

Indication and Considerations for Conscious Sedation

Patients who are anxious, have dental phobia, or have a strong gag reflex may be ideal candidates to receive mild or moderate conscious sedation at Triax Dental. During conscious sedation, the patient will be able to relax long enough to receive necessary treatment while being able to respond to stimulation and maintain his/her own airway as well as protective reflexes. Patients receiving oral or IV conscious sedation will require someone to accompany them to their appointment and to help care for them for a few hours after treatment.

Sedation Types

Minimal (anxiolysis): Reduces anxiety via minimally depressed level of consciousness produced by a pharmacologic method that allows a patient to continue breathing independently and respond to tactile stimulation and verbal commands. Cognitive function may be temporarily impaired during administration, but the airway, breathing, and cardiovascular function remains unaffected.

- Types: N2O, oral sedation, IM sedation, and/or nitrous in combination.

Moderate: Reduces anxiety as well as promotes amnesia via a moderately depressed level of consciousness. Patients may be asleep at times but are able to respond purposefully to verbal commands alone or with light tactile stimulation. Airways are typically unaffected, independent breathing is maintained, and cardiovascular function is usually maintained.

- Types: oral sedation, IM, and IV sedation with or without nitrous oxide.

Deep: Patients are in a deeper state of sedation where they cannot be easily aroused but are able to respond to repeated painful stimuli. Independent breathing may be impaired, and one may have difficulty maintaining a patent airway. Cardiovascular function is usually maintained, and intervention to maintain airway may be required. Most general dentists in Tennessee are unable to provide this deep level of sedation, and patients would require treatment by either a dental anesthesiologist or an oral surgeon.

- Types: IV sedation.

General Anesthesia: Deepest state of sedation where one's reflexes and airway are both impaired. Intervention to one's airway is often required, and spontaneous ventilation and cardiovascular function are not adequate. This is not to be considered a part of conscious sedation and is generally confined to hospitals or surgical centers.

- Types: IV sedation, inhalational anesthesia with required intubation.

There are four primary ways that **mild** or **moderate** conscious sedation is administered at Triax Dental:

1. Inhalational gas (nitrous oxide)– either via nasal hood
2. Oral sedation (in the form of syrup or pill) – usually benzodiazepines or alpha-2 agonists are used
3. Intramuscular injection (shot in the arm) – typically an opiate and/or benzodiazepine is used
4. Intravenous sedation (constant IV drip through a vein in arm) - typically benzodiazepines and/or opiates are used

Types of Mild and Moderate Conscious Sedation:

- **Nitrous Oxide (N₂O):** A colorless, slightly sweet gas used to calm mild or moderate anxiety for patients able to breathe through their nose. This is a mild conscious sedation technique, and patients can swallow, talk, and cough as needed throughout the procedure. When inhaled, N₂O can induce feelings of euphoria and relaxation. The anesthetic gas is delivered through a nasal mask and is mixed with oxygen in a specific ratio tailored for each patient's comfort. The patient can expect to feel the effects of the "laughing gas" within a few minutes, and may feel sensations of drowsiness, tingling in extremities, or mild lightheadedness. The effects of the gas are mild, and it is safely and quickly eliminated from the body once it is no longer administered. The patient will be given pure oxygen prior to dismissal to ensure the effects are no longer present in the body. Patients can return to work or drive after receiving treatment under nitrous oxide.
- **Oral Conscious Sedation:** Can be administered in either pill or liquid form and is used to reduce moderate or severe fear and anxiety related to dental procedures. Depending on the medication type, it may be obtained either by prescription or dispensed at the office and can be used in combination with nitrous, IM, or IV sedation as needed to achieve desired effects. During oral sedation, one may be sleepy or asleep but easily aroused and will have little or no recollection of the appointment. The patient can continue to respond to simple commands, but will have reduced awareness of unpleasant sights, sounds, and sensations associated with the procedure. Patients will need to be accompanied to the office and cannot return to work or drive after receiving oral conscious sedation.

- **Intramuscular (IM) Sedation:** Medication is administered via an injection into a muscular region such as an arm or thigh to reduce moderate or severe fear and anxiety related to dental procedures. Often takes longer to achieve sedation than IV sedation, but is quicker acting than oral sedation and can be used in conjunction with other sedation types. Patients will need to be accompanied to the office and cannot return to work or drive after receiving IM conscious sedation.
- **Intravenous (IV) Sedation:** Medication is administered via a slow IV drip in a vein (typically in the hand or arm) to aid with moderate conscious sedation. The use of IV sedation requires advanced training, but is the one of the safest means to titrate medication dosages and achieve immediate effect for an individual. Typically, a benzodiazepine is used alone or in combination with an opioid (see below for medication types). This is the best mode of treatment for lengthy appointments where amnesia and anxiolysis are the desired effects. Patients will need to be accompanied to the office and cannot return to work or drive after receiving IV conscious sedation.

For additional information regarding indications, advantages, disadvantages, side effects, risks, and medications utilized, please see Addendum.

Sedation Medications Used at Triax:

- **Benzodiazepines:** used for patients with general anxiety, anxiolytic (relaxation without sleep), amnesia, anticonvulsant, and even sedative effects (minimal anesthesia effects)
 - **Midazolam (Versed):** Can be administered via liquid syrup taken orally or via IV/IM. The syrup contains a red dye, so please alert the dentist if you have a red dye allergy or adverse effects
 - **Triazolam (Halcion):** Administered via pill form, benzodiazepine with anxiolytic, sedative, amnesiac effects
 - **Diazepam (Valium):** Administered via pill form, benzodiazepine with anxiolytic and light sedative effects
 - **Lorazepam (Ativan):** Administered via pill form, benzodiazepine with anxiolytic and light sedative effects
 - Effects: muscle relaxant, slowed response, response to tactile stimulation, increases threshold for seizures
 - Side effects: decrease in efforts to breathe, lowers blood pressure, causes sleepiness
 - Reversal: If adverse reactions occur, can administer flumazenil (via IV or IM)
- **Opioids:** produce morphine-like effects that mimic the actions of endorphins, aiding with anesthesia and causing sedative effects; can be administered in addition to benzodiazepines to aid in “restlessness” and “uncooperativeness”
 - **Fentanyl:** potent synthetic opioid anesthetic for analgesia and sedation, quick acting
 - Effects: increases pain threshold, decreases reaction to pain, euphoria (pleasure), analgesia without loss of consciousness, drowsiness, sleepiness
 - Side effects: respiratory depression (chest wall stiffness), decreased blood pressure, nausea and vomiting
 - Reversal: If adverse reactions occur, can administer naloxone
 - Caution: should be avoided if patients have history of substance abuse
- **Adrenergic alpha-2 agonists:** can be used to aid in relaxation due to ability to decrease blood pressure in addition to sedate via muscle relaxation, oral administration prior to IV sedation can reduce total amount of medication administered
 - **Clonidine:** typically used to reduce blood pressure and hot flashes, but has also shown positive results alleviating opioid withdrawal
 - Side effect: insomnia (long term), dry mouth, low blood pressure, headache, dizziness, orthostatic hypotension
 - Caution: should not be used for patients with low blood pressure
- **Reversal agents:** typically administered via IV (but can also be given via IM or sublingual injection)
 - **Flumazenil (Romazicon):** reversal agent for benzodiazepines
 - **Naloxone (Narcan):** reversal agent for opioids
- **Emergency medications:** can include but are not limited to antibiotics, antihistamines, and antiarrhythmic agents

I understand that undergoing oral or intravenous (IV) sedation includes the possible inherent risks, such as, but not limited to the following (please initial):

_____ **Need for limitation of food and drink.** I understand that I must refrain from any food or drink after midnight for a morning appointment. Prior to an afternoon appointment, I will be limited to a light breakfast no later than six hours before treatment time and clear liquids up to three hours before treatment. I also understand that a hydration schedule may be advised for ease of IV placement and I will follow instructions on the NPO Order Sheet.

_____ **Changes in health are important for the dentist to know, including fevers or a cold.** I am expected to convey this information to the dentist at least two days prior to a planned appointment when conscious sedation is possible, and understand that if I am sick, my appointment will be rescheduled for my safety and well-being

_____ **A responsible adult must accompany me at the time of discharge, and I understand that I may not drive a vehicle, or take a bus or taxi after undergoing IV sedation/anesthesia.**

_____ **Women: Anesthesia/medications and drugs may be harmful to an unborn child and may cause birth defects or spontaneous abortion.** I accept full responsibility for informing the dentist or attending anesthesiologist/anesthetist of a suspected or confirmed pregnancy.

_____ **Bruising or tenderness of the IV induction site may occur.** Some sedative agents may cause a burning or itching sensation in the wrist or arm during induction. Edema may be caused when excessive IV sedation fluid enters surrounding tissues and may take several days to resolve.

_____ **Complications due to drugs and anesthesia, which include but are not limited to: tenderness, bruising, nausea, vomiting, swelling, bleeding, infection, numbness, allergic reaction, stroke, and heart attacks.** Some of these complications, although rare, may require hospitalization and may even result in death.

_____ To the best of my knowledge, I am not allergic to any of the aforementioned medications and have notified Triax of all adverse reactions that I have had to local and general anesthesia.

_____ I understand that while sedated, I will be unable to give informed consent for invasive treatment and have taken the opportunity to understand all necessary treatment prior to sedation. In the event that I may need additional treatment such as fillings, crowns, extractions, or root canals performed during sedation, I hereby give permission to the doctor to use his/her best clinical judgment and perform necessary treatment for my safety and well-being.

I have been given the opportunity to ask any questions regarding the necessary treatment as well as the nature and purpose of IV sedation/ anesthesia and have received answers to my satisfaction. I do voluntarily assume any and all possible risks, including the risk of substantial harm, if any, or even death, which may be associated with any phase of receiving IV sedation/anesthesia in hopes of obtaining the desired results, which may or may not be achieved.

No guarantees or promises have been made to me concerning my recovery and results of the treatment to be rendered to me. The fee(s) for this service have been explained to me and are satisfactory.

By signing this form, I am freely giving my consent to allow and authorize Michael D. Vaughan, D.D.S., PLC d/b/a Triax Dental, to render any treatment necessary or advisable to my dental conditions, including any or all anesthetics and medications, for the benefit of the patient.

Patient name (print)

Date

Name of Legal Guardian, or Authorized Representative (If Applicable)

Signature of Patient, Legal Guardian, or Authorized Representative

Addendum:

Type	Nitrous Oxide	Oral Sedation	IM Sedation	IV Sedation
Indication	mild apprehension, anxiety, reducing awareness, involuntary gagging	moderate or severe anxiety/apprehension, gag reflex	lack of cooperation or inability to take oral medication or start an IV	moderate to severe anxiety or apprehension, severe gag reflex, deeper sedation in safer manner
Advantages	inexpensive, rapid onset of action, quick elimination (can return to work or drive), can be titrated	cost effective, anxiolysis with some amnesia	more effective absorption and faster acting than oral meds	customized titration, rapid onset of action, vague or minimal recollection
Disadvantages	cooperation to breathe in gas for maximum effect, may not always produce desired effect	inability to titrate effectively (unpredictable), delayed onset of action, delayed effect	unable to titrate as effectively as IV, delayed onset of action, needle use, soreness in arm	needle, skin irritation at site of catheter (including bruising), cost (additional training and equipment required)
Contraindications	pregnancy, mouth breathing, nasal obstruction, chronic obstructive pulmonary disease, untreated B12 deficiency	allergy to benzodiazepine, chronic drug use, acute narrow angle glaucoma, pregnancy, severe kidney or liver disease	lack of area with adequate muscle mass (muscular atrophy), severe liver or kidney disease	pregnancy, obesity, difficult to manage airways, complex medical history, severe liver or kidney disease
Medications	nitrous oxide and oxygen	mostly benzodiazepines either in pill or liquid form, namely Midazolam (Versed), Triazolam (Halcion), Lorazepam (Ativan), Diazepam (Valium), and Alprazolam (Xanax); clonidine (alpha-2 agonist)	mainly fentanyl (opioid narcotic), but sometimes midazolam (versed), or reversal agents such as flumazenil and naloxone	midazolam usually used in combination with fentanyl
Side effects	dizziness, nausea, drowsiness (temporary)	nausea and vomiting, respiratory depression (in larger doses)	Irritation/bruising of skin, nausea and vomiting, respiratory depression	nausea and vomiting, irritation/pain or swelling in the skin and veins, respiratory depression
Risks (rare)	overdose, leading to hypoxia, severe hypotension, unconsciousness	must not eat before to avoid aspiration into lungs, breathing problems, cardiac arrest	must not eat before to avoid aspiration into lungs, breathing problems, cardiac arrest	aspiration into lungs, breathing problems, phlebitis (inflammation of vein), infection, brain damage, cardiac arrest, death