**Introduction**

There is a major trend in dentistry for patients to ask for and need sedation to help them alleviate fears and get the dental treatment they need. As dentists, we need to be well versed in how to safely and effectively use sedation to meet this growing need. In part II we will discuss some helpful techniques on how to orally sedate patients. Children have different physiology, anatomy and behavior patterns and require more rigorous training and experience to safely sedate, as such oral sedation for pediatrics is beyond the scope of this article. One should not sedate a child without proper training and experience specific to that patient population.

First it is important to manage expectations. Oral sedation may calm and relax a patient, but it is not designed to be general anesthesia or deep sedation (although these levels of sedation can be reached via any route). As such there is an expected failure rate for oral sedation, as some patients don’t sedate well, and some need deep sedation or general anesthesia.

**Definitions of the different levels of sedation**

According the Oregon Dental Practice Act the following definitions apply:

**Minimal Sedation**—“Patient independently maintains airway and responds normally to verbal commands”

**Moderate Sedation** (formerly conscious sedation) - “No interventions are necessary to maintain a patent airway. Patient responds purposefully to verbal commands or light tactile stimulation”

**Deep Sedation**—“Patient responds following repeated painful stimulation”

**General Anesthesia**—“Patient is not arousable even to painful stimulation”

Medications and doses should be given within a range that would make taking a patient deeper than intended unlikely (If a patient gets over-sedated a stimulating jaw thrust forward is the initial step to treatment-This pulls the genioglossus forward and thus pulls the tongue off the back of the throat and corrects an obstructed breathing pattern).

**Permitting**

The Oregon Dental Board does not require a sedation permit for anxiolysis. This is defined as the MRD (maximum recommended dose) approved for unmonitored use. For example, any dentist can prescribe 0.25mg of Triazolam or 5mg of Ambien to a patient without needing a permit. This is the same dose that a physician would prescribe as a sleep aid to a patient to safely take at home without monitors or being observed. The package insert for Triazolam states that “A dose of 0.5 mg should be used only for exceptional patients who do not respond the initial dose.” Also lower doses should be given to elderly patients, usually half the regular dose is appropriate.

When a dentist provides a dose above the MRD dose, then they are said to be practicing sedation and would need a moderate sedation permit. Also, if a dentist is giving an oral sedative plus adding nitrous oxide then they would need a minimal sedation permit. Along with these permits are additional requirements.
Patients who tend to respond well to oral sedation:
- Mild to moderately fearful patients
- Medically complex patients - Safer because it minimizes the stress of the appointment.
- Patients with a strong gag reflex
- Wants treatment done but is nervous

Patients for whom oral sedation doesn’t work well (i.e. often requires deep sedation or general anesthesia):
- Young (pre-cooperation) children
- Mentally handicapped-MR, autism, dementia
- Patients with OSA (obstructive sleep apnea)-Obstruct easily
- Obese patients-better to use shorter acting drugs
- Patients with previous drug abuse histories
- Patients with chronic pain issues
- Patients with a strong “need to be in control”

Physiology of Oral Sedation
When one takes a sedative medication orally it must travel down the esophagus and into the stomach where it waits until gastric emptying allows the medication into the small intestines where it can be absorbed into the hepatic portal system. The medication is then sent to the liver and some of it is metabolized before it even reaches the systemic circulation. This is called the first pass effect.

There are some clinically important facts that come from this understanding of how an oral drug is absorbed. First, if the patient has gastroparesis (a stoppage of gastric motility, i.e. the drug just sits in the stomach) then it cannot be absorbed. So if the patient ate a hamburger prior to taking a Valium before your appointment, you wouldn’t expect to see a great affect because it would take a long time for the drug to pass through to the small intestines. Not only will a full stomach cause gastroparesis, but also diabetes, obesity, narcotic medications, pain and anxiety.

Secondly, many benzodiazepines have a significant first pass effect, meaning that some of the medication will be metabolized before it gets to the blood stream. Thus sublingual administration of oral medications will produce a greater affect and higher blood plasma levels. One study showed an increase in plasma concentration by an average of 28% when utilizing the sublingual administration (Scavone JM J Clin Pharmacol. 1986 Mar; 26(3):208-10). Another report showed a 15% increase in Xanax (alprazolam) plasma concentrations and a 30 minute faster peak effect time with sublingual administration (Scavone JM J Clin Psychopharmacol. 1987 Oct;7(5):332-4). Also many drugs can inhibit the metabolism of Triazolam and thus increase the plasma concentration and clinical effect (see side note for list).

Sublingual Administration
Giving a medication sublingually can increase its clinical effectiveness and can improve patients satisfaction. To do this first have the patient swish their mouth with warm water for 1-2 minutes prior to giving the oral drug (usually Triazolam), crush up the medication into a powder, place it under the tongue and have the patient hold their tongue down against the floor of the mouth until the medication is absorbed. Some clinicians like to add a crushed up life saver to the powder because it has a somewhat bitter taste.

Timing and Duration of Action
In a patient who is NPO (nothing to eat for 6-8 hours and nothing to drink for 2 hours), the peak effect of oral Triazolam is about 75 minutes after sublingual administration and about 90 minutes after regular oral administration. One must remember the effect of oral sedatives can last for hours after the last dose is given; unlike IV sedation medications which have a much quicker recovery.
Example Technique for Oral Sedation

A 56 year old male presents for RCT on tooth #14. Patient weighs 185 pounds and is 5’8” tall. He is very anxious for the root canal treatment. Medical history is significant for high blood pressure, high cholesterol, and diabetes. He takes metoprolol 25mg BID, simvastatin 40mg daily, and metformin 500 mg BID. He has trouble sleeping the night before dental appointment due to “nerves”. He denies snoring or having obstructive sleep apnea.

Plan:
Write the patient a prescription for:

Halcion 0.25mg
DISP: 2 tablets
SIG: 1 tablet PO 1 hour HS the night before dental appointment. Then bring other tablet with you to the dental appointment.

- Have the patient take all his medications with small sips of water in the morning.
- Have the patient not eat anything for 6-8 hours prior to the appointment, but can have clear liquids 2 hours prior.
- Take pre-operative vitals.
- Have the patient come to the office 60 minutes before the appointment.
- Have the patient swish with warm water inside the mouth for 1-2 minutes.
- Crush up the second Triazolam and place it sublingually.
- When the medication looks like it is working (around 60 minutes in) give local and start your treatment.
- After treatment is completed, give post op instructions to the escort who will drive the patient home.
- Also inform the patient that their memory may be impaired.

Dr. Ryan Allred is a dentist anesthesiologist practicing in the Portland, Oregon area. He travels to dental offices providing all levels of anesthesia, from IV sedation to general anesthesia, for pediatric, adult and medically complex patients. This allows both dentist and patient to have a smooth and comfortable experience in some of the most challenging cases. More information about Dr. Allred’s training and services offered by Portland Dental Anesthesia can be found at www.portlanddentalanesthesia.com.

If you would like meet with Dr. Allred call 503-858-4880, or if you would like to consult about how to go about sedating a specific patient email him at ryanallred@portlanddentalanesthesia.com.

If you have a patient in your office that might need deep sedation or general anesthesia, please call 503-858-4880.
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