



Lifelong
Learning



Who Should Administer Conscious Sedation?

Part One: What exactly is conscious sedation?

In this three part series we discuss conscious sedation, a relatively young and increasingly popular technique of administering sedatives, analgesics, hypnotics or dissociative agents to induce a state that allows the patient to tolerate unpleasant procedures while maintaining cardiorespiratory function and responsiveness.

From its origins in dentistry it has progressed to emergency departments, day hospitals, doctors rooms and dental surgeries. Some resistance to advanced sedation techniques used outside the operating room by non-anesthetists has been voiced.

Common purposes include:

- Setting fractures, reducing dislocations
- Draining abscesses
- Plastic surgery
- Dermatology
- Endoscopy
- Cardioversion
- Dental procedures
- Trans-oesophageal echocardiogram
- Imaging or minor procedures where the patient is unable (or unwilling) to keep still - especially children

Introduction

To address the very important question raised in the headline we need first to understand what conscious sedation is about and the issues that complicate this question.

About the author

Professor James Roelotse MB ChB, M Med (Anaes), PhD (Anaes) is Head of Sedation and Pain Control at the University of the Western Cape, Cape Town and Visiting Professor at the University College London, London, UK.

It should be emphasised that many professional sedation societies around the world no longer use the term 'conscious sedation'. In the US the term is often considered an oxymoron or even a myth.

The use of the term conscious sedation is almost exclusively limited to the UK where it defines one of the levels of sedation. Sedation practitioners in SA and the rest of the world prefer 'moderate sedation' and 'analgesia'. They believe moderate sedation and analgesia more accurately describe what sedation practitioners do.

The UK definition of CS includes a requirement that the patient must respond to verbal command at all times during sedation; this is called an 'appropriate response'. In SA and the rest of the world, mild physical (tactile) stimulation as a way to determine the level of consciousness (LOC) is included in the definition of CS. It is often said that the term conscious sedation is 'dentistry driven'.

Whatever the term used, the crucial point to understand is that sedation practitioners administer drugs and those drugs may influence the LOC. Those drugs depress the respiratory system and may cause airway obstruction.

- To answer the question of who should administer CS it is important to understand that there are two sedation techniques available to sedation practitioners:
- Simple/basic techniques
- Advanced techniques that involve advanced or combination drugs.

Which drugs fall into each of these techniques and who should administer them are currently areas of controversy: not all sedation practitioners support who should give which drugs.

What is conscious sedation?¹

"Conscious sedation is a technique in which the use of a drug or drugs produces a state of depression of the central nervous system (and the respiratory system) enabling treatment

Injectomat
TCI Pump

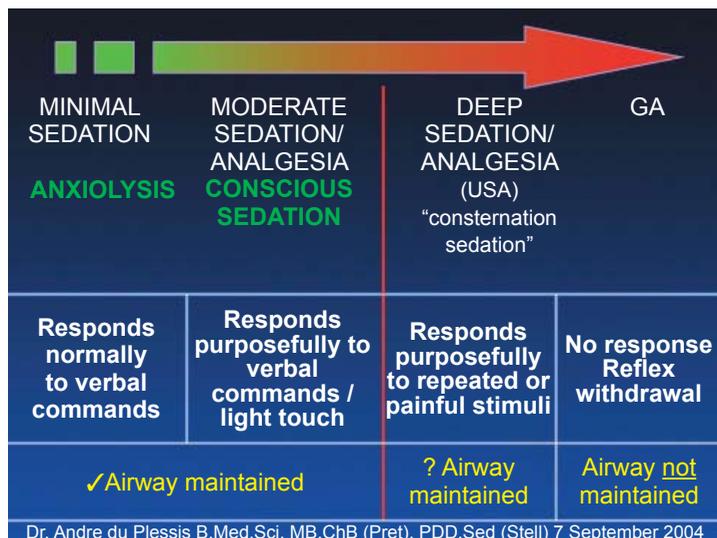


Injectomat
MC Pump





The conscious sedation continuum



to be carried out, but during which verbal contact with the patient is maintained throughout the period of sedation." (UK Department of Health 2003).

In other words the sedation practitioner will alter the level of consciousness by administration of drugs but the patient will still be able to respond to verbal commands. This is called an appropriate response. The idea is to make the patient comfortable, free from anxiety and pain, drowsy, and the patient may even sleep, but not unconscious.

"The drugs and techniques used to provide conscious sedation for treatment should carry a margin of safety wide enough to render loss of consciousness unlikely. The level of sedation (LOC) must be such that the patient remains conscious, retains protective airway reflexes, ie, coughing and swallowing, and be able to respond to verbal commands." (UK Department of Health 2003).

The effective management of pain and anxiety before, during and after operations is of paramount importance if sedation practitioners are to achieve patient satisfaction. CS is a fundamental component of this objective. When the term conscious sedation was initially developed it implied the patient must be comfortable **during** the operation. This is contrary to the current belief that the patient must be comfortable **before, during, and after** the operation.

It must however be remembered that local/regional anaesthesia plays an important part in providing analgesia. The safety record is excellent, as all international guidelines on sedation expect sedation practitioners to be trained, and to update their knowledge and skills regularly by attending courses and symposia.

Procedural sedation and analgesia (PSAA)

Many sedation societies around the world feel that sedation practitioners should use the term Procedural Sedation and Analgesia (PSAA) as a more appropriate and accurate description of what they do when they administer sedative and analgesic drugs.² PSAA describes a sedation continuum ranging from light to deep sedation, with the depth of sedation easily titrated by selective administration of sedative and analgesic drugs. The more drugs the sedation practitioner administers, the deeper the level of consciousness will be, with the possibility of unconsciousness, a state not desirable outside the operating theatre.

Conscious sedation continuum

Therefore a continuum exists (see figure) that ranges through the following:

- Minimal sedation or anxiolysis, (a calm, relaxed state/changing the mood of the patient)
- Moderate sedation and analgesia (conscious sedation)
- Profound, deep sedation (an unconscious or hypnotic state called 'light general anaesthesia' in the UK)
- General anaesthesia (unconsciousness).

If a sedation practitioner claims he practices PSAA then it can be at any level on the sedation continuum described above.

Built into the concept of a sedation continuum is the fundamental concept of titration. Intravenous drugs for sedation need to be titrated to effect as titration eliminates guesswork and ensure a safe sedation experience.

Non-dissociative and dissociative sedation

The terms 'non-dissociative sedation' and 'dissociative sedation' are increasingly used today in sedation practice and need further clarification.³

The non-dissociative drugs eg, opioids, benzodiazepines, barbiturates, etomidate, propofol, and dexmedetomidine, operate on the sedation continuum. The more of these drugs the sedation practitioner administers, the deeper the patient's LOC will become, with the possibility of a higher incidence of respiratory depression, adverse events and even unconsciousness. This is where titration of intravenous drugs is so crucial.

Dissociative sedation is produced by the use of ketamine, a N-Methyl-D-aspartate (NMDA) receptor antagonist. A trance-like cataleptic state is induced, characterised by intense analgesia and sedation, amnesia, retention of protective reflexes, spontaneous breathing, and cardiovascular and respiratory stability.

**Injectomat
TCI Pump**



**Injectomat
MC Pump**





Some sedation practitioners believe that ketamine produces a sedation level which does not operate on the sedation continuum as long as the doses administered are within the PSAA range. They contend that all that is necessary with ketamine administration is to 'top up' the dissociative dose when the patient needs more sedation, which is much lower than the anaesthetic dose. Other sedation practitioners disagree. Whatever the opinions, ketamine is a drug increasingly being used for its sedative and analgesic effects in PSAA and in other areas of medicine.

Sedation techniques⁴

As mentioned earlier, sedation practitioners acknowledge⁴ two sedation techniques:

- Simple/basic sedation techniques
- Advanced techniques that involve advanced or combination drugs.

These give an indication of who should administer conscious sedation.

There is intense debate and currently no consensus on who should be allowed to perform these techniques. The debate is especially between anaesthetists and non-anaesthetists although the guidelines from the SA Society of Anaesthetists are clear about this.⁴

Simple techniques involve the administration of a single drug. These can be performed by operator sedationists (whilst the sedation practitioner performs the operation, monitors the patient, and administers other drugs).

Advanced techniques usually involve combinations of drugs and should be administered only by the dedicated sedation practitioner (who administer drugs and also monitors the patient).

Simple/basic technique⁴

The above involves the administration of a single drug ie, a benzodiazepine. A combination of drugs implies an advanced sedation technique.

Some of the drugs applicable to simple/basic sedation are:

- Oral or transmucosal drugs ie, benzodiazepines like midazolam or
- Inhaled combinations of nitrous oxide (N₂O) and oxygen with the concentration of N₂O not exceeding 50% or
- Titrated intravenous midazolam with a maximum of



Simple/basic conscious sedation is useful when setting fractures and reducing dislocations.

0.1mg/kg; but never a combination of drugs mentioned.

Simple analgesic drugs ie, paracetamol and the non-steroidal anti-inflammatory drugs do not fall within the definition of simple/basic sedation.

Advanced technique⁴

Any of the following sedation techniques would be classified as an advanced technique:

- Infusion techniques: ie, target controlled infusions (TCI) or total intravenous anaesthesia (TIVA)
- Sedation by the intravenous route with any of propofol, ketamine, dexmedetomidine, etomidate and the opiates
- A inhalation anaesthetic agent: ie, sevoflurane
- Any combination of drugs, administered by any route.

Safety

It is essential that a wide margin of safety be maintained between conscious sedation and the unconscious state achieved in general anaesthesia, where verbal communication/response to tactile stimulation with the patient, and protective reflexes are lost. It is important that there is a clear understanding by the patient and the sedation team that conscious sedation does not mean the patient will be 'knocked out'.

With the use of non-dissociative drugs, the key to prevention of deeper levels of sedation and possible sedation complications is the careful titration of the drugs to the desired effect.

References

1. *Conscious Sedation: A referral guide for dental practitioners.* Dental Sedation Teachers' Group. www.dstg.co.uk/teaching/conc-sed/
2. Evered LM. Procedural sedation and analgesia for pediatric patients in the emergency department. *Pediatric Child Health* 2003; 8:503-507.
3. Green SM, Krauss B. Clinical practice guideline for emergency department ketamine dissociative sedation in children. *Ann Emerg Med* 2004; 44: 460-471.
4. Piercy J, Roelofse JA. Guidelines for the safe use of procedural sedation and analgesia (PSA) for diagnostic and surgical procedures in adults. *S Afr J Anaesthesiol Analg* 2010; 16(2): S1-S25.

Injectomat TCI Pump



Injectomat MC Pump

