

COMMENTARY

Pediatric, dental communities concerned about safe sedation for kids

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New studies about proper sedation of children and the need for pediatricians to know how to rescue a patient from sedation have prompted the Academy to publish an addendum to its guideline (*Pediatrics*. 2002;110:836-838).

The addendum (*Guidelines for Monitoring and Management of Pediatric Patients During and After Sedation for Diagnostic and Therapeutic Procedures: Addendum*) is the latest in a series of updates to previous guidelines developed by the Academy in cooperation with pediatric dentists and other experts.

Clearing misconceptions

The Academy first took a proactive approach and developed guidelines for pediatricians in the early 1980s, after several children suffered adverse events from sedation for dental procedures. Pediatricians needed an explanation of what "clearing for dental anesthesia" meant.

With help from the pediatric dental community, the AAP Sections on Anesthesiology, and Hospital Care, and the Committee on Drugs developed guidelines for children sedated for procedures titled *Guidelines for the Elective Use of Conscious Sedation, Deep Sedation and General Anesthesia in Pediatric Patients* (*Pediatrics*. 1985;76:317-321; *ASDC J Dent Child*. 1986;53:21-22).

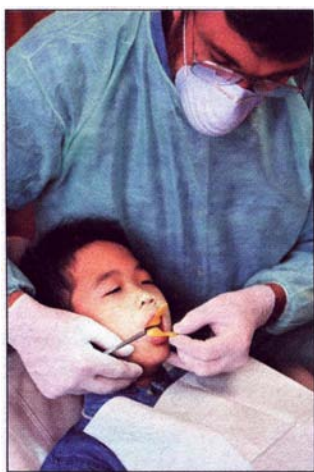
For years after the guideline was published, it was not being followed. Because it included the word "anesthesia" in the title, practitioners assumed the guideline applied only to physicians who administered anesthesia. Changes were made to the guideline to reflect the fact that it was intended for all children who undergo sedation (*Pediatrics*. 1992;89:1110-1115).

A systematic approach was suggested. Pulse oximetry was recommended for all children sedated for a procedure. The guideline recommended against the use of prescription medications at home prior to a procedure and developed a structured approach to sedation similar to that used for screening and preparing patients for anesthesiology (i.e., appropriate fasting, appropriate pre-sedation history and physical examination, appropriate monitoring during and after the procedure and strict discharge criteria). This same systematic approach to the practice of anesthesiology has reduced anesthesiology-associated mortality from approximately 1 in 10,000 patients in the 1950s to approximately 1 in 200,000 in 2002. It was hoped that a similar systematic approach would reduce sedation-related adverse outcomes.

Other guidelines developed

When the revised draft guideline was distributed for review, the American Academy of Pediatric Dentistry (AAPD) chose not to sign on and instead developed its own guideline (*Pediatr Dent*. 1993;15:297-299). The AAPD guideline differed in that it allowed home prescriptions and had a different definition of "conscious sedation."

Shortly after the AAP guideline was published, the Joint Commission on Accreditation of Healthcare



Organizations (JCAHO) became interested in sedation. Its hospital procedure manual made the hospital's chief of anesthesiology responsible for developing "within institution" sedation guidelines. Because of concerns raised by language in the JCAHO documents, the American Society of Anesthesiologists (ASA) formed a Task Force for Sedation and Analgesia by Non-Anesthesiologists. Using the help of a statistician and a panel of experts, they reviewed the world's literature and replaced the phrase "conscious sedation" with a more precise phrase "sedation/analgesia" (*Anesthesiology*. 1996;84:459-471). This phrase was meant to characterize a patient who would respond appropriately and purposefully to verbal command or physical stimulation (not reflex withdrawal to a painful stimulus).

Following publication of the first ASA guideline, it became clear that the language used to describe sedation was still somewhat "muddy" and the ASA developed revised sedation definitions later adopted by the JCAHO.

A new classification was introduced: "minimal sedation," "moderate sedation," "deep sedation" and "general anesthesia." Minimal sedation is equivalent to what practitioners previously called "anxiolysis." Moderate sedation is equivalent to what anesthesiologists used to call "sedation/analgesia" and other practitioners called "conscious sedation."

Deep sedation is the same as previously defined. The caveat, however, is that if someone requires any kind of airway maneuver to maintain a patent airway or who loses contact with the environment (i.e., does not respond purposefully to verbal command or mild stimulation), he or she should be considered in a state of deep sedation.

In 2001, the JCAHO introduced this new language into its *2000 Comprehensive Accreditation Manual for Hospitals* with a most important change — the concept of "rescue." The ASA also reconvened to develop a new document (*Anesthesiology*. 2002;96:1004-1017).

Rescue from sedation

If the intended level of sedation is "anxiolysis" (i.e., "minimal sedation"), the practitioner must have the skills to rescue a patient who might progress to the next level of sedation. If the intended level of sedation is "moderate sedation," previously called "conscious

sedation or sedation/analgesia," the practitioner must have the skills to rescue somebody who might progress to deep sedation. In turn, if the intended level of sedation is "deep sedation," the practitioner must have the skills to rescue the person from general anesthesia.

For patients whose intended level of sedation is deep, the practitioner must have the skills to manage an obstructed airway, to remove the obstruction from the airway, to perform a jaw thrust, insert oral and nasal airways and perform bag/mask ventilation (i.e., advanced airway skills).

In unison

In 1999, the Academy recognized the need to update its guideline to coincide with the ASA and JCAHO and new information from papers on sedation-related accidents that provided clarity regarding sedation accidents.

Studies had found that the main contributory factors to adverse outcomes were failure to recognize the evolving adverse event because of a lack of monitoring and failure to rescue the patients because of a lack of airway management and CPR skills (*Pediatrics*. 2000;105:805-814). It was not the drug (drug class), it was not the route of administration, but, rather, it was the response of the patient to those medications (*Pediatrics*. 2000;106:633-644).

Other issues were drug interactions, prescription or transcription errors, improper recovery procedures and inadequate pre-sedation evaluation.

In two cases, children had received sedating medications at home prior to a procedure. Both had received what ordinarily would be considered light levels of sedation (60 mg/kg of chloral hydrate or 0.5 mg/kg of oral midazolam). Following administration of the sedating medications by a parent, the children were placed in a car seat. Both were found dead upon arrival at the practitioner's office. The likely mechanism was the child falling asleep with the head falling forward, causing airway obstruction. These cases underscore why the AAP guideline recommended against at-home administration of sedating medications and illustrate how pediatricians might become entangled in a malpractice case if they write a sedation prescription at the request of another specialist.

Changes in language and documentation of sedation accidents are reflected in the addendum in the October 2002 *Pediatrics*. It reiterates the principles outlined in the earlier documents and adopts language from the ASA and JCAHO. It also clarifies that the guideline applies to all children who are sedated, whether in a practitioner's office, a free-standing facility or a hospital-based environment.

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Groups will work to form conjoint guidelines

Some remaining differences of opinion exist among the dental and pediatric communities as well as some pediatric specialties regarding sedation guidelines, drugs and how closely guidelines should be followed. The Academy and the American Academy of Pediatric Dentistry are forming a Sedation Task Force to move forward with a conjoint iteration of their guidelines. The AAP Committee on Drugs will work in conjunction with dental and other specialists to develop language that is consistent across all specialties so no differences exist among anesthesiologists, the Joint Commission on Accreditation of Healthcare Organizations, the Academy, the dental community and pediatric subspecialties.