characterize the patient-centered approach. It is especially helpful in higher levels of resistance, anger, or entrenched patterns. Motivational interviewing is empowering to both staff and patients and, by design, is not adversarial or shaming.

[1] Adapted from Goleman J. Cultural factors affecting behavior guidance and family compliance. *Pediatr Dent.* 2014;36(2):121-127.

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References

1. American Academy of Pediatric Dentistry. Policy on medically-necessary care. *The Reference Manual of Pediatric Dentistry.* American Academy of Pediatric Dentistry; 2024: 43-47.
2. American Academy of Pediatric Dentistry. Pain management in infants, children, adolescents, and individuals with special health care needs. *The Reference Manual of Pediatric Dentistry.* American Academy of Pediatric Dentistry; 2024:435-443.
3. American Academy of Pediatric Dentistry. Use of anesthesia providers in the administration of office-based deep sedation/general anesthesia to the pediatric dental patient. *The Reference Manual of Pediatric Dentistry.* American Academy of Pediatric Dentistry; 2024:430-434.
4. American Academy of Pediatric Dentistry. Use of nitrous oxide for pediatric dental patients. *The Reference Manual of Pediatric Dentistry.* American Academy of Pediatric Dentistry; 2024:394-401.
5. American Academy of Pediatric Dentistry. Use of protective stabilization for pediatric dental patients. *The Reference Manual of Pediatric Dentistry.* American Academy of Pediatric Dentistry; 2024:379-385.
6. Coté CJ, Wilson S, American Academy of Pediatric Dentistry, American Academy of Pediatrics. Guidelines for monitoring and management of pediatric patients before, during and after sedation for diagnostic and therapeutic procedures. *Pediatrics.* 2019;143(6):e201910000. DOI: 10.1542/peds.2019-1000
7. American Academy of Pediatric Dentistry. Guidelines for behavior management. American Academy of Pediatric Dentistry; May 1990.
8. American Academy of Pediatric Dentistry. Behavior guidance for the pediatric dental patient. *The Reference Manual of Pediatric Dentistry.* American Academy of Pediatric Dentistry; 2020:292-310.
9. American Academy of Pediatric Dentistry. Proceedings of the conference on behavior management for the pediatric dental patient. *Pediatr Dent.* 2004;26(2):110-183.
10. American Academy of Pediatric Dentistry. Behavior Symposium III: Conference Papers. *Pediatr Dent.* 2014;36(2): 102-160.
11. Accreditation Standards for Advanced Specialty Education Programs in Pediatric Dentistry. Commission on Dental Accreditation; 2022:25-26. Accessed March 6, 2024. https://coda.ada.org/-/media/project/ada-organization/ada/coda/files/pediatric_dentistry_standards.pdf?rev=50a8557ef6474199b75d53 1b22f05e60&hash=12EE1B109A4B6FD893950812B9C C2EC9
12. Dhar V, Gosnell E, Jayaraman J, et al. Nonpharmacological behavior guidance for the pediatric dental patient. *Pediatr Dent.* 2023;45(5):385-410.
13. National Maternal and Child Oral Health Resource Center. Behavior guidance. In: *Special Care: An Oral Health Professional's Guide to Serving Young Children with Special Health Care Needs*. 2nd ed. National Maternal and Child Oral Health Resource Center; 2018. Accessed March 6, 2024. https://www.mchoralhealth.org/SpecialCare/5-behavior/
14. Baier K, Milgrom P, Russell S, Mancl L, Yoshida T. Children's fear and behavior in private pediatric dentistry practices. *Pediatr Dent.* 2004;26(4):316-321.
15. Brill WA. The effect of restorative treatment on children's behavior at the first recall visit in a private pediatric dental practice. *J Clin Pediatr Dent.* 2002;26(4):389-394. DOI: 10.17796/jcpd.26.4.r1543673rx055355
16. Howenstein J, Kumar A, Casamassimo PS, McTigue D, Coury D, Yin H. Correlating parenting styles with child behavior and caries. *Pediatr Dent.* 2015;37(1):59-64.
17. Long N. The changing nature of parenting in America. *Pediatr Dent.* 2004;26(2):121-124.
18. Sheller B. Challenges of managing child behavior in the 21st century dental setting. *Pediatr Dent.* 2004;26(2):111-113.
19. Stigers JI. Nonpharmacologic management of children's behaviors. In: Dean JA, ed. *McDonald and Avery's Dentistry for the Child and Adolescent.* 11th ed. Elsevier; 2022: 340-355.
20. Arnup K, Broberg AG, Berggren U, Bodin L. Lack of cooperation in pediatric dentistry: The role of child personality characteristics. *Pediatr Dent.* 2002;24(2):119-128.
21. Klingberg G, Broberg AG. Temperament and child dental fear. *Pediatr Dent.* 1998;20(4):237-243.
22. Seligman LD, Hovey JD, Chacon K, Ollendick TH. Dental anxiety: An understudied problem in youth. *Clin Psychol Rev.* 2017;55:25-40. DOI: 10.1016/j.cpr.2017.04.004
23. Boyce TW. The lifelong effects of early childhood adversity and toxic stress. *Pediatr Dent.* 2014;36(2):102-107.
24. da Fonseca MA. Eat or heat? The effects of poverty on children's behavior. *Pediatr Dent.* 2014;36(2):132-137.
25. Long N. Stress and economic hardship: The impact on children and parents. *Pediatr Dent.* 2014;36(2):109-114.
26. Goleman J. Cultural factors affecting behavior guidance and family compliance. *Pediatr Dent.* 2014;36(2):121-127.
27. Chen AH, Youdelman MK, Brooks J. The legal framework for language access in healthcare settings: Title VI and beyond. *J Gen Intern Med.* 2007;22(suppl 2):362-367. DOI: 10.1007/s11606-007-0366-2
28. US Department of Health and Human Services. Section 1557 of the Patient Protection and Affordable Care Act. Final rule June 19, 2020. Accessed March 6, 2024. https://www.govinfo.gov/content/pkg/FR-2020-06-19/pdf/2020-11758.pdf
29. American Academy of Pediatric Dentistry. Policy on the dental home. *The Reference Manual of Pediatric Dentistry.* American Academy of Pediatric Dentistry; 2024:38-40.
30. Feigal RJ. Guiding and managing the child dental patient: A fresh look at old pedagogy. *J Dent Educ.* 2001;65 (12):1369-1377.

31. Versloot J, Craig KD. The communication of pain in paediatric dentistry. *Eur Arch Paediatr Dent.* 2009;10(2):61-66. DOI: 10.1007/BF03321601
32. Yigit T, Topal BG, Ozgocmen E. The effect of parental presence and dental anxiety on children's fear during dental procedures: A randomized trial. *Clin Child Psychol Psychiatry.* 2022;27(4):1234-1245. DOI: 10.1177/13591045211067556
33. Gupta RC, Randell KA, Dowd MD. Addressing parental adverse childhood experiences in the pediatric setting. *Adv Pediatr.* 2021;68:71-88. DOI: 10.1016/j.yapd.2021.05.003
34. Boland L, Graham ID, Légaré F, et al. Barriers and facilitators of pediatric shared decision-making: A systematic review. *Implement Sci.* 2019;14(1):7. DOI: 10.1186/s13012-018-0851-5
35. Riba H, Al-Shahrani A, Al-Ghutaimel H, Al-Otaibi A, Al-Kahtani S. Parental presence/absence in the dental operatory as a behavior management technique: A review and modified view. *J Contemp Dent Pract.* 2018;19(2):237-241. DOI: 10.5005/jp-journals-10024-2243
36. Pinkham JR. An analysis of the phenomenon of increased parental participation during the child's dental experience. *J Dent Child.* 1991;58(6):458-463.
37. American Academy of Pediatric Dentistry. Behavior Management for the Pediatric Dental Patient. Conference/Workshop. Iowa City, Iowa. September 30-October 2, 1988. Final Proceedings. American Academy of Pediatric Dentistry; 1989.
38. Hamzah HS, Gao X, Yung Yiu CK, McGrath C, King NM. Managing dental fear and anxiety in pediatric patients: A qualitative study from the public's perspective. *Pediatr Dent.* 2014;36(1):29-33.
39. Shroff S, Hughes C, Mobley C. Attitudes and preferences of parents about being present in the dental operatory. *Pediatr Dent.* 2015;37(1):51-55.
40. American Academy of Pediatric Dentistry. Management of dental patients with special health care needs. *The Reference Manual of Pediatric Dentistry.* American Academy of Pediatric Dentistry; 2024:343-350.
41. Townsend JA, Wells MH. Behavior guidance in the pediatric patient. In: Nowak AJ, Christensen JR, Mabry TR, Townsend JA, Wells MH. eds. *Pediatric Dentistry – Infancy through Adolescence.* 6th ed. Elsevier-Saunders Co.; 2019:352-370.
42. Law CS, Blain S. Approaching the pediatric dental patient: A review of nonpharmacologic behavior management strategies. *J Calif Dent Assoc.* 2003;31(9):703-713.
43. Sharma A, Kumar D, Anand A, Mittal V, Singh A, Aggarwal N. Factors predicting behavior management problems during initial dental examination in children aged 2 to 8 years. *Int J Clin Pediatr Dent.* 2017;10(1):5-9. DOI: 10.5005/jp-journals-10005-1397
44. Aguirre-González G, De Ávila-Rojas P, García-Flores R, et al. Inclusive dentistry: Integral management of pediatric patients with intellectual disability and/or communication impairments. Case-series reports. *J Clin Pediatr Dent.* 2020;44(4):221-227. DOI: 10.17796/1053-4625-44.4.2
45. Jensen B, Stjernqvist K. Temperament and acceptance of dental treatment under sedation in preschool children. *Acta Odontol Scand.* 2002;60(4):231-236. DOI: 10.1080/000163502760148007
46. Lochary ME, Wilson S, Griffen AL, Coury DL. Temperament as a predictor of behavior for conscious sedation in dentistry. *Pediatr Dent.* 1993;15(5):348-352.
47. Oliver K, Manton DJ. Contemporary behavior management techniques in clinical pediatric dentistry: Out with the old and in with the new? *J Dent Child (Chic).* 2015;82(1):22-28.
48. Radis FG, Wilson S, Griffen AL, Coury DL. Temperament as a predictor of behavior during initial dental examination in children. *Pediatr Dent.* 1994;16(2):121-127.
49. Arnup K, Broberg AG, Berggren U, Bodin L. Treatment outcome in subgroups of uncooperative child dental patients: An exploratory study. *Int J Paediatr Dent.* 2003;13(5):304-319. DOI: 10.1046/j.1365-263x.2003.00482.x
50. Paiva ACF, Rabelo-Costa D, Fernandes IB, et al. The relationship between temperament and dental fear and anxiety: A systematic review. *Evid Based Dent.* 2023;24(1):42. DOI: 10.1038/s41432-023-00852-0
51. Holst A, Hallonsten AL, Schroder U, Ek L, Edlund K. Prediction of behavior-management problems in 3-year-old children. *Scand J Dent Res.* 1993;101(2):110-114. DOI: 10.1111/j.1600-0722.1993.tb01098.x
52. Shonkoff JP, Garner AS. The lifelong effects of early childhood adversity and toxic stress. *Pediatrics.* 2012;129(1):e232-246. DOI: 10.1542/peds.2011-2663
53. Fischer-Owens SA, Lukefahr JL, Tate AR, et al. Oral and dental aspects of child abuse and neglect. *Pediatrics.* 2017;140(2):e20171487. DOI: 10.1542/peds.2024-068024
54. Strickhouser JE, Sutin AR. Family and neighborhood socioeconomic status and temperament development from childhood to adolescence. *J Pers.* 2020;99(3):515-529. DOI: 10.1111/jopy.12507
55. Forkey H, Szilagyi M, Kelly ET, et al. Trauma-informed care. *Pediatrics.* 2021;148(2):e2021052580. DOI: 10.1542/peds.2021-052580
56. Glossary of terms related to trauma-informed, integrated healthcare. The National Child Traumatic Stress Network. Accessed March 6, 2024. https://www.nctsn.org/sites/default/files/resources//glossary_of_terms_related_to_trauma-Informed_integrated_healthcare.pdf
57. Duffee J, Szilagyi M, Forkey H, et al. Trauma-informed care in child health systems. *Pediatrics.* 2021;148(2):e2021052579. DOI: 10.1542/peds.2021-052579
58. Raja S, Hoersch M, Rajagopalan CF, Chang P. Treating patients with traumatic life experiences: Providing trauma-informed care. *J Am Dent Assoc.* 2014;145(3):238-245. DOI: 10.14219/jada.2013.30

References continued on the next page.

59. Hall JA, Roter DL, Katz NR. Task versus socio-emotional behaviors in physicians. *Med Care.* 1987;25(5):399-412. DOI: 10.1097/00005650-198705000-00004
60. Chambers DW. Communicating with the young dental patient. *J Am Dent Assoc.* 1976;93(4):793-799. DOI: 10.14219/jada.archive.1976.0051
61. Harper DC, D'Alessandro DM. The child's voice: Understanding the contexts of children and families today. *Pediatr Dent.* 2004;26(2):114-120.
62. Nash DA. Engaging children's cooperation in the dental environment through effective communication. *Pediatr Dent.* 2006;28(5):455-459.
63. Zhou Y, Cameron E, Forbes, G, Humphris G. Systematic review of the effect of dental staff behavior on child dental patient anxiety and behavior. *Patient Educ Couns*. 2011;85(1):4-13. DOI: 10.1016/j.pec.2010.08.002
64. Schouten BC, Eijkman MA, Hoogstraten J. Dentists' and patients' communicative behavior and their satisfaction with the dental encounter. *Community Dent Health.* 2003;20(1):11-15.
65. Wells M, McTigue DJ, Casamassimo PS, Adair S. Gender shifts and effects on behavior guidance. *Pediatr Dent.* 2014;36(2):138-144.
66. Adair SM, Schafer TE, Rockman RA, Waller JL. Survey of behavior management teaching in predoctoral pediatric dentistry programs. *Pediatr Dent.* 2004;26(2):143-150.
67. Eaton JJ, McTigue DJ, Fields HW Jr, Beck M. Attitudes of contemporary parents toward behavior management techniques used in pediatric dentistry. *Pediatr Dent.* 2005;27(2):107-113.
68. Freeman R. Communicating with children and parents: Recommendations for a child-parent-centered approach for paediatric dentistry. *Eur Arch Paediatr Dent.* 2008;9(1):16-22. DOI: 10.1007/BF03262651
69. American Academy of Pediatric Dentistry. Informed consent. *The Reference Manual of Pediatric Dentistry.* American Academy of Pediatric Dentistry; 2024:554-558.
70. Documentation/patient records. American Dental Association. Accessed March 6, 2024. https://www.ada.org/en/resources/practice/practice-management/documentation-patient records
71. Nunn J, Foster M, Master S, Greening S. British Society of Paediatric Dentistry: A policy document on consent and the use of physical intervention in the dental care of children. *Int J Paediatr Dent.* 2008;18(suppl 1):39-46. DOI: 10.1111/j.1365-263X.2008.00937.x
72. Seale NS. Behavior Management Conference Panel III Report: Legal issues associated with managing children's behavior in the dental office. *Pediatr Dent.* 2004;26(2):175-179.
73. Burgess J, Meyers A. Pain Management in dentistry. Accessed March 6, 2024. https://moodle2.units.it/pluginfile.php/89098/mod_resource/content/2/Pain%20Management%20in%20Dentistry.pdf
74. Tickle M, Milson K, Crawford FI, Aggarwal VR. Predictors of pain associated with routine procedures performed in general dental practice. *Community Dent Oral Epidemiol.* 2012;40(4):343-350. DOI: 10.1111/j.1600-0528.2012.00673.x
75. American Academy of Pediatric Dentistry. Use of local anesthesia for pediatric dental patients. *The Reference Manual of Pediatric Dentistry*. The American Academy of Pediatric Dentistry; 2024:386-393.
76. Nakai Y, Milgrom P, Mancl L, Coldwell SE, Domoto PK, Ramsay DS. Effectiveness of local anesthesia in pediatric dental practice. *J Am Dent Assoc.* 2000;131(12):1699-1705. DOI: 10.14219/jada.archive.2000.0115
77. Nutter DP. Good clinical pain practice for pediatric procedure pain: Target considerations. *J Calif Dent Assoc.* 2009;37(10):719-722.
78. Nutter DP. Good clinical pain practice for pediatric procedure pain: Iatrogenic considerations. *J Calif Dent Assoc.* 2009;37(10):713-718.
79. Nutter DP. Good clinical pain practice for pediatric procedure pain: Neurobiologic considerations. *J Calif Dent Assoc.* 2009;37(10):705-710.
80. Klingberg G. Dental anxiety and behaviour management problems in paediatric dentistry: A review of background factors and diagnostics. *Eur Arch Paediatr Dent.* 2007;8(4):11-15. DOI: 10.1007/BF03262650
81. Versloot J, Veerkamp JS, Hoogstraten J. Children's self-reported pain at the dentist. *Pain.* 2008;137(2):389-394. DOI: 10.1016/j.pain.2007.09.025
82. Stinson JN, Kavanagh T, Yamada J, Gill N, Stevens B. Systematic review of the psychometric properties, interpretability and feasibility of self-reporting pain intensity measures for use in clinical trials in children and adolescents. *Pain.* 2006;125(1):143-157. DOI: 10.1016/j.pain.2006.05.006
83. Trottier ED, Ali S, Dore-Gergeron M-J, Chavin-Kimoff L. Best practices in pain management and assessment for children. *Paediatr Child Health.* 2022;27(7):429-437. DOI: 10.1093/pch/pxac048
84. McWhorter A, Townsend J. Behavior Symposium Workshop A Report–Current guidelines/revision. *Pediatr Dent.* 2014;36(2):152-153.
85. Frankl SN, Shiere FR, Fogels HR. Should the parent remain with the child in the dental operatory? *J Dent Child.* 1962;29:150-163.
86. American Academy of Pediatric Dentistry. Policy on the use of silver diamine fluoride for pediatric dental patients. *The Reference Manual of Pediatric Dentistry.* American Academy of Pediatric Dentistry; 2024:104-106.
87. Crystal YO, Marghalani AA, Ureles SD, et al. Use of silver diamine fluoride for dental caries management in children and adolescents, including those with special health care needs. *Pediatr Dent.* 2017;39(5):E135-E145.

88. American Academy of Pediatric Dentistry. Pediatric restorative dentistry. *The Reference Manual of Pediatric Dentistry.* American Academy of Pediatric Dentistry; 2024:452-465.
89. American Academy of Pediatric Dentistry. Policy on interim therapeutic restorations (ITR). *The Reference Manual of Pediatric Dentistry.* American Academy of Pediatric Dentistry; 2024:107-108.
90. Lim SM, Kiang L, Manohara R, et al. Interim therapeutic restoration approach versus treatment under general anaesthesia approach. *Int J Paediatr Dent.* 2017;27(6):551-557. DOI: 10.1111/ipd.12296
91. Nelson T. An improved interim therapeutic restoration technique for management of anterior early childhood caries: Report of two cases. *Pediatr Dent.* 2013;35(4):124-128.
92. Makansi N, Carnevale FA, Macdonald ME. The conceptualization of childhood in North American pediatric dentistry texts: A discursive case study analysis. *Int J Paediatr Dent.* 2018;28(2):189-197. DOI: 10.1111/ipd.12325
93. Fox C, Newton JT. A controlled trial of the impact of exposure to positive images of dentistry on anticipatory dental fear in children. *Community Dent Oral Epidemiol*. 2006;34(6):455-459. DOI: 10.1111/j.1600-0528.2006.00303.x
94. Alnamankany, A. Video modeling and dental anxiety in children. A randomized clinical trial. *Eur J Paediatr Dent.* 2019;20(3):242-246. DOI: 10.23804/ejpd.2019.20.03.14
95. Melamed BG, Hawes RR, Heiby E, Glick J. Use of filmed modeling to reduce uncooperative behavior of children during dental treatment. *J Dent Res.* 1975;54(4):797-801. DOI: 10.1177/00220345750540041701
96. Kamath PS. A novel distraction technique for pain management during local anesthesia administration in pediatric patients. *J Clin Pediatr Dent.* 2013;38(1):45-47. DOI: 10.17796/jcpd.38.1.265807t236570hx7
97. Pickrell JE, Heima M, Weinstein P, et al. Using memory restructuring strategy to enhance dental behaviour. *Int J Paediatr Dent.* 2007;17(6):439-448. DOI: 10.1111/j.1365-263X.2007.00873.x
98. Nelson T, Sheller B, Friedman C, Bernier R. Educational and therapeutic behavioral approaches to providing dental care for patients with autism spectrum disorder. *Spec Care Dentist.* 2015;35(3):105-113. DOI: 10.1111/scd.12101
99. Campbell C, Soldani F, Busuttil-Naudi A, Chadwick B. Non-pharmacological behaviour management guideline. British Society of Paediatric Dentistry; Revised 2011. Accessed March 6, 2024. https://www.bspd. co.uk/Portals/0/Public/Files/Guidelines/Non-pharmacological%20behaviour%20management%20.pdf
100. Levi M, Bossù M, Luzzi V, et al. Breathing out dental fear: A feasibility crossover study on the effectiveness of diaphragmatic breathing in children sitting on the dentist's chair. *Int J Paediatr Dent.* 2022;32(6):801-811. DOI: 10.1111/ipd.12958
101. Roberts JF, Curzon ME, Koch G, Martens LC. Review: Behaviour management techniques in paediatric dentistry. *Eur Arch Paediatr Dent.* 2010;11(4):166-174. DOI: 10.1007/BF03262738
102. Bodison SC, Parham DL. Specific sensory techniques and sensory environment modifications for children and youth with sensory integration difficulties: A systematic review. *Am J Occup Ther.* 2018;72(1):7201190040p1-7201190040p11. DOI: 10.5014/ajot.2018.029413
103. Cermak SA. Stein Duker LI, Williams ME, et al. Feasibility of a sensory-adapted dental environment for children with autism. *Am J Occup Ther.* 2015;69(3):6903220020p1-10. DOI: 10.5014/ajot.2015.013714
104. Cruz-Fierro N, Vanegas-Farfano M, González-Ramírez MT. Dog-assisted therapy and dental anxiety: A pilot study. *Animals.* 2019;9(8):512. DOI: 10.3390/ani9080512
105. Flippin M, Reszka S, Watson LR. The effectiveness of picture exchange communication system (PECS) on communication and speech for children with autism spectrum disorders: A meta-analysis. *Am J Speech Lang Pathol.* 2010;19(2):178-195. DOI: 10.1044/1058-0360(2010/09-0022)
106. Ganz JB, Davis JL, Lund EM, Goodwyn FD, Simpson RL. Meta-analysis of PECS with individuals with ASD: Investigation of targeted versus non-targeted outcomes, participant characteristics, and implementation phase. *Res Dev Disabil.* 2012;33(2):406-418. DOI: 10.1016/j.ridd.2011.09.023
107. American Academy of Pediatrics, Section on Integrative Medicine. Mind-body therapies in children and youth. *Pediatrics.* 2016;138(3):e20161896. DOI: 10.1542/peds.2016-1896
108. Birnie KA, Noel M, Chambers CT, et al. Psychological interventions for needle-related procedural pain and distress in children and adolescents. *Cochrane Database Syst Rev.* 2018;10(10):CD005179. DOI: 10.1002/14651858.CD005179.pub4
109. Padminee K, Hemalatha R, Shankar P, et al. Effectiveness of biofeedback relaxation and audiovisual distraction on dental anxiety among 7- to 12-year-old children while administering local anaesthesia: A randomized clinical trial. *Int J Paediatr Dent.* 2022;32(1):31-40. DOI: 10.1111/ipd.12787
110. Ramírez-Carrasco A, Butrón-Téllez Girón C, Snachez-Armass OK, et al. Effectiveness of hypnosis in combination with conventional techniques of behavior management in anxiety/pain reduction during dental anesthetic infiltration. *Pain Res Manag.* 2017:1434015. DOI: 10.1155/2017/1434015
111. Prado IM, Carcavalli L, Abreu LG, Serra-Negra JM, Paiva SM, Martins CC. Use of distraction techniques for the management of anxiety and fear in paediatric dental practice: A systematic review of randomized controlled trials. *Int J Paediatr Dent.* 2019;29(5):650-668. DOI: 10.1111/ipd.12499

References continued on the next page.

112. Thrash WJ, Marr JN, Boone SE. Continuous self-monitoring of discomfort in the dental chair and feedback to the dentist. *J Behav Assess.* 1982;4(3):273-284. https://doi.org/10.1007/BF01321269
113. Fisher-Owens S. Broadening perspectives on pediatric oral health care provision: Social determinants of health and behavioral management. *Pediatr Dent.* 2014;36(2):115-120.
114. Cermak SA, Stein Duker LI, Williams ME, et al. Sensory adapted dental environment to enhance oral care for children with autism spectrum disorders: A randomized controlled pilot study. *J Autism Dev Disord.* 2015;45(9):2876-2888. DOI: 10.1007/s10803-015-2450-5
115. Cajares CM, Rutledge CM, Haney TS. Animal assisted therapy in a special needs dental practice: An interprofessional model for anxiety reduction. *J Intell Disabl.* 2016;4(1):25-28. DOI: https://doi.org/10.6000/2292-2598.2016.04.01.3
116. Gussard AM, Weese JS, Hensten A, Jokstad A. Dog-assisted therapy in the dental clinic. Part B. Hazards and assessment of potential risks to the health and safety of the dental therapy dog. *Clin Exp Dent Res.* 2019;5(6):701-711. DOI: 10.1002/cre2.239
117. Zink AG, Molina EC, Diniz MB, Santos MTBR, Guaré RO. Communication applications for use during the first dental visit for children and adolescents with autism spectrum disorders. *Pediatr Dent.* 2018;40(1):18-22.
118. McClintock AS, McCarrick SM, Garland EL et al. Brief mindfulness-based interventions for acute and chronic pain: A systematic review. *J Altern Complement Med.* 2019;25(3):265-278. DOI: 10.1089/acm.2018.0351
119. Tieri M, Cosi A, Lombardi L, et al. Nitrous oxide and hypnotherapy in paediatric dentistry. *Eur J Paediatr Dent.* 2023;24(3):229-237. DOI: 10.23804/ejpd.2023.1932
120. Anthonappa RP, Ashley PF, Bonetti DL, et al. Non-pharmacological interventions for managing dental anxiety in children. *Cochrane Database Syst Rev.* 2017;6(6):CD012676. DOI: 10.1002/14651858.CD012676
121. Bahrololoomi Z, Sadeghiyeh T, Rezaei M, Maghsoudi N. The effect of breathing exercise using bubble blower on anxiety and pain during inferior alveolar nerve block in children aged 7 to 10 years: A crossover randomized clinical trial. *Pain Res Manag.* 2022:7817267. DOI: 10.1155/2022/7817267
122. Clark MS, Brunick AL. Anatomy and physiology of respiration and airway management. In: *Handbook of Nitrous Oxide and Oxygen Sedation.* 5th ed. Elsevier; 2019:74.
123. Gupta K, Ritwik P. Rationale for using nitrous oxide in pediatric dentistry. In Gupta K, Emmanouil D, Sethi A, eds. *Nitrous Oxide in Pediatric Dentistry: A Clinical Handbook.* Springer Nature; 2020:1-43. DOI:10.1007/978-3-030-29618-6
124. Ashley P, Anand P, Andersson K. Best clinical practice guidance for conscious sedation of children undergoing dental treatment: An EAPD policy document. *Eur Arch Paediatr Dent.* 2021;22(6):989-1002. DOI: 10.1007/s40368-021-00660-z
125. Saxen M. Pharmacologic management of patient behavior. In: Dean JA, ed. *McDonald and Avery's Dentistry for the Child and Adolescent.* 11th ed. Elsevier; 2022:367.
126. Buhre W, Disma N, Hendrickx J, et al. European Society of Anaesthesiology Task Force on Nitrous Oxide: A narrative review of its role in clinical practice. *Br J Anaesth.* 2019;122(5):587-604. DOI: 10.1016/j.bja.2019.01.023
127. Pasarón R, Burnweit C, Zerpa J, et al. Nitrous oxide procedural sedation in non-fasting pediatric patients undergoing minor surgery: A 12-year experience with 1,058 patients. *Pediatr Surg Int.* 2015;31(2):173-180. DOI: 10.1007/s00383-014-3608-5
128. De Veaux CK, Montagnese TA, Heima M, et al. The effect of various concentrations of nitrous oxide and oxygen on the hypersensitive gag reflex. *Anesth Prog.* 2016;63(4):181-184. DOI: 10.2344/15-00039.1
129. Arcari S, Moscati M. Nitrous oxide analgesic effect on children receiving restorative treatment on primary molars. *Eur J Paediatr Dent.* 2018;19(3):205-212. DOI: 10.23804/ejpd.2018.19.03.7
130. Becker DE, Rosenberg M. Nitrous oxide and the inhalation anesthetics. *Anesth Prog.* 2008;55(4):124-131. DOI: 10.2344/0003-3006-55.4.124
131. Chino K, Ganzberg S, Mendoza K. Office-based sedation/general anesthesia for COPD Patients, Part II. *Anesth Prog.* 2019;66(1):44-51. DOI: 10.2344/anpr-66-02-05
132. Clark MS, Brunick AL. N_2O and its interaction with the body. In: *Handbook of Nitrous Oxide and Oxygen Sedation.* 5th ed. Elsevier; 2019:103-113.
133. Thikkurissy S, Gosnell ES. Pain reaction control: Sedation. In: Nowak AJ, Christensen JR, Mabry, TR, Townsend JA, Wells MH, eds. *Pediatric Dentistry: Infancy through Adolescence.* 6th ed. Elsevier; 2019:121.
134. American Academy of Pediatric Dentistry. Oral health care for the pregnant pediatric dental patient. *The Reference Manual of Pediatric Dentistry.* American Academy of Pediatric Dentistry; 2024:333-342.
135. Fleming P, Walker PO, Priest JR. Bleomycin therapy: A contraindication to the use of nitrous oxide-oxygen psychosedation in the dental office. *Pediatr Dent.* 1988;10(4):345-346.
136. Sanders RDB, Weimann J, Maze M. Biologic effects of nitrous oxide: A mechanistic and toxicologic review. *Anesthesiology.* 2008;109(4):707-722. DOI: 10.1097/ALN.0b013e3181870a17
137. Aldossari GS, Aldosari AA, Alasmari AA, Aldakheel RM, Al-Natsha RR, Aldossary MS. The long-term effect of previous dental treatment under general anesthesia on children's dental fear and anxiety. *Int J Paediatr Dent.* 2019;29(2):177-184. DOI: 10.1111/ipd.12455
138. Cantekin K, Yildirim MD, Cantekin I. Assessing change in quality of life and dental anxiety in young children following dental rehabilitation under general anesthesia. *Pediatr Dent.* 2014;36(1):12E-17E.

139. Guney S, Araz C, Tirali R, Cehreli S. Dental anxiety and oral health-related quality of life in children following dental rehabilitation under general anesthesia or intravenous sedation: A prospective cross sectional study. *Niger J Clin Pract.* 2019;21(10):1304-1310. DOI: 10.4103/njcp.njcp_150_18
140. Klaassen MA, Veerkamp JS, Hoogstraten J. Young children's oral health-related quality of life and dental fear after treatment under general anaesthesia: A randomized controlled trial. *Eur J Oral Sci.* 2009;117(3):273-278. DOI: 10.1111/j.1600-0722.2009.00627.x
141. Patel M, McTigue DJ, Thikkurissy S, Fields HW. Parental attitudes toward advanced behavior guidance techniques used in pediatric dentistry. *Pediatr Dent.* 2016;38(1):30-36.
142. Hulin J, Baker S, Marshman Z, Albadri S, Rodd H. The decisional needs of young patients faced with the decision to undergo dental treatment with sedation or GA. *SAAD Digest.* 2017;33:18-23.
143. Weishuhn D, Scully A, Amini H, Salzmann L, Boynton JR. Contemporary predoctoral paediatric behaviour guidance education in the United States and Canada. *Eur J Dent Educ.* 2022;26(1):85-92. DOI: 10.1111/eje.12675
144. New York State, Office for People with Developmental Disabilities. Administrative Memorandum – #2010-02. Medical immobilization/protective stabilization (MIPS) and sedation for medical/dental appointments. 2010;1-7. Accessed February 5, 2024. https://opwdd.ny.gov/system/files/documents/2020/01/mips-and-sedation.pdf
145. Chavis SE, Wu E, Munz SM. Considerations for protective stabilization in community general dental practice for adult patients with special healthcare needs. *Compend Contin Educ Dent.* 2021;42(3):134-138. Accessed February 23, 2024. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8281605/
146. Centers for Medicare and Medicaid Services. State Operations Manual Appendix A – Survey protocol, Regulations, and Interpretive Guidelines for Hospitals. §482.13 Condition of Participation: Patient Rights A-0154 §482.13(e) Standard: Restraint or Seclusion. (Rev. 216, 07-21-23). Accessed March 16, 2024. https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_a_hospitals.pdf
47. American Academy of Pediatrics Committee on Pediatric Emergency Medicine. The use of physical restraint interventions for children and adolescents in the acute care setting. *Pediatrics.* 1997;99(3):497-498. DOI: 10.1542/peds.99.3.497
148. Townsend JA. Protective stabilization in the dental setting. In: Nelson TM, Webb JR, eds. *Dental Care for Children with Special Needs.* Springer Nature; 2019:253.
149. Mohr WK, Petti TA, Mohr BD. Adverse effects associated with physical restraint. *Can J Psychiatry.* 2003;48(5):330-337. DOI: 10.1177/070674370304800509
150. American Dental Association Council on Ethics, Bylaws and Judicial Affairs. Principles of Ethics and Code of Professional Conduct. With official advisory opinions revised to March 2023. American Dental Association; 2023 Accessed February 23, 2024. https://www.ada.org/-/media/project/ada-organization/ada/ada-org/files/about/ada_code_of_ethics.pdf?rev=ba22edfdf1a646be9249fe2d870d7d31&hash=CCD76FCDC56D6F2CCBC46F1751F51B96
151. American Academy of Pediatrics. The pediatrician's role in the evaluation and preparation of pediatric patients undergoing anesthesia. *Pediatrics.* 2014;134(3):497-498. DOI: 10.1542/peds.2014-1840
152. Ing C, Warner DO, Sun LS, et al. Anesthesia and developing brains: Unanswered questions and proposed paths forward. *Anesthesiology.* 2022;136(3):500-512. DOI: 10.1097/ALN.0000000000004116