

Staying Safe and Sedating with a Smile

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“During my pregnancy, I became hysterical and frightened and begged for sedation. And that was just the first prenatal visit.”

Erma Bombeck



Erma Bombeck, the domestic equivalent of Will Rogers in the late 1970s, regaled middle America with stories of household peril, typically in *Reader's Digest*, and my mother swore by the woman. I'm going to extrapolate from the quote above to summarize the perils of procedural sedation in dentistry: It's perceived a panacea by many, the "end all, be all" to anxiety and pain. Pediatric literature is consistent in the notion that procedural sedation ultimately is about 60-70 percent effective. It is important to note that this end point is often independent of the cocktails used, and the doses applied.

However, in my travels and teaching, I do find a consistent segment of Pediatric Dentistry who swears by the reliability of certain medications, regimens or dosing. It is imperative to understand the fallacy in this assumption. Pharmacologic-driven dental care of an individual child with individual fears, needs and coping strategies requires case-by-case evaluation of each patient. More often the "never-fails" are a product of a practitioner with flexible definitions of success, or very specific criteria for who gets sedated. Some thoughts on specific pitfalls we may find ourselves include:

1. The Cocktail Approach. James Bond, beware. Whether "shaken or stirred," multiple medication cocktails are susceptible to multiple medication latencies, onsets and durations. Each component has the potential to prey upon the fact that approximately 20 percent of children can be either hypo-responders (not feeling the effect at all) or hyper-responders (moving into a "deep moderate" sedation with a small dose). Typically, if I recommend polypharmacy, I will require the child is of optimal health with a visible/good airway history, and I tend to reduce cumulative doses. Cote has noted that "there was a marked increased risk of events when three or more medications were used for sedation"¹ Remember, we need to count local anesthetic and nitrous oxide as medications used, so even just the "versed" sedation is open to adverse events. Many of our newer cocktails have limited evidence and should be approached with caution.

- 2. Successful and Effective.** Do you define success as a satisfied parent? The treatment getting done? No protective stabilization employed? Something else? Unquestionably, your definition of success will impact how you dose, and what you tolerate in a patient's behavior. Entering my 15th year of teaching sedation, I have learned that some residents tolerate movement and sing "Frozen" songs through it all, and others demand absolute silence like a master magician. I don't try to break those expectations, but work them into the regimen and the idea of what is "successful." I always start with the thought of whether we are doing behavior modification (tweaking what is there) or behavior suppression (looking to rely more on sleep to get through).
- 3. Process Is as Process Does.** Much of dental sedation safety efforts are based on checklists and protocols, mirroring the airline industry. This is critical indeed. The dosing and medications are always secondary to a good, reproducible process. When I teach my residents, a versed sedation is the same as a chloral hydrate combo. We approach it the same way, a methodical approach to assessment, monitoring and discharge. Hyper-responders mean about 10 percent of versed sedations will get deeper than planned. Are you ready to rescue them when they do? It's not if, it's when. The work of Charles Cote is seminal in understanding how things can go wrong in sedation. His classic 2012 article noted factors associated with adverse events during sedation as drug interactions, high dose/drug overdose, premature discharge, prescription, and inadequate understanding of administered medications (pharmacokinetics/pharmacodynamics, administration by parents or family members).²

In conclusion, I will admit here for all pediatric dental posterity: I still get nervous when I do or cover a sedation. We are introducing a medication into an immature physiologic machine with a poorly positioned anatomic airway and lungs that can either scream your ears off, or completely close up. Fear is something that should focus us and make us increase our attention to detail and safety. Often experience is the best teacher, and methodical process improvement and attention to outcomes are key guides. For those who bemoan when a sedation doesn't go as planned, I'll close with Erma again, "I'm not a failure. I failed at doing something, there's a big difference."

References

1. Cote CJ, Karl HW, Notterman DA, et al. Adverse sedation events in pediatrics: analysis of medications used for sedation. *Pediatrics*. 2000;106:633-644.
2. Cote CJ, Daniel A, Notterman HW, et al. Adverse sedation events in pediatrics: a critical incident analysis of contributing factors. *Pediatrics*. 2000;105:805-814.