

Sedation – Expectation versus Reality

Patient safety, comfort and satisfaction are important goals for sedation practitioners. The patient must never have any doubt about this commitment. Treating pain and anxiety that may be present when planning and doing a procedure is critical to patient satisfaction and quality of care.

Sedation is the depression of a patient's awareness (making the patient calm, comfortable and relaxed) to the environment and reduction of his or her responsiveness to external stimulation.

In fact we change the level of consciousness by the administration of drugs, and this is something that sedation practitioners must never forget. This is accomplished along a continuum of sedation levels: (1)

- Minimal sedation and analgesia is equivalent to anxiolysis, that is, a drug-induced relief of apprehension with minimal effect on sensors. We change the mood of the patient. Only clinical monitoring (the eyes, ears and fingers) is necessary to see that the patient is comfortable and safe during the procedure.
- Moderate sedation and analgesia or conscious sedation is a depression of consciousness in which the patient can still respond to external stimuli (verbal or tactile stimulation).

In the UK the patient must be able to respond to verbal command. The protective reflexes (coughing and swallowing), spontaneous breathing and cardiovascular function are maintained. Apart from clinical monitoring the patient must also be monitored electronically.

- Deep sedation is a depression of consciousness where the patient may or may not respond to repeated or painful stimuli. The patient may not be able to maintain airway reflexes or spontaneous ventilation, but cardiovascular

function is usually preserved. Deep sedation in the UK is seen as “light general anaesthesia”. This is not allowed outside the operating room.

- General anaesthesia is a state of unconsciousness. The autonomic nervous system is unable to respond to surgical or procedural stimuli. This is not allowed for procedures outside the operating theater.

From the above continuum it is evident that the more drugs we administer for sedation the deeper the patient will become and the higher the risk for adverse events.

Dissociative sedation, which could be considered a type of “moderate sedation”, is getting more attention in the sedation world. This level is achieved by ketamine, a drug with sedative and analgesic properties. Some sedation practitioners believe that the level of dissociative sedation cannot be compared with the sedation levels on the sedation continuum. Like moderate sedation, airway reflexes, spontaneous ventilation and cardiovascular function are well maintained.

Numerous indications exist for sedation. It must however be understood that sedation is an option in the anxious patient, but cannot be used for every operation. General anaesthesia still remains an option and must always be considered and discussed with the patient.

Patient comfort, information as to the sedation, and safety entail the pre-procedural preparation and assessment, pain and anxiety management before and during the procedure, and adequate pain management after the procedure.

Sedation provision requires a multi-disciplinary approach, with all role players equally important.

The history of sedation (5)

- The history of sedation and anaesthesia were, and continues to be, inseparable. The history of “induced altered states as a means of tolerating uncomfortable situations” is as old as man, and for ages has been associated with a loss of self-control. It has been alternately welcomed, worshipped and vilified.

Ethyl alcohol was probably the first sedative-hypnotic agent and used 2000 years ago to achieve sedation. Through the ages ethanol remained a vital ingredient to various mixtures containing opium, hyoscine, scopolamine and other botanicals used for therapeutic purposes. Barbiturates were first used as sedative and anxiolytic agents, and then followed by the anxiolytics like the benzodiazepines e.g. chlordiazepoxide, diazepam and midazolam) which are used extensively today.

Ancient history (5)

Emperor Shennung (2737 – 2697 [Before Common Era]) did the earliest systematic study of herbal medicines. He described and mentioned various herbs, including the opium poppy, for pain relief.

The Sumerians described many of their practices on clay tablets from the time of Ashurbanipal of Assyria (568 – 626 BCE). Beers were a well-developed intoxicating drug in Babylon; as was hemp (cannabis) a well-acknowledged agent, producing ecstasy and exaltation, as well as being a minor pain-relieving agent.

The priesthood of the Jewish culture prepared numerous potions for pain relief and the inducing of sleep during surgical procedures, venesection and leeching.

Hindu documents (about 1000 BCE) described the use of wines and fumes of hemp to produce a so called “insensibility to pain.”

Classical history (5)

Chaldo–Egyptian magic, lore and medicines were introduced to the Greeks by migrating Semitic Phoenicians or Jews.

Hippocrates was a well known physician (460 – 380 BCE). He did not gather or create his herbal remedies, but did prescribe plant drugs. In Greece plants or herbs had many uses: healing and inducing death through suicide or execution were but two common uses.

After Hippocrates, Theophrastus (380 – 287 BCE) classified plants and noted their medicinal properties.

Greek medicine was disseminated through the Roman Empire by Greek physicians, often enslaved. Dioscorides described almost 600 plants and non-organic materials. His description of mandragora is famous: the roots which could be prepared to administer by various routes and caused some degree of sleepiness and relief of pain.

Scribonius Largus gave the first description of opium in Western medicine in the first century.

The Saracens tried to ease the discomfort of the sick. They flavoured bitter drugs with orange peels and sweets, coated unpleasant pills with sugar and studied the writings of Hippocrates and Galen. They translated Greek texts into Syriac and spread the Hellenic culture and knowledge throughout the East. Persian physicians

were the major medical teachers after the rise of the Baghdad Caliphate around 749CE, some even penetrating as far east as India and China.

The modern story of anaesthesia (5)

Humphrey Davy (1778 – 1829) started the modern era of anaesthesia with his study of nitrous oxide and its biological effects.

William E Clarke (1818 – 1878) started using ether on young people in Rochester NY, in 1839. He gave ether for extraction of a tooth. Crawford W Long (1815 – 1878) noted in 1842 that one of the participants in an ether frolic fell heavily, but did not seem to experience pain. On March 30th, 1842, he gave ether, by inhalation, to a patient for removal of a neck tumour; there was no evidence of pain.

It was William T.G. Morton (1819 – 1868) a student at Harvard Medical School who first tried to use an inhaling device for the inhalation of nitrous oxide. His first demonstration was arranged at the Massachusetts General Hospital on 16 October 1846, a turning point in the history of anaesthesia.

William Morton was so impressed by nitrous oxide inhalation that he persuaded a surgeon John Warren to do an amputation of the leg under nitrous oxide sedation. This was a catastrophe as the analgesic effects of nitrous oxide will not be sufficient enough for major procedures.

But nitrous oxide sedation was increasingly used for sedation especially for dental procedures. This drug has become a very important form of sedation especially for dental procedures.

Modern sedation and analgesia (5)

There is an inseparable continuum between general anaesthesia, sedation and analgesia.

Dentists spearheaded ambulatory anaesthesia in the early 20th century. Ralph Waters (1883 – 1979) opened the Downtown Anaesthesia Clinic in Sioux City, Iowa in 1916. They did dental and minor surgical work.

Only in the 1960's was there increased interest in employing shorter acting anaesthetic strategies with more rapid recovery. The explosion in diagnostic modulation created a need for "easier" and non-traditional anaesthetizing locations.

The future of sedation (5)

An increasing number of procedures and investigations are being developed that are accessible by percutaneous, intra-vascular or natural orifice routes. While these procedures may be less painful, the imaging techniques and procedures are likely to be longer and require increasingly more sophisticated, high-tech hardware.

Simultaneously, progress will inevitably continue in understanding the neurophysiology of pain mechanisms as well as consciousness, and we are perhaps not that far removed from the futuristic settings depicted in Star Trek where non-invasive controlling of mediators of pain, attention and neuromuscular competence, all in scalable fashion can be performed.

We see a very important role for sedation for surgical procedures in the future; sedation is today one of the fastest growing areas in anaesthesia care.

The Role-players in Sedation

1. Patient

The patient is the most important role player and the safety of the patient is ultimately what everything is about. A certain amount of anxiety will be present. Different types of personality, previous experiences, intellectual standards, informed knowledge and socio-economical background, all play an integral part of a person's perception on pain, anxiety and trust. (7)

Undeniably, after a pleasant experience, future references will be so much easier. The patient will also be the most uninformed member of the role-player team, thus requiring extensive guidance and information before procedures are conducted.

It is common sense that patients will differ. Not only psychological, but physical and physiological differences will have a decisive role in the selection of patients.

Reducing anxiety forms one of the mainstreams of sedation. The physical categorization must also be standardised and uniform, easy to apply and with as little as possible margin of error. An example is the American Society of Anaesthetists' ASA grading of a pre-procedural patient which is widely used and understood. (1)(2). It is generally accepted that only ASA 1 and 11 patients can be done outside the hospital setting

Expectations are the most important entity to be addressed, in order to develop a clear cut relationship between the sedation practitioner, operator and the patient.

We are going to be judged by the satisfaction of the patient in the future; we need to see that our patients are comfortable and satisfied with our expertise.

2. The operator

The operator will be the technician, physician or professional that plans a specific procedure in which a certain degree of compliance is necessary. The operator will know his/her skills and the amount of discomfort that said procedure might entail. He/she will also be knowledgeable about the preparation and aftercare of the procedure, also entailing the risks and complications that can develop.

It is essential that the operator knows the ability of the patient to endure a procedure in order to make a decision on the specific needs for sedation and analgesia. (7)

When the operator doubts whether a patient can be done under sedation it is his duty to contact a dedicated sedation practitioner for his opinion.

Some operators e.g. dentists are also trained as operator sedationists. Here they do the operation and administer sedative drugs, usually single drugs. When the operation is more complicated they will get a dedicated sedation practitioner, who only administers the sedative drugs and monitor the patient.

The role of the operator sedationist is well recognized in the sedation world.

3. The sedation practitioner

It is a long and ongoing debate on who should administer moderate sedation and analgesia. Specialist anaesthetists have long been considered as the only safe providers of sedation (2). This is not the view of decision makers anymore. Many procedures are considered elementary and are not being done in hospital or operating theatre situations any more (3). Out of hospital or consultation room based sedations are a rapid growing entity (3). The need for sedation in the Emergency Room has also become more and more crucial (3). It is therefore

impossible that all services can be delivered by specialist anaesthetists, and several procedures can be successfully sedated by experienced or qualified sedation practitioners with training (3).

A specialist anaesthetist does not necessarily have the ability to be a sedation practitioner (2). This is recognized by all international guidelines. Even an anaesthetist may need training in specific sedation techniques, as they are most of the time hospital bound and in ideal circumstances like an operating theatre with all life sustaining equipment readily available (2). The endpoint here is usually unconsciousness which is not the case with sedation.

Non-anaesthetist sedation practitioners, with enough and adequate experience and training in the techniques of sedation will be able to successfully administer ASA I and II patients in the out of hospital situation (2). It is also therefore considered that ASA III and above patients be sedated in hospital/operating theatre (2).

Single operator sedations are also an integral part of sedations and sedation techniques. This is the situation where an operator will act as the sedationist as well as performing a procedure or investigation. It also seems to be good, cost effective and safe in the hands of the qualified or experienced operator (2).

4. Financial administrators

Unfortunately, in medicine and dentistry, remuneration has always been, and will be determined by third and fourth parties to the industry. Fund managers

and other role players are responsible to oversee cost-effective, safe and effective practice. They have a mandate, from their members, and therefore the ability to manipulate trends and tendencies.

Administrators also have the ability to determine the fiscal value of procedures or skills. It is thus of crucial importance that acceptable guidelines be set by the industry regarding standards, code of conduct and guidelines that should be set by all the role-players of the industry.

5. Statutory or Regulating Body

Sedation provision has always been an integral part of the specialist anaesthetist armamentarium inside the hospital setting (2). The increasing popularity and enormous development in the science of drugs and techniques have brought the dedicated sedationist to the lime light (2). Safer drugs and better understanding of their activity have also “taken the sedation” out of the operating theatre or hospital milieu. This has also contributed to greater cost effectiveness.

Regulating bodies need to oversee their members in order to maintain high standards, efficacy and safe practices. They should be inclusive of all the roll-players of the industry. This is important for protection of patients and members of a medical and dental team. These bodies can be independent from speciality groups in anaesthesiology or part of the speciality with a special interest in sedation.

Guidelines for the subject and industry should be compiled by its members through thorough research, interactions and working experience by the involved members.

The academic input and research programs are crucial in the development and growth of knowledge and skills.

6. Academic research authorities or bodies

Medicine and dentistry are a dynamic science, where the subject of sedation is still in its infant shoes. An explosion of knowledge about pharmacology and the physiological science of the human body have made for a rapid changing science. Never have so many changes occur in such a short time span as just now. Suddenly all authoritative bodies cry out for sedation training as more patient report a high satisfaction rate for procedures being done under sedation.

Medical and dental research should also refrain from being involved in any subjective participation through any of the involved parties. Research should only be evidence based to the best interest of all parties involved.

Establishing a “safe culture” around sedation is important. Credentialing, standardizing the definitions of adverse events, improving sedation delivery methods and techniques, introducing new sedation sedatives or drugs, incorporating simulation into provider training, and using more objective means of identifying depth of sedation and associated risks are all important steps to the whole development of the industry (4).

The Expectations of Sedation

Seen through the many segments of the role-players, it is evident that there must be different expectations on the same subject.

Only through the satisfaction of everyone's expectations, can development progress and will the science of sedation grow, and be beneficial to all parties.

1. Expectations of patients

The most common question that we receive as sedation practitioners (outside of the operating theatre) is that of safety. Patients expect safety to be top priority and that is absolutely correct. They expect professional skills with confidence in the ability of the sedation practitioner to perform his/her skills.

Patients sometimes insist on total unconsciousness while under sedation. They demand pain free procedures and minimal residual discomfort afterwards. Sometimes they are told by the surgeon "they will be knocked out". Patients need to be told that this is not what we will do as this is illegal and even dangerous. There are no international guidelines that support this idea of "being knocked out" outside the operating theater.

Do our (sedationist) guidelines allow for this, or should we make false promises to patients? We doubt if all patients understand the term "arousable" or do they just prefer to disregard the term? Is it ethical to accept this "slight misunderstanding" of a specific terminology? Are we not "promising" a general anaesthesia, but giving sub-optimal and anaesthetic doses in order to meet the patient's expectations?

Addressing fear and anxiety by giving drugs only, could be done, but interaction, addressing fear and anxiety, with the patient is just as crucial. The patient should know beforehand what to expect and how it will be dealt with.

Co-morbidities should be known and incorporated into the sedation plan.

To every person or patient, dignity is of utmost importance. Explaining amnesia or memory loss could be for some people an unknown entity, building on the already existing fear. It should be explained that actions during a procedure would be dealt with in an orderly and professional way.

Just the mere preparation in terms of legalities should already create a sense of professionalism and will therefore reassure and limit anxiety.

Patients need to know that medications and drugs used during sedation are well studied and known to the trained sedation practitioner. It should be known that pharmacological entities have been widely researched, tested and adverse effects known.

It is very reassuring for all parties involved that all necessary equipment is available, should any emergency situation develop, which is rarely the case. That is also the reason why minimum requirements and equipment are set by speciality guidelines (6).

Patients expect a clear explanation, informed consent, from all parties involved. Therefore it is vital that the operator should also be trained and have “experience” or insight into the use of sedation for his/her procedure.

2. Expectations of the operator

The operator is primarily involved with the procedure being done, but cannot be uninvolved or apathic towards the sedation practitioner, sedation techniques or dangers thereof.

Many operators are only involved in the procedure. They expect a compliant patient. How many times we wonder do sedation practitioners need to use dosages of drugs outside of accepted guidelines, in order for the operator to be satisfied, to complete or perform a procedure? From personal experience we sometimes have to use “higher doses” of drugs in order to satisfy an “impatient” operator, and to complete a specific procedure.

Not only does such practise endanger a patient’s life or put the industry in serious jeopardy, but it creates a sense of mistrust between the professional people involved. We need to urge sedation practitioners to follow the sedation guidelines.

If an operator needs to perform procedures under sedation it is vital that they know the limitations of sedation even more than the other role-players.

An operator should acknowledge the discomfort and possible difficulties of a procedure and be able to control it in as effective a way as deemed necessary in that situation. It should not be expected from a sedation practitioner to only increase drugs and therefore increase the possibility of adverse or side-effects of used drugs. Operators should be able to use adjuvant techniques in order to make the patient more comfortable. They should approach a patient as if fully conscious and awake. They should use local anaesthetics where and as appropriate as possible. It should, after all, be a team effort!

We suggest that operators need as much information about sedation as the sedation practitioners and the patient. All professionals involved should be knowledgeable and have direct access to accepted guidelines set by the industry and the professional bodies. They should know adverse or side effects and also be fully capable of addressing them (especially in the out of hospital scenario). The experience gained thus far will hopefully lead to a more team based approach,

where all roll players will share their experience and expectations leading to improvement of sedation techniques.

There should be an operator sedation courses or lectures available to operators using sedation or at least information being presented by regulating bodies to such a group.

2. Expectations of financial providers

It has been stated previously that the financial or fund administrators need a cost-effective and safe service to their members.

As a third party involved, they expect patients to be well-informed about techniques and alternatives as well as adjuvant treatment. They need a realistic approach from the patient and an open and scientific solution from the service provider.

There are financial implications concerning the decision whether to do sedation or general anaesthesia, but more so to hospital admissions and out of hospital treatment. This scenario creates a conflict of interest. Obviously, can safety not be translated to a fiscal entity, but it is crucial that sedation, and especially out of hospital sedation, not be downgraded to a “cheap alternative to anaesthesia.” It is a viable option scientifically proven.

It may also not be fair to compare a specialist anaesthetist to a dedicated sedation practitioner and refer to them as an “inferior” alternative.

We think that fund administrators and other role players in sedation need to be well informed about the role of each player via the industry itself. Information and

knowledge will prevent false expectations, not only from the administrators, but from everyone involved.

2. Expectation of Professional Bodies / Academics

Professional bodies will undoubtedly be the interaction co-ordinators for the industry (6).

Through academic input via research and direct experience, can sufficient and up to date information be shared throughout the whole industry (6). Input and feedback from ground level upwards are also important (6).

It is then vital for professional bodies to interact with its members; to distribute modern, safe and efficient techniques and to evaluate, scrutinise and research solutions. They should also be the access to new development.

Last, but not least important, should professional bodies co-ordinate further education to the industry and other role players in sedation. They should also act as the safeguard to members where knowledge and information can be evaluated and distributed. It was said before that sedation and sedation techniques are a very rapid growing industry.

It is still unclear what the involvement of professional bodies is with operators and with the financial administrators. We think clearer or more prominent interactions need to be initiated in order to address the different role-players and their expectations.

Where do we meet?

Recently sedation outside of the operating room has evolved rapidly and is an important part of patient care. It is now an area of interest, research, and clinical practice which encompasses multiple specialities. Policies, procedures and guidelines have been created worldwide by speciality organizations and even statutory councils, all designed to improve and maximize safety and outcome. Research continues in efforts to increase our knowledge of sedation practice, predictors of adverse outcome and improve safety.

There still remain many opportunities to optimise the safe practice of sedation and improve the efficiency and efficacy of its implementation. Often, when we look for advances in sedation, we look to new agents and techniques to improve our practice.

Yes, this is a sound policy, but in our way, (often very well established) do we meet everybody's expectations. Is what people want and what they get always in par? Should we not start from expectations, then work our way to workable solutions? Or will science and psychology eventually meet any way?

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