The drug Atropine takes its name from Atropos, one of the three Fates of Greek mythology. Her Roman equivalent was called Morta, and this perhaps explains the use of her name in conjunction with the plant Atropa Belladona, the Deadly Nightshade, ‘bella donna’ because of its ability to dilate the pupils of its users. Mattioli 1501-1577 described the ladies of Venice using it thus and named the tincture of Atropa they used “Belladonna”. Linnaeus picked up both names in his formal classification of the plant kingdom in 1700s.

“Cleopatra watched the bitter berry work and opted for the Asp” - Professor John Mann of Reading University, author of Murder, Magic and Medicine (Oxford University Press) says Cleopatra investigated belladonna when seeking the best poison for committing suicide. A slave given it died a quick but painful death. Asp venom was equally rapid, but tranquil.

The Greek cult of Dionysius, and the Roman cult of Bacchus took wine and added Atropa and other herbs to make a magic potion which caused devotees to fall into a trance and commit lewd and libidinous acts. Those initiated into the rite were promised eternal life and continued sexual potency. Deadly Nightshade was an important plant in the medieval witches’ pharmacopeia, being regarded as one of the Devil’s favourite plants. Here a potion of ground Atropa and bear's grease was rubbed on the skin and genitals and caused hallucinations and sexual arousal to orgasm. Small amounts of the plant were also eaten by witches prior to fortune telling.

Chemically, Atropine is a racemic plant anticholinergic alkaloid, dl-hyoscyamine, very similar in structure to Hyoscine, present in a number of plants including Atropa Belladonna, henbane, mandrake and other members of the Solanaceae. It is both a non-irritant toxin which leaves little trace in the body, and an antitoxin which can be used as the antidote to nerve poisons. It was first isolated in its pure crystalline form by the German pharmacist H. F. G. Mein in 1831, and first synthesized by another German, Richard Willstätter in 1901. Atropine itself is relatively insoluble, the usual form now used is the sulphate.

Atropine has long been used in medicine. The first use recorded is in Dioscorides “De Materia Medica” written between AD 50 and 70, where a mixture of wine and Mandrake is suggested for “Anaesthesia”, this is also the first use of the word Anaesthesia. Similar descriptions occur in medieval literature and excavations at Soutra Hospital on the Scottish Borders have yielded plant residues used in 14th century which contained atropine. The sleep induced by these soups would have lasted up to three days.

Very high doses of atropine, generally 150-212 mg, but sometimes even up to 2g, have been used in psychiatry to induce Atropine coma. This was described in the US and also used in some Eastern European countries from the 1950s to the 70s. Current psychotropic drugs and social attitudes have now displaced its use. Interestingly, the lethal dose is quoted as between 90-130mg!

Atropine is a drug of death, Witthaus in 1911 looked at 682 cases of atropine poisoning, of these 37 were suicide and 14 murder. More recently the drug again hit the headlines when in 1994 Dr Agutter of East Lothian attempted to poison his wife by hiding the bitter taste of atropine in tonic water. To cover his crime he tainted additional tonic water bottles placing them back on the shelf in the local Safeway. His wife survived, he was gaol for attempted murder, seven other people were affected, but an anaesthetist, Dr Sharwood-Smith having poured his wife, but not himself a Gin and Tonic recognised she was showing the symptoms of atropine toxicity. This diagnosis ensured the hospital gave prompt treatment to the victims. It was he who also persuaded Safeway to remove 55,000 two litre bottles of tonic water from their shelves.

After such a long history of use and abuse atropine is now a core medicine in the WHO essential drugs List.

Bill Hamlin
The SAAD Digest is published each January by the Society for the Advancement of Anaesthesia in Dentistry. The SAAD Newsletter is published electronically by the Society in July and November.

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The cover photograph is scanning electro-micrograph of atropine. It is reproduced with the kind permission of the National High Magnetic Field Laboratory, Florida State University.
Welcome to Volume 30 of SAAD Digest. Although this is the 30th volume, it does not mark the 30th anniversary of the first publication as the first issue was published in January 1970, forty three years ago. There have been gaps in the publication, most notably before the Digest’s re-launch in 2006.

The Digest has been the main route of communication between the Society and its members over the years, allowing both news and scientific articles to be shared. Indeed, the authors in the first edition included Professor Hopper (later Dean of the Dental School in Leeds), David Main and David Donaldson (the latter subsequently moved to Vancouver where he played a major role in the field of pain and anxiety control). For further information on the story of the Digest please see the article in this volume on page 33.

The Editorial Board continues to strive to improve the quality of the Digest with each successive issue. I hope that you will find the articles in this issue both informative and enjoyable to read.

The launch of our online CPD with the 2013 edition was well received, and thus we will continue that service to our members. A number of members, and indeed some non-members, have taken advantage of this scheme. It is a good way to accumulate some of the hours that are recommended in the Independent Expert Group on Training and Standards for Sedation in Dentistry’s (IEGTSSD) guide on maintaining Standards in sedation. 1 It also has the advantage of being included as one of the benefits of Membership of the society.

Sadly the last year saw us lose Michael Wood from the Editorial Board and SAAD Board of Trustees. We all felt the loss of a dear colleague and friend, and found it particularly hard to believe, given that he had never looked so well in all the time that I had known him. A fuller Obituary is published on page 61 in this volume of Digest.

It is said that every cloud has a silver lining, and we are delighted to welcome Sadie Hughes, who became a Trustee last year, onto the Editorial Board where she is already making a most valuable contribution to our work.

The political aspects of the practice of conscious sedation in dentistry refuse to go away. The Intercollegiate Advisory Committee for Sedation in Dentistry (IACSD) and the Academy of Medical Royal Colleges (AoMRC) group continued the work of producing their documents during 2013. At the time of writing this editorial we are still awaiting the publication. Members of the SAAD Board of Trustees have served on both of these groups, and thanks to their efforts we are not expecting any nasty surprises in the final publications. The AoMRC document was sent to the Academy for approval at the end of October. The IACSD had a meeting in December but this editorial had to be written before the outcome of that meeting was known, so the date of publication of any document will be notified on the SAAD website.

The Independent Expert Group on Training and Standards for Sedation in Dentistry (IEGTSSD) has continued to meet. This group has been instrumental in persuading NICE to audit the implementation of their Sedation Guidelines. The project has been the first time that NICE have been involved in the auditing of their own recommendations. David Craig and Mike Sury took the lead in organising the questionnaire, whilst the staff at NICE enabled the questions to be uploaded onto survey Monkey and the data to be collated for analysis. There should be some interesting publications produced from this data. The IEGTSSD is independent but is funded by SAAD. This is another example of SAAD using its funds for the promotion of conscious sedation in dentistry. There have been two articles prepared and submitted for publication.

Our “what’s new in…..” article this year is on hypnotherapy. I am delighted that Professor Enrico Facco from the University of Padua agreed to write this for us. Enrico is currently President of the European Federation for the Advancement of Anaesthesia in Dentistry, and a good friend and colleague. Last year he gave a wonderful workshop for the undergraduate students at the University of Bristol. I am pleased that we have a range of articles that cover both pharmacological and non-pharmacological ways of helping our patients.

In the last year SAAD has also published some advice on commissioning sedation services, which can be found on our website. The transition from the PCTs to GP’s commissioning has proved to be challenging for many professionals as well as for patients. It is important in these challenging times to continue to push for the availability of conscious sedation to meet the clinical need that is so evident to many of us. Unfortunately despite our best efforts, the commissioning process is still far from clear and the main result is uncertainty and delays for all concerned.

When I looked back at the previous 29 volumes of SAAD Digest, it was amazing to see how many of the same issues kept recurring through the years.

Nigel Robb

References
The Role Of Hypnotherapy In Dentistry

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Abstract

Dental fear is a universal phenomenon justifying the increasing relevance of psychology and the behavioural sciences to dental training and clinical practice. Pharmacological sedation has been used more and more over the past two decades, in order to relieve dental anxiety and phobia and let the patient face oral surgery safely. Hypnosis is a still underused but powerful non-pharmacological tool in dentistry. It provides an effective sedation whilst maintaining patient collaboration, but it also may help patients recovering from dental anxiety and phobia as well as those with a severe gag reflex. While pharmacological sedation affords a temporary respite and helps the patient to cope with a single procedure, hypnosis can effectively allow for both an excellent sedation in a physiological way and the treatment of patients' anxiety, or substantially decrease the doses used for sedative and analgesic drugs when these are needed.

Introduction

Undergoing dentistry is stressful, and can cause a relevant increase in anxiety, suffering expectation and pain perception immediately before the operation, while intraoperative anxiety and pain are recognised as a causative factor in dental emergencies. Dental fear can be considered as a universal phenomenon with different cultural features. The origin of dental anxiety is multidimensional and includes both endogenous and exogenous causes. The latter is usually caused by dentists’ inappropriate behaviour and traumatic dental treatments, leading to patients’ feelings of helplessness, threats to their autonomy and personal violation. So the dentist can resemble Janus, the ancient two-faced Roman God of time (the month January takes its name from the God) involved both in the past and the future, in war and in peace: similarly, the dentist may be a peaceful protective authority allowing for pain- and anxiety-free dental care or conversely a warrior-torturer, causing avoidable suffering and creating long-lasting psychological disorders by their inappropriate behaviour. The former is the modern dentist, a ‘leader-guide-friend’ able to empathically understand a patient’s needs and to provide anxiety and pain-free dental care: accordingly, competence in both pharmacological and behavioural techniques for anxiety management have become an essential step in a dentist’s development. The Profile of Competences of the European Dentist (PCD), (updated 2009), published by the Association of Dental Education in Europe (www.ADEE.org) states that the dentist, on graduation, is to be competent in (items 6.22, 6.23): a) identifying the origins and continuation of dental fear and anxiety and to manage this fear and anxiety with behavioural techniques; b) selecting and prescribing drugs for the management of pre-operative, operative and post-operative pain and anxiety.

The roles of the common techniques employed in the relief of dental anxiety are summarised in Figure 1: hypnosis is the only behavioural technique allowing for both sedation and treatment of patients’ anxiety and phobias, whereas pharmacological sedation affords only a temporary respite, and helps the patient to cope only with a single procedure.

The misperception of hypnosis

Hypnosis has been misunderstood for around two centuries, due to its history and the very terms used to define it. The birth of hypnosis is commonly attributed to Franz Anton Mesmer in the XVIIIth Century, who hypothesised its origin in a sort of animal magnetic fluid. However, in all likelihood, the beginning of hypnosis is much older and is mixed up with wizardry, religion, shamanism, all doctrines interested in introspective processes, and able to yield so-called ‘altered states of consciousness’ (ASC), including fakirs’ capability of increasing their own pain threshold up to complete analgesia. A link also exists between hypnosis and eastern techniques of meditation, including techniques of induction as well as brain areas activated and deactivated by meditative and hypnotic activity (Facco, in preparation).

Abbé Faria first recognised that hypnosis did not depend on animal magnetism but on a subject’s expectancy and co-operation, and in 1819 stated: ‘I cannot conceive how mankind was peculiar enough to search for the cause of this phenomenon in some baquet’. A baquet was a wooden container filled with water, glass, and magnetised iron filings with iron rods protruding from it, which was used in group animal magnetism treatments. Patients simultaneously touched the rods to facilitate the flow of a healing magnetic energy among them.

Then, James Braid (1795–1860), a Scottish physician, in his books Neurohypnology and On Hypnotism (published in 1843 and 1860, respectively) emphasised the role of the physician-patient relationship, introduced the concepts of suggestion and monoideism.
and recognised that the subject cannot be forced to act against his or her will; he also coined the term hypnosis, from the Greek ὑπνος (hypnos, sleep).

The very term hypnosis evokes the wrong idea of a sleep-like condition and loss of control; furthermore, the ill-defined term trance has been used for both hypnotised subjects and mediums in spiritualist séances, thus ambiguously suggesting the idea of a paranormal or abnormal phenomenon. Charcot, from his Physiological Clinical Perspective, defined hypnosis as a sort of “Experimental Hysteria” and stated that only neurotypical subjects, especially hysterical ones, could be hypnotised: such a definition in terms of psychopathology has certainly helped misunderstanding and to throw discredit on hypnosis. A strong prejudicial stance against hypnosis was also held by the German physician at that time, leading Meynert to say that hypnosis was shrouded in a “halo of absurdity” and that even recoveries did not prove anything (quoted by Freud in his introduction to the German translation of the book Der Hypnotismus by August Forel and Hypnosis: De la Suggestion by Hippolyte Bernheim). Both Freud and Jung, after an initial interest, abandoned hypnosis, feeling not yet confident with it, leading Freud to create and introduce psychoanalysis. Finally, even stage hypnotists, falsely claiming powers over their subjects, have helped to increase an inaccurate perception of hypnosis, leading people to perceive hypnotised subjects as zombies, and under another’s power.

The prejudices of the XIXth Century probably sprang from the apparently odd hypnotic phenomenon, which revealed the existence of an unconscious mind conditioning human behaviour (in this regard, hypnosis is to be considered as the Mother of Modern Psychology and Psychotherapy); this was not an easily acceptable fact in a rationalistic post-enlightenment epoch, where the intellect and free will were considered the foundations of a human being. These misinterpretations of hypnosis also show the power of beliefs and dogmas even in the world of science, which are often stronger than reality itself, as witnessed by detractors, ubiquitous figures in the history of science: as Albert Einstein wisely stated, “The only thing that interferes with my learning is my education”.

In short, the very history of hypnosis has given rise to the widespread misperception of it being related to a less than normal or even pathological condition, loss of control, acting like a robot, losing free will and choice. On the contrary, the ability to enter hypnotic-like states is encoded in our brains (or at least the brains of some of us, and also of some animals, like Caretta-Caretta turtles) for a reason. Hypnosis is actually an opportunity to enhance, rather than decrease, control over stress, pain, muscle tension, perception, memories, shifts in mental state, emotions and feelings. Contrary to quite recent belief, hypnosis is not something the hypnotist does to the patient; rather it is an ability he or she can teach to the patient, who can learn and subsequently use the skill autonomously. Thus, according to Spiegel, we should move from the concept of hypnotic induction to the concept of neuro-hypnotic deduction, a process leading to transformation (or, better, to “trance-formation”), which in dentistry may involve: a) transforming mental states and improving cognition (i.e. restructuring one’s understanding of the problem, which plays a key role in recovering from dental anxiety); b) changing perception of pain up to surgical anaesthesia; c) managing stress; d) modulating neurovegetative reactions.

The role of hypnosis in Oral Surgery

Hypnosis can be defined as a modified state of consciousness (or, perhaps better, a Non-Ordinary Mental Expression (NONE); Facco et al. in preparation) springing from the focalisation of attention on an idea (called monoidism) as a result of subject-hypnotist relationship. It yields a wide range of psychic and physical phenomena. For example, hypnotised subjects may experience a feeling of heaviness or lightness of their body or a part of it (the latter leading to arm levitation), eidetic imagination, hallucinations or attentive deficits (neglect), catalepsy, paralysis or unconscious automatic movements, vasodilation, vasocostriction or blood flow redistribution. They can also modulate their pain perception, from hyperalgesia to analgesia, develop indifference towards pain or even take pleasure in feeling pain (such as in Lesch-Nyhan Syndrome).

Some of the above mentioned effects of hypnosis are clearly helpful in the dental setting, giving the need for managing anxiety, pain and neurovegetative reactions (e.g. heart rate and blood pressure changes, gag reflex). A relevant advantage, unique to hypnosis, is the capability of reaching full relaxation, a deep sedation and in some cases amnesia, whilst maintaining a patient’s collaboration: in fact, hypnotised subjects can open their eyes, mouth, move, speak, walk and act just as a normal person even in the deepest levels of hypnosis.

Hypnosis was used for anaesthesia in the early XIXth century, it was then abandoned following the discovery of anaesthetic drugs such as ether and nitrous oxide. In the past decades, it has been reappraised and several papers have been published on the use of hypnosis for sedation and analgesia both in dentistry and several medical invasive procedures, alone, or in combination with drugs, for reduction of post-operative pain, neurovegetative adverse events, for psychiatric disorders and for the support of patients with cancer.

As far as dentistry is concerned, in a prospective randomised study on the use of hypnosis as an adjunct to propofol infusion in third molar extraction, the authors reported a significant reduction in intraoperative propofol administration, patient post-operative pain ratings and post-operative prescription pain relief consumption compared with the control group. In our opinion, these results are far from being meaningful, since hypnosis plus local anaesthesia delivers a very effective sedation and a full analgesia without any need for intravenous sedation, allowing for, a) a patient’s complete wellbeing and b) full autonomy and immediate post-operative discharge without any need for a recovery phase; the latter makes hypnosis both very simple and cost-effective.

The induction of hypnosis is a simple and fast procedure in the hands of an expert hypnotist, calling for less than five minutes (usually 1–3 min), during which the patient is guided towards focusing his/her attention on a single idea, and excluding any external or internal stimuli. During induction, suggestions of general wellbeing, deep relaxation, eyelid heaviness, regular breathing are usually delivered, thus leading the subject to concentrate on their internal environment and to disregard any external stimuli. Their state of hypnosis can be checked by several clinical signals, such as arm levitation, the easing of facial tension, a dropped lower jaw with a slight opening of the mouth, and a reduction in breathing rate. The time needed for subsequent inductions can be strongly decreased by post-hypnotic conditioning; thus, in clinical practice the induction of hypnosis in the dental sessions following the first one becomes very quick and easy, enabling the dentist-hypnotist to obtain full relaxation for their patient almost immediately, that is, in much less time than that required for intravenous sedation.

Besides deep hypnotic relaxation, a hypnotic focused analgesia (HFA) can be obtained in the surgical field. Our previous results have proved that HFA for oral surgery can be effectively obtained, leading to a huge increase in pain threshold in most cases: it has been possible to increase patients’ average pain threshold by about 220% with full analgesia assured in up to 45% of subjects, whilst preventing the haemodynamic changes induced by painful stimuli. Patients
able to develop a full HFA can successfully undergo surgery with hypnosis as the sole anaesthesia 5 with full wellbeing and cardiovascular stability, whilst those with a partial HFA can better tolerate local anaesthesia and other possibly unpleasant sensations during the operation.

As already mentioned, HFA is not a simple psychological dissociation from pain perception but is a genuine block of pain processing as a whole, preventing the cardiovascular responses to pain stimuli, and thus protecting the patient from surgical stress; this feature allows hypnosis to stand comparison with pharmacological sedation. In this regard, it is worth emphasising that cardiovascular responses to trigeminal painful stimuli may yield just the opposite effects to those related to pain in other somatic areas: the well-known sympathetic response to pain in non-trigeminal areas is characterised by vasconstriction and tachycardia, while painful stimuli delivered in the trigeminal area may lead directly to vasodilation and bradycardia through the trigeminovascular reflex, making haemodynamic syncope the most common emergency in dentistry. 29-31

Hypnosis also offers the possibility to reduce or abolish the gag reflex, a disorder strongly hampering dental treatment and, in severe cases, resistant to conscious sedation or even deep sedation. 32-34 In most cases, the gag reflex is to be regarded as a sort of panic attack due to high levels of dental fear: vomiting is the last, desperate, unconsciously adopted defence against dentist’s perceived aggression. According to his or her hypnotic ability and the severity of their gag reflex, patients can also be quickly trained in autohypnosis and to easily learn to face dental care in full autonomy so overcoming their gag reflex.

Thanks to its analgesic and tranquilising potential, hypnosis is a safe and effective tool in the hands of the modern, trained dentist, who is to be competent in anxiety assessment and management; it also may improve safety by decreasing the cardiovascular response to dental treatments, thus limiting the risk of syncope and offering adequate patient protection without any need for sedative drugs. There are no other available tools so effective, cost-free, always available and devoid of adverse effects, as hypnosis. The only limitation is hypnotisability, but no less than 80% of the population is moderately or highly hypnotisable; the main contraindication is in the field of psychopathology, in borderline syndromes and schizophrenia, where patients may be prone to dissociative effects of hypnotic suggestions or are poorly hypnotisable, being not able to maintain the ribbon of attention to hypnotic tasks. 35

Case reports

In dental practice, hypnosis can be effectively used in several settings, ranging from sedation during dental care, to the treatment of phobia in patients who are not even able to face the dental chair and those with a heightened gag reflex. Here, we report on two representative cases, where the narrative aspects of patients’ experience and care may provide useful information on the effectiveness of hypnosis.

Case 1. A young lady with a severe gag reflex preventing oral examination was admitted to our dental clinic, with acute pulpitis of her right lower second molar. The first author (EF), who was called by the dentist to sedate the patient, started the interview by asking the patient how she was feeling and, after her reply disclosing a strong anxiety, he told her “May I help you to start relaxing with hypnosis while the nurse is preparing some drugs and the monitor?” As anxious patients usually do, she was happy to find a doctor taking care of her (instead of only her teeth) and who was trying to understand her subjective needs, and gave her consent. So the induction of hypnosis was started (about five minutes duration); it included suggestions of deep relaxation, analgesia in her right lower arch and avoided mentioning her mouth (i.e. her mind was encouraged to disregard what was going to happen in her mouth, since this would only give rise to neutral or even unpleasant sensations). The dentist, after the administration of local anaesthesia, started her dental treatment, including the positioning of a dental dam, without any problem, and the intervention was performed uneventfully. The patient was happy, indeed amazed at the result and asked the author to use hypnosis again at further sessions. She was told that certainly the next session would be performed under hypnosis, but, even more importantly, she was helped to realise that she had been able to do everything by herself: the hypnotist did nothing, apart from teaching her how to face the treatment with full self-control and ease, and she had clearly shown herself able to do it, she had the power to do it herself.

Just before the next session, the author congratulated her again on her ability to do everything by herself and told her that, as a matter of fact, she was going to be able to face the new session without the hypnotist, simply doing the same as she had done previously: therefore, it was suggested she try to do by herself what she had previously learned, while the author would remain at her disposal throughout to help her, should she have any trouble. The patient agreed to try, sat down in the dental chair and relaxed herself very quickly, allowing for an uneventful endodontic treatment, at the end of which she was even more happy and proud of herself. After this self-training, she became fully autonomous and did not ask again for sedation or hypnosis.

Case 2. This patient was a 42-year-old woman with so severe a phobia that she was not able even to call the dentist to arrange an appointment for a check-up. She had a history of a terrifying dental treatment during childhood, causing her phobia; in turn, it also caused a progressive worsening of her oral health so she could no longer postpone her dental care. She was submitted to two sessions of Eye Movement Desensitisation and Reprocessing (EMDR) plus two sessions of hypnosis to desensitise her, at the end of which she was able to face the first dental visit to plan her dental treatment; it called for the removal of two bridges on teeth 15–17, and 25–27, and the extraction of teeth 15, 18 and 28, followed by implants. She successfully underwent two sessions of oral surgery with hypnosis plus local anaesthesia, for extractions and implants, respectively. As in case 1, the patient was very happy with hypnosis. It provided a unique opportunity for her to realise her capacity to undergo surgery without any sedative drug and resulted in her empowerment.
leading her to spontaneously undergo conservative and endodontic treatment of teeth 23, 25 and 27 without any other help. In her case also, hypnosis was not only effective as sedation but also allowed her to recover from her anxiety and to start dental care in full autonomy.

Conclusions

The modern dentist, according to the Profile and Competences for the European Dentist (PCD), must be competent in both pharmacological and behavioural approaches to dental anxiety. In this regard, we must emphasise that pharmacosedation does not reduce or eliminate fear, but only temporarily circumvents it, permitting the patient to face the operation. On the contrary, behavioural techniques such as hypnosis and iatrosedation, may help the patients to progressively decrease and eliminate their anxiety, improving their autonomy, self-control and quality of life. In other words, when patients are submitted to pharmacological sedation they perceive that the power is in the drugs used, while hypnosis, when properly performed, provides a unique opportunity for them to realise that they have the power to face the operation with full self-control, tranquillity and wellbeing, with related strong empowerment. Hence, behavioural techniques should be considered as primary when treating the fearful patient, and pharmacological sedation as secondary, and to be used supplementally.

As far as pharmacological sedation is concerned, it is worth emphasising that this topic is not just a simple matter of drug choice: it is a much more complex and wider process starting with the first clinical encounter; while the drug used is only a step, albeit an essential one, in the patient’s path to wellbeing. A good empathic approach with behavioural techniques, decreasing anxiety, may allow for decreased doses of sedative drugs when needed, while a negative communication may yield exactly the opposite effects and increase patient fear: this may lead to the use of increasingly higher doses of drugs in an attempt to overcompensate the negative results of previous wrong behaviour. At the beginning of the XXIst century this approach is no longer acceptable, both scientifically, philosophically and ethically.

References


Figure 2: Hypnosis for sedation in oral surgery in a patient with dental phobia and allergy to latex and lidocaine (the local anaesthesia was performed with mepivacaine plus bupivacaine). The patient was deeply relaxed (as can be drawn from the blank face) and developed a partial amnesia (the intervention, over two hours duration, was perceived as lasting no more than twenty minutes).
Bispectral Index (BIS) Monitoring of Intravenous Sedation for Dental Treatment

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Abstract

Aim: To investigate the efficacy of the Bispectral Index monitor (BIS) in monitoring patients receiving intravenous midazolam for dental treatment.

Background: The BIS monitor has been proposed as an objective form of monitoring the level of consciousness in patients undergoing sedation and anaesthesia. It analyses electroencephalogram wave forms and quantifies this information to produce a numerical value of 0-100. To assess its efficacy, this study investigates if BIS correlates with the Observer’s Assessment of Alertness/Sedation scale (OAA/S).

Method: 50 episodes of intravenous sedation using midazolam were provided for anxious adults. Sedation proceeded in the standard manner but with the addition of BIS monitoring and assessment of the depth of sedation using the OAA/S scoring system. The operator was blinded to the BIS monitor. Information from the BIS monitor and corresponding OAA/S scores were recorded at 5-minute intervals and at clinically significant points, and correlation was tested using Spearman’s Rank test. The effect of electromyographic interference (EMG) on the BIS reading was also investigated.

Results: A strong positive correlation was found between BIS and OAA/S. The mean range of BIS values recorded during sedation was 81 ± 8. The BIS value was found to be most accurate at the end point of sedation.

Conclusion: BIS monitoring may be a useful adjunct in monitoring patients receiving sedation for dental treatment using midazolam.

Introduction

Conscious sedation is a dynamic process and during its provision the patient must be closely and continuously monitored. Monitoring is necessary to enable appropriate drug administration in order to achieve effective sedation and to minimize risks of over sedation or inadequate sedation.

Monitoring of sedation may be broadly divided into monitoring of cardiorespiratory function and monitoring of the depth sedation. The two, however, are not separate entities. In current practice, cardiorespiratory function is monitored clinically and by use of pulse oximetry to monitor arterial oxygen saturation and heart rate. The depth of sedation is monitored by clinical observation of the patient. The clinician determines sedation depth based on drowsiness, the patient’s speech, responsiveness, focus and change in facial expression and muscle tone. Depth of sedation may be quantified by using one of many scoring systems such as the Observer’s Assessment of Alertness/Sedation score (OAA/S), the Ramsay scale and the Glasgow Coma Sedation scale. Over thirty such systems and scales have been described in the literature but no universally accepted standard has been identified. These scoring systems require the clinician to make a clinical assessment of the patient using the parameters identified and a numerical value (score) is assigned to the depth of sedation at that time. However, being subjective in nature, there may be problems associated with their use. Differences in clinical interpretation may result in inter- and intra-operator variability and lack of reliability and consistency potentially resulting in an inaccurate judgement of the depth of sedation and its consequences.

<table>
<thead>
<tr>
<th>Responsiveness</th>
<th>Speech</th>
<th>Facial expression</th>
<th>Eyes</th>
<th>Score</th>
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<tr>
<td>Responds readily to name in normal tone</td>
<td>Normal</td>
<td>Normal</td>
<td>Clear</td>
<td>5 (alert)</td>
</tr>
<tr>
<td>Lethargic response to name spoken in normal tone</td>
<td>Mild slowing or thickening</td>
<td>Mild relaxation</td>
<td>Glazed</td>
<td>4</td>
</tr>
<tr>
<td>Responds only after name is called loudly and/or repeatedly</td>
<td>Slurring or prominent slowing</td>
<td>Marked relaxation</td>
<td>Glazed</td>
<td>3</td>
</tr>
<tr>
<td>Responds only after mild prodding or shaking</td>
<td>Few recognizable words</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Does not respond to mild prodding or shaking</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1 (deep sleep)</td>
</tr>
</tbody>
</table>

Table 1: Observer’s Assessment of Alertness/Sedation Scale 2

In an attempt to reduce the difficulties associated with subjective monitoring, the use of an objective monitoring system would be highly desirable. Ideally it should be consistent, reliable, easy to use, non interruptive and have the ability to detect small changes in sedation levels.
A preliminary study was planned to investigate the usefulness of an objective form of monitoring, the Bispectral Index monitor (BIS), which has been proposed as an objective means of assessing the level of consciousness during sedation and general anaesthesia.

The BIS monitor works on the principles that cerebral electrical activity (as recorded in the electroencephalogram) is representative of cerebral function, and that EEG wave forms change with the level of consciousness. A computerised algorithm converts relevant aspects of the EEG into a numerical value which ranges from 0 to 100 with zero representing no brain activity, and one hundred indicative of an alert and awake status. The BIS monitor consists of a sensor, a digital signal converter and a monitor screen. The sensor is placed on the patient’s forehead (Figure 2) to obtain electrical signals from the cerebral cortex and this information is transferred via cable to the digital signal converter.

Processed information is then displayed on the monitor screen. As well as the BIS value (0-100), the electromyogram (EMG) and signal quality index (SQI) are continually displayed on the screen. EMG is a measure of interference from muscular activity and other high powered artefacts. It ranges from 30 (low interference) to 80dB (high interference). SQI is an indication of the quality of the electroencephalogram signal. Its calculation is based on impedance data, artefact and other variables. It ranges from 0 (no interference) to 100 (total interference). Increased muscle tone, electrical and mechanical artefact from medical devices, abnormal EEG states and certain drugs may give rise to high EMG and low SQI which may result in an inaccurately elevated BIS reading.

Bispectral index values of 65-85 have been recommended for sedation and 40-60 for general anaesthesia. This recommendation has been supported by a number of studies.

Much of the research carried out to evaluate the use of the BIS monitoring in conscious sedation in the medical field has been carried out for gastroenterology procedures, for paediatric sedation and in the intensive care setting. In dentistry the research is limited and research has mainly been carried out in sedation for oral surgery procedures.

This study aimed to investigate the value of BIS monitoring in conscious sedation using intravenous midazolam for general dental treatment. It examined the relationship between BIS monitoring and OAA/S, determined the range of BIS values consistent with optimal sedation and explored the effect of carrying out dental procedures on the accuracy of the BIS value.

**Method**

**Design and Setting**

A prospective study was carried out at the Community Dental Clinic in Canterbury (Kent Community Health NHS) where patients are referred by dental practitioners and other health care professionals. Dental care is provided to a wide range of patient groups using local anaesthesia, behavioural management, conscious sedation, and...
facilities are available for general anaesthesia where appropriate. Anxious adults for whom intravenous sedation was chosen as the appropriate management option were invited to participate in this study. They were given an information leaflet and informed consent was sought from patients who were willing to participate.

Inclusion criteria:
- Adults consenting to treatment under intravenous sedation.
- ASA I and II.

Exclusion criteria:
- Patients under the age of sixteen.
- Patients who were unable to provide consent.
- Patients with a known benzodiazepine allergy.
- Patients with a pacemaker device.
- Patients with skin conditions that might be aggravated by or would prevent effective application of BIS monitor sensors.

Ethical approval was granted by the East Kent Research and Ethics Committee. The A-2000 XP Bispectral Index Monitor was used in this study and the dental team received training on its use.

Clinical technique
In all cases in this study, sedation and dental treatment were provided by the same operator. Following confirmation of pre-sedation checks, the BIS monitor sensor was applied to the patient’s forehead as shown in Figure 2.

The monitor screen was turned away from the operator. The time taken to set up the BIS system was recorded and sedation and dental procedures then proceeded as normal.

A baseline record was made of the BIS, OAA/S, blood pressure, heart rate and oxygen saturation. Venous access was obtained and midazolam was slowly titrated to patient response until the patient exhibited an appropriate level of sedation as judged by the operator. Dental treatment was then carried out as required. Patients were monitored both clinically and with the use of a pulse oximeter throughout the sedation procedure.

Patient co-operation was recorded using the Ellis scoring system (Table 2).

<table>
<thead>
<tr>
<th>Ellis Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No uninvited limb movement. Total co-operation, no restlessness.</td>
</tr>
<tr>
<td>2</td>
<td>Small amount of uninvited limb movement. Total co-operation, no restlessness.</td>
</tr>
<tr>
<td>3</td>
<td>More uninvited limb movement. Small degree of restlessness and anxiety. Patient less co-operative, still able to perform all dental procedures.</td>
</tr>
<tr>
<td>4</td>
<td>Considerable degree of limb movement, unhelpful head movement. Co-operation poor, patient restless and anxious, able to perform only basic dentistry. Advanced delicate work not possible.</td>
</tr>
<tr>
<td>5</td>
<td>Restlessness, severe anxiety and limb movement. Impossible to perform any dentistry.</td>
</tr>
</tbody>
</table>

Table 2: The Ellis Scale

OAA/S, BIS value, electromyogram (EMG) and signal quality index (SQI) were recorded at baseline, every five minutes thereafter, at the endpoint of sedation, during dental treatment and during recovery. The OAA/S score was determined by the treating clinician. Data from the BIS monitor was recorded by a second dental nurse. Oxygen saturation, heart rate and the quantity of midazolam used was recorded.

At the end of treatment the patient was initially recovered in the dental chair. When orientated, the BIS monitoring equipment was removed and the patient was escorted to the recovery area until ready for discharge.

Results
41 patients were enrolled onto the study and a total of 50 sedation episodes were carried out. 58% of patients were female and 42% male. The mean age was 40 years with a standard deviation of 13.25. Twenty-nine cases were classified as ASA I and twenty-one were ASA II. A mean dose of 8mg of midazolam was used. The mean procedure time was 46 minutes and the mean time taken to set the BIS monitoring system was 75 seconds. Dental treatment was carried out during all the episodes of sedation. Local anaesthetic was administered in 48 cases, 13 had scaling, 32 had restorative treatment and 15 had extractions.

Patient co-operation as determined by the Ellis scale is shown in Figure 4.

Figure 4: Ellis Sedation Score Distribution Proportions

Heart rate readings ranged from 51 to 127 with an average recording of 81 and standard deviation of 11.4. Oxygen saturation ranged from 87% to 100% with a mean saturation of 96% and a standard deviation of 2.3. Saturation dropped below 90% during two episodes of sedation. Both were corrected by simple airway management and verbally encouraging the patient to breathe.

BIS readings
A total of 882 BIS readings ranging from 65 to 98 were recorded and their distribution is shown in Figure 5. The BIS values between the 25th and 75th percentile were 77–91. Half the scores were seen to occur between 75 and 85. 17% were found in the higher range of 95–100 which accounts for baseline and recovery data. At the end point of sedation in every case BIS ranged from 65 to 88 with a mean value of 75.2 and standard deviation of 4.76.
The BIS value was judged to be accurate when EMG was less than 50dB and the signal quality index (SQI) was more than 25%. Retrospective analysis showed that 76% of all the values were considered to be accurate. 60% of the values recorded at baseline were considered accurate, 92% at the endpoint of sedation and 57% during dental procedures.

Discussion

This study showed that in accordance with manufacturer's guidelines, the BIS values were seen to decrease following administration of the sedative drug and gradually increase towards recovery. Mean BIS at baseline was 96±2, 75±4 at the end point of sedation, 79±5 during dental treatment and 88±5 during recovery. A positive relationship was found between BIS and OAA/S showing that BIS was consistent with a validated form of monitoring. BIS values corresponding to an alert OAA/S (score 5) were 95-99, mild sedation and relaxation (score 4) were 75-84 and deeper sedation (score 3) were 70-79. Overlap between BIS values for each OAA/S score is observed, however, the mean BIS values for each OAA/S score are statistically different except between score 2 and 3. This may be attributed to the fact that only four BIS values corresponded with OAA/S score 2 as compared to 230 for score 3.

Although OAA/S scale was found to be generally simple to apply, it may be subject to operator variability. In this study, only one operator judged the depth of sedation thereby eliminating inter-operator variability. The judgement however was still a subjective clinical interpretation and may be liable to inter-operator variability. BIS has potential advantages over subjective monitoring. In this study whilst OAA/S limits the depth of sedation assessment to only four scores (2-5) BIS gives a wider spectrum (65-98). BIS is objective, quantitative and not subject to operator variability. Its application also does not require stimulation of the patient, for example to obtain a verbal response, therefore may be seen to be less disruptive during treatment. BIS set-up was found to be simple and took just over a minute. Patients accepted application of sensors but in one case BIS monitoring had to be abandoned due to perspiration on the patient's forehead which affected the adherence of sensors.

These findings from this study are consistent with manufacturer recommendation and with previous studies. Bower et al. found a similarly significant correlation (r = 0.59) between BIS and OAA/S. They also found a BIS range of 75−85 to have a very high probability of corresponding with an OAA/S score of three. Sandler and Sparks also reported a strong positive relationship between OAA/S and BIS scores for 25 adult patients undergoing extraction of the third molar. In critically ill patients Hernandez et al. found a correlation between the OAA/S and the Ramsay scales but they found this was lost with deeper levels of sedation with midazolam. A study on paediatric oral and transmucosal sedation for dental treatment found BIS ranged from 60 to 99 from baseline to recovery. Donaldson and Goodchild also found BIS scores ranging from 6 to 98 to be consistent with mild or moderate sedation for patients given oral triazolam prior to dental procedures.

By contrast, other studies have found BIS monitoring to be of questionable benefit. In a study carried out by Morse et al. in patients undergoing oral surgery procedures with midazolam alone and midazolam and ketamine, the mean BIS value was 90 and 94 respectively which did not vary significantly from baseline. Cheung et al. found that although BIS titrated patients required significantly lower volatile sedative concentrations.
less midazolam to reach the endpoint, 70% of this group of patients required incremental midazolam. The BIS monitor is known to be limited for use with some sedative agents. Ketamine has been shown not to decrease the BIS value.\textsuperscript{11,12} Nitrous oxide, another commonly used sedative for dental treatment, has also been shown not to produce an effect on the bispectral index.\textsuperscript{13,14}

Another factor that may give rise to a false BIS value is contaminated signals known collectively as “EMG”. Factors that may produce EMG include electrical devices, surgical drills, facial muscle movement, electrosurgery and the surgical field being in close proximity with the Bispectral Index Monitor sensors.\textsuperscript{15,16} These factors are an important consideration for BIS monitoring of sedation for dentistry. Matsuzaki and Tanaka\textsuperscript{17} found the incidence of EMG was higher in patients undergoing dental treatment under intravenous sedation as compared to general anaesthesia where neuromuscular blocking drugs are used. The exact contaminating effect of EMG during dental procedures is unknown and no criteria have been specified on how much EMG or signal quality may falsely elevate a BIS reading. Different models of the BIS monitor have varying capacity to remove contaminating signals. The criteria from Johansen\textsuperscript{18} and Koitabashi et al.\textsuperscript{19} have therefore been used in this study as an arbitrary guide to determine the effect of EMG. The BIS values were found to be most accurate at the end point when the patient is most likely to be talking less, hence reducing EMG.

**Conclusion**

So is the BIS monitor valuable in monitoring sedation for dental treatment?

A question frequently asked by the novice sedationist is: when to recognize the end point and when to stop administering drugs? BIS monitoring may be useful in providing guidance in determining the end point of sedation. However, relying on BIS as a judge of sedation when titrating midazolam may be over optimistic. Cheung et al.\textsuperscript{20} titrated midazolam to BIS 78-83 but then did not maintain this, due to concerns of oversedating the patient. Bell et al.\textsuperscript{21} also noted practical difficulties in maintaining a predetermined BIS.

BIS monitoring may have a role in monitoring oral and transmucosal sedation which is usually administered as a bolus and the sedative effects can be less predictable. It may also be useful in determining baseline consciousness levels in individuals with neuro-disability before embarking upon sedation. Another possible application of BIS would be in researching alternative and advanced sedation techniques.

This study adds to the body of evidence for BIS monitoring, however, further research is recommended. In summary, the BIS monitor may be a useful adjunct in monitoring the depth of sedation in patients being sedated for dental treatment using midazolam but it should not be relied upon as the sole monitoring tool for sedation.

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An Unusual Response to Intravenous Sedation: A Case Report

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Abstract
Midazolam is a benzodiazepine commonly used for conscious sedation in dentistry. This paper reports a state of unconsciousness in a 14-year-old girl after administration of midazolam sedation for dental treatment, which was not reversible with flumazenil. The patient remained in an Intensive Care Unit for two days, unresponsive to any stimulus. A range of tests were inconclusive, but the diagnosis of an unusual reaction to midazolam was made. The patient fully recovered and was discharged from hospital after 6 days. A referral to a sleeping disorder clinic was made to investigate the patient’s sleeping patterns. This paper highlights the importance of sedation being provided by an appropriately trained team.

Background
Intravenous Midazolam administration comes under the definition of conscious sedation, when used as a single agent. The following definition is accepted by the General Dental Council and the Dental Sedation Teachers Group for conscious sedation:

“A technique in which the use of a drug or drugs produces a state of depression of the central nervous system enabling treatment to be carried out, but during which verbal contact with the patient is maintained throughout the period of sedation. The drugs and techniques used to provide conscious sedation for dental treatment should carry a margin of safety wide enough to render loss of consciousness unlikely.”

Midazolam is a benzodiazepine (BZD) widely used in clinical dentistry for sedating adults and children who are too anxious to accept dental treatment under local anaesthesia. It is recommended for use in dentistry by the National Institute of Clinical Excellence (NICE) and has been successfully and safely used (being administered orally, intranasally and intravenously) in the Paediatric Dentistry Department at King’s College Hospital (London) since 2006 where the latest NICE guidelines for sedation in children and young people are followed.

Midazolam intervenes in the mechanism of gamma-aminobutyric acid (GABA), enhancing its effects. GABA is a transmitter substance particularly abundant in certain parts of the central nervous system. High activity in the GABAergic cells results in a high rate of release of GABA bringing about an inhibitory effect on other nerve cells. Midazolam acts as an agonist at the BZD receptors increasing the activity of GABA and therefore decreasing the number of stimuli reaching higher centres, resulting in the known sedative and hypnotic effects.

Midazolam causes anxiolysis, anterograde amnesia and various degrees of respiratory depression. It acts as a muscle relaxant relaxing the respiratory muscles and also reduces the sensitivity of chemoreceptors at the Central Nervous System. Midazolam is also an anticonvulsant and is used in the treatment of emergency seizures. There may be cardiovascular effects by causing a small fall in arterial blood pressure which is compensated by the baroreceptor reflex, i.e. an increased pulse rate. The drug may, paradoxically, result in increased aggression, irritability and anxiety, especially in children.

The following describes a girl undergoing dental treatment using midazolam sedation.

Case Report
A medically fit and healthy (ASA I), 14-year-old Afro-Caribbean girl (L), weighing 60 kilos was referred to the Periodontal Department

Figure 1. L’s dental panoramic radiograph showing severe bone loss around all first permanent molars
at King’s College Hospital London, Dental Institute, by her general dental practitioner, whom she had been seeing irregularly for examinations without ever having needed dental or periodontal treatment. The patient presented with grade I mobility and extensive bone loss affecting all first permanent molars seen on her dental panoramic radiograph (Figure 1). She was diagnosed with Aggressive Periodontitis and her treatment plan involved extraction of all four of her first permanent molars. Both first left permanent molars were extracted under local anaesthesia by the periodontist at King’s College London Dental Institute. The extractions were difficult, requiring surgical removal of roots and resulted in the patient becoming extremely anxious, and her refusal to continue her planned treatment under local anaesthesia. Thereafter, L was internally referred by the periodontist to the Paediatric Dentistry Department, requesting extraction of both first right permanent molars under general anaesthesia. At the assessment appointment, both inhalation and intravenous sedations were suggested, as well as general anaesthesia, as options to control her fear and anxiety.

After a lengthy discussion with L and her father it was decided that an attempt would be made for the extractions to be carried out under intravenous sedation and local anaesthesia. Verbal information and a written information leaflet on intravenous sedation was provided to her parents, and written consent obtained from her father. A tube of topical anaesthetic and four Tegaderm™ adhesives were given to the patient, with an explanation to place the cream on the skin over the chosen veins of the antecubital fossa and dorsum of the hands, one hour before the scheduled treatment appointment.

For every midazolam sedation procedure, checks are carried out to ensure that equipment and drugs are set up, emergency medicines are accessible and a pulse oximeter is used throughout.

On the day of the appointment, L arrived with her father and stepmother feeling extremely anxious. L’s baseline readings were recorded and these included blood pressure (125/72 mmHg), heart rate (112 bpm) and oxygen saturation (100%), pre-operative analgesia (oral Ibuprofen 600 mg) was administered at 3:00pm, thus following King’s College Hospital NHS Trust protocol, as this is considered the most effective dosage for patients above 12 years of age, with the intention to prevent post-operative pain and inflammation.

A Y-can cannula was inserted in the dorsal metacarpal vein of the right hand and was secured with a Tegaderm™ adhesive. The pulse-oximeter was placed on the index finger of the left hand, and at 3:15pm, a slow infusion of midazolam 5 mg was administered by titration according to L’s observed responses. Her parents were invited to sit in the waiting area but they requested to stay in the treatment room for the duration of the treatment.

Topical anaesthesia using 20% benzocaine was applied around the upper and lower right first permanent molars and at 3:20pm 2.6 ml of 4% articaine 1:100,000 epinephrine was injected with computerised local anaesthesia (Wand™ STA®) using the periodontal ligament technique. Local anaesthesia was completed after five minutes of slow administration.

At the first attempt to establish if the anaesthesia had taken effect (by probing the gum around her upper molar), L became agitated. The sedation nurse used gentle clinical holding to avoid her moving her head and hands. L continued to be agitated saying she was “scared” and did not want to have the extractions. After discussion with her parents it was agreed that the treatment should proceed. Subsequently, both extractions were carried out with forceps and the treatment was completed uneventfully at 3:30pm.

Haemostasis was achieved with difficulty, as L did not want to bite down on the gauze to apply pressure. She became very tearful, complaining of the taste of blood in her mouth and kept spitting out, against instructions. She was kept for 15 minutes in the dental chair and then transferred to the recovery area at 3:45pm using a recovery chair. In the recovery area, a sedation nurse placed the pulse-oximeter on L and she was clinically monitored. At 4:30pm, an hour after the procedure, the operative sedationist surgeon was alerted to the fact that L was sleeping and was unable to keep her eyes open. Her blood pressure was taken and was recorded at 121/74 mmHg, pulse rate 72 bpm and SpO₂ 100%.

On investigation, L was unresponsive to verbal commands and painful stimuli. This was discussed with her parents and they were informed that a reversal agent would be used to awaken her. Her father then mentioned for the first time that he had had sedation for dental treatment in the past and that it had taken four hours for him to wake up. He also informed us that L was a very heavy sleeper who needed to be shaken awake in the morning and who would sleep for 24 hours at the weekend if not disturbed. Her father also suggested that L would only wake up when she felt like it. The recommended slow intravenous administration of 500µg of flumazenil was given at 5:00pm, but L carried on sleeping, unresponsive to both the flumazenil administration and other stimuli.

The hospital Paediatric Department was contacted to request admission and a bed to permit close observation and monitoring. A paediatric nurse arrived at 6:25pm and at this moment the pulse-oximeter alarm sounded, as L’s oxygen saturation suddenly dropped below 90%. She had been continuously administered oxygen since when she first became unresponsive and had maintained a steady rate of breathing and 100% oxygen saturation until this point.

The crash team were then called as it appeared that L had entered a deep coma-like state. They assessed L’s vital signs and reassured the in-house team that L was maintaining a steady respiratory rate, her blood pressure was 119/78 mmHg, pulse rate 67 bpm and SpO₂ again 100%. She was transferred to a bed in the Paediatric Department of King’s College Hospital at 6:50pm. L was administered a further 300µg of flumazenil at 8:00pm and later transferred to the Critical Care Unit, where she remained for two days.

A left brachial peripheral line was inserted and L was initially prophylactically treated for encephalitis, receiving 4g of intravenous ceftriaxone, clarithromycin 250mg, ranitidine 50mg and acyclovir 600mg. She was continuously monitored for oxygen saturation, blood pressure, pulse rate and temperature, all of which were within the normal ranges. She was given intravenous saline and...
dextrose and her fluid balance was closely and continuously monitored. Regular suction from the extraction sites was carried out and neuro-observations were conducted using the Glasgow Coma Scale every half an hour or as her condition dictated. Traces of midazolam were found in her blood. A chest x-ray and a CT scan were performed both of which proved inconclusive. L was intubated during the CT scan as there was a risk she would not be able to maintain her airway after being given propofol 65mg and atracurium 40mg. She was screened for encephalitis, and a lumbar puncture was conducted and more blood tests carried out, all of which were within normal ranges. She was given intravenous painkillers and NSAIDS throughout.

Over the next four days, L started to become increasingly reactive and responded to commands such as squeezing of hands. Ondansetron 8mg od was prescribed, as she started to vomit and feel nauseous. She complained of a severe headache and blurred vision and therefore an EEG was carried out which detected no abnormalities. L’s symptoms improved rapidly during her remaining days at the hospital.

L was discharged from the hospital after six days, with no further diagnosis other than a possible abnormal reaction to midazolam. She was warned that she should not have sedation with midazolam in the future.

On discharge she was prescribed oral Ibuprofen 400mg qds PRN, oral cyclizine 50mg tds and ranitidine tablets 150mg bds for 14 days, which had been started intravenously at the hospital.

Follow-up

A letter was sent to her general practitioner (GP) requesting a referral for investigation of possible sleeping disorders, such as narcolepsy or Kleine-Levin Syndrome, and another letter requesting a review at the Periodontal Department.

Regular contact was kept with the family who reported that L had fully recovered, was back at school and had resumed her regular activities.

At her three-month review appointment L reported no recollection of the dental extractions but that she sometimes felt a slight discomfort from the site of the lumbar puncture. She attended a review at the main hospital and was subsequently discharged. Her father reports that L still sleeps heavily and for prolonged periods.

At her six month review L reported she continued to attend the Periodontal Department where she was advised to improve her oral hygiene and continue with regular reviews to control her periodontitis and to assess possible management of the spaces left after extractions. Her GP arranged for her to attend a Sleeping Disorder Clinic where she underwent several tests all of which proved inconclusive, however, she has undergone a management program involving a change of lifestyle, going to bed earlier, getting a full eight hours sleep per night and not using any electronic device two hours prior to bedtime. No stimulants have been prescribed. She is going to be regularly monitored by her GP for any changes in her sleeping patterns and if necessary, another referral made to the Sleeping Disorder Clinic.

This is an extremely unusual case of an anxious paediatric patient entering into a deep sleep following midazolam administration, and failure of the flumazenil reversal agent. There were two main issues to consider: firstly, that the midazolam may have triggered an unusual response of a deep sleep or a sleeping disorder and secondly, the failure of the flumazenil.

A literature search was carried out and no publications with similar findings were discovered. Several studies, reporting over-sedation, related more to patients with liver or kidney diseases or prolonged use of midazolam for patients in intensive care units. No studies were found on adverse reactions to midazolam in adolescents. No studies reporting the failure of reversal with flumazenil were found.

The pharmacological effects of midazolam appear to result from reversible interactions with the GABA benzodiazepine receptor in the central nervous system and the major inhibitory neurotransmitter in the central nervous system. Flumazenil is used to reverse the effects of BZDs such as midazolam. It acts as a competitive inhibitor for the GABA receptors, working as an antagonist at the receptors and has a greater affinity for the BZD receptors than midazolam, it acts by displacing it from the receptors and consequently reversing the sedative effects. The effect of flumazenil is usually seen within one to two minutes after administration but can take anything up to ten minutes. The half-life of midazolam is longer than that of flumazenil and therefore the reversal agent may need to be topped up or re-administered to prevent the patient relapsing. In this case coma did not occur until well after the normal half life of midazolam and the patient had fulfilled the criteria for conscious sedation with the higher blood levels present. It is not therefore surprising that in this case flumazenil did not work, though through lack of alternative causes being labelled subsequently as an abnormal reaction to midazolam.

Sleeping disorders are a common phenomenon. However, they are more related to insomnia rather than hypersomnia. Disproportionate sleep is more commonly known as narcolepsy, which is a neurological disorder that affects the control of sleep and wakefulness affecting one in 2,000 adults and may first appear in adolescence. Young adults with narcolepsy experience excessive daytime sleepiness and intermittent, uncontrollable episodes of falling asleep during the day. These sudden sleep attacks may occur during any type of activity, at any time of day. Kleine-Levin syndrome is a neurological disorder characterised by recurring periods of excessive sleeping and eating. At the onset of an episode, the patient becomes drowsy and sleeps for most of the day and night (hypersomnolence), waking only to eat or use the bathroom.

In relation to L, a referral for further investigation was thought to be necessary, even if she did not have any of the above symptoms, on the basis that she suffers from excessive sleeping and tiredness, common to teenagers.

Conclusion

This situation had the potential to be life-threatening had it not been conducted in a controlled environment by appropriately trained staff. Thousands of IV sedations have been carried out with no adverse effects, so this rare episode must not change the
practice for the provision of sedation using midazolam for paediatric patients or the general regulations and training in sedation. However, it has highlighted the importance of the requirement for the sedation team to undergo annual medical emergency and life support training, and to be fully aware of the potential risks of sedation. Following this case, the department has introduced mock emergency scenarios in order to prepare the team for the unlikely event of similar or unusual reactions to sedation.

Acknowledgements

This report was published with the written consent of the patient and her Father.

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Submission deadline 15 August 2014

Please refer to the guidelines for authors on page 65

Contact - fiona@saad.org.uk
Is Sedation by Non-anaesthetists Really Safe?

Webb S.T, Hunter DN,

Sedation is frequently given by non-anaesthetists but is it safe? Most patients would expect mishaps to be rare <1:10,000. Sedation should be approached with caution and may be as difficult as a general anaesthetic to give. Some colleagues and patients view sedation as a lesser and safer procedure as no anaesthetist is needed, others like the presence of an anaesthetist. Varying techniques and inconsistent quality of published data make risk quantification difficult.

In 1995 Quine published an audit for upper GI endoscopy. His mortality rate was 1:2,000 and morbidity of 1:200, poor sedation practice was the culprit. In 2001 the Academy of Medical Royal Colleges (AoMRC) published recommendations “Implementing and Ensuring Safe Sedation Practice for healthcare procedures in adults”. This used the accepted definition of conscious sedation but said deeper levels required a level of care identical to general anaesthesia. It also suggested appropriate training be available to practitioners. Now 20 years after Quine’s audit and 10 after AoMRC’s document, progress has been limited.

Firstly the target level. Conscious sedation is regarded as safe but margins of safety can be easily breached and training to rescue patients from deeper levels has not been formally introduced in the UK. Advances in diagnostics and therapy in cardiology and other specialities may require the patient to be sedated for prolonged periods and be at a deeper level of sedation. It appears that non-anaesthetist sedationists, perhaps unaware of the limitations of their practise, frequently target and achieve deep levels of sedation. Two more recent documents, NICE “Sedation in Children and Young people”, 2010, and RCOA/ College of Emergency Medicine “Safe sedation of adults in the Emergency Department”, 2012, refer to the ASA definition of deep sedation as an appropriate target for a non-anaesthetist seditionist to achieve.

Secondly the drugs used. Propofol is now being used commonly as a sedative by non-anaesthetists particularly outside the UK. The authors contend that the safety margin of this drug is not wide enough to render loss of consciousness unlikely and the death of Michael Jackson may illustrate this. This may not, however, necessarily be true. Various terms are used to describe non-anaesthetist sedation including NAAP (non-anaesthetist administered propofol) NAPS (nurse administered propofol sedation) and EDP (endoscopist directed propofol). Studies of EDP suggest it is associated with low morbidity and is safer than benzodiazepines. Proposals for training of gastroenterologists have been put forward in the US but at present, following Michael Jackson and the intervention of the ASA, have been refused by the US FDA. UK guidance by the British Society of Gastroenterologists is that propofol should only be administered by an anaesthetist. There is now increasing interest in NAAP in cardiology where the procedures can last hours and the propofol given by continuous infusion, but we have grave concerns about NAAP in cardiology.

Thirdly guidance and training in the UK. A number of bodies have made recommendations but only dentistry and anaesthesia have set out comprehensive training programmes, and poor sedation practice continues; without training programmes and assessment there is no safety net. Currently it is expected that non-anaesthetic trainees pick up skills during their specialty training and there are limited opportunities for Consultants to participate in CPD.

Lastly governance. The AoMRC guidance included the appointment of lead clinicians to implement guidelines. The uptake of this is patchy and leads are being asked to sanction deep sedation practices by non-anaesthetists following small underpowered studies showing success. A study of 100 patients without mishap can only give a 95% absolute risk of death certainty of 1:33. Larger studies are needed. So where do we go from here? We need to understand that non-anaesthetists have a limited interest in sedation using it as a tool to allow them to carry out the primary procedure. Are non-anaesthetists less safe, or is it a matter of getting the right training, what should those skills be, who should deliver the training and who will pay? Should the operator sedationist be banned or are there some combinations of procedure and technique safe enough to allow their continued practice? Mandating the need for a trained individual solely responsible for sedation and monitoring will have major implications for healthcare
staffing and costs. It is hoped that the new AoMRC guidelines will clarify the situation and the increased costs of training will need to be recognised in the business plan of non-anaesthetic departments.

Bill Hamlin

Non-anaesthetist administration of propofol for sedation. Caught “NAAP” ing?


Propofol is the most popular anaesthetic agent in the UK. There is increasing worldwide interest in its use for procedural sedation for endoscopy and other interventional procedures. The evidence base for non-anaesthetist use in terms of efficiency safety and cost has now exceeded 500,000 cases showing a low incidence of problems. The term NAAP (non-anaesthetist administration of propofol) is now in widespread use.

Over 4 years to 2008, there were 498 incidents involving midazolam in sedation with 3 deaths. Overdose of midazolam in sedation is now listed as a never event by NPSA implying that an adverse patient outcome is both serious and preventable. There is now a national focus on governance for procedural sedation. NICE guidelines 2010 for sedation in children encompass many concepts that are applicable to adult patients. NICE looked at recommendations for every step in the patient journey.

What do we mean by sedation? In the UK we have the definition of conscious sedation where verbal contact is maintained. NICE, however, uses the American definition which describes a continuum of sedation levels to general anaesthesia. In this paradigm safety is maintained by the practitioner being able to cope with problems encountered at the level deeper than intended. This definition brings the concept of deep sedation into UK practice, the next level being general anaesthesia. Using propofol, with its narrow therapeutic margins, accidental general anaesthesia is easily possible.

NAAP administration. Controversy over NAAP is exemplified by the US debate where anaesthesiologists and gastroenterologists are diametrically opposed. Anaesthesiologists claim, for a number of reasons, including the product data sheet which says it should only be given by anaesthesiologists, that they must be the users. The American College of Gastroenterology unsuccessfully petitioned the FDA to have this clause removed, subsequently publishing a landmark review of 460651 NAAP cases with only three deaths, all of whom had significant “high risk” co-morbidity. This was accompanied by a position statement on the safety profile of NAAP saying that there is no benefit in using anaesthesiologists and the costs are $5m per life year saved or $5billion annually.

In Europe, propofol’s safety profile is similar to other sedative agents and gives a higher patient satisfaction. In the UK the RCoA and AAGBI both say propofol for deep sedation should only be given by an anaesthetist.

Personnel and training. The RCoA has devised a curriculum for anaesthetists for sedation with competencies laid out in knowledge and a skills matrix. If we believe in the validity of these tools they should be applicable to any clinical group, whether anaesthetist physician or nurse practitioner. It is universally recognised that the practitioner giving the sedation should have this as their sole task; the dual sedationist/operator is not defensible. There is also consensus on the need for a period of preceptorship where sedation techniques are practised under expert supervision as complications are more likely early on. The question is, how many cases and who is the expert? CPD must also be seen to be maintained. To this end, NPSA and intercollegiate guidelines have made recommendations on the governance of sedation within hospitals.

Conclusions

There is mounting evidence that propofol is an effective drug for use in sedation with similar rates of complications to traditional agents even when given by non-anaesthetists. Complications can be fatal, the key principle for safe sedation practice is competence, the tools and systems for building and assessing this competence are not yet fully developed, but should include a curriculum of knowledge and practical skills, and a period of preceptorship.

Bill Hamlin

Hypnotic and sedative drugs – anything new on the horizon?


Propofol and midazolam are the main intravenous sedatives currently used for anaesthesia and sedation. Several possible alternatives continue to attract research. Many of these are “soft” drugs designed to undergo rapid predictable metabolism, for example by incorporating an ester into their chemical structure. Maintenance of sedative effect may require continued administration. This review summarises the studies, published in 2012, of several new sedative drugs.

Remimidazolam (CNS7056)

This new benzodiazepine metabolised by tissue esterases has a rapid predictable offset of action. The first phase 1 study showed remimidazolam produced rapid dose-dependent sedation at doses from 0.075 mg/kg with onset times of 1-3 min. Doses of 0.075–0.2 mg/kg produced similar peak sedation to midazolam 0.075 mg/kg but median recovery times for these doses ranged from 5–20 min compared with 40 min for midazolam. There were three cases of hypoxia at higher doses but no cardiovascular instability or serious adverse effects. Metabolism is three times as fast as midazolam and the volume of distribution half that of midazolam. An accompanying editorial explored the implications of this new drug, apart from the obvious benefits for short sedation. Remimidazolam is sufficiently different from previous benzodiazepines to revisit other areas of anaesthesia where synergistic actions with other drugs, although useful, became a problem because of the long duration of action of the benzodiazepine.

A phase 1b study using remimidazolam for sedation during colonoscopy used increasing doses 0.04, 0.075 and 0.1 mg/kg plus fentanyl 50 mcg topped up incrementally to maintain sedation for 30 minutes. This was successful in 33/44 subjects. Onset of sedation was within 1 minute and recovery within 10 minutes of finishing. A few subjects had hypotension which resolved with fluid. Remimidazolam is reversed with flumazenil.

JM-1232/MR04A3

JM-1232 is an agonist at the benzodiazepine binding site but does not have a benzodiazepine structure. First trials in humans gave a plasma effective concentration(EC50) of 200 ng/ml, doses of 0.2-0.4
mg/kg produce onset of sedation in 1.5-2 min with recovery in 15-38 min, arterial pressure was moderately reduced.

One unique feature of JM-1232 is it appears to be antinoceceptive, this may be as a result of an increase in spontaneous release of GABA and glycine from nerve terminals in the substantia gelatinosa.

AZD-3043
AZD-3043 is a positive allosteric modulator of GABA(a) receptors; it is an analogue of propranidid with an ester to be rapidly metabolised. Animal studies show it to have a shorter action than propofol but it requires 4 times the dose for the same effect. Studies also suggest it has a similar method of action to propofol. No further studies are active at present.

Intravenous emulsion of volatile anaesthetics
A University in China is looking at 8% isoflurane dissolved in 30% intralipid, so far only in Beagles. The University of Wisconsin has used 20% sevoflurane in a fluoropolymer and shown smooth induction and rapid recovery in rats.

Conclusions
New sedative agents have been produced with ester moieties to allow rapid metabolism, this means continuous dosage regimes for longer sedation periods but which may create problems with build-up of metabolites. Nevertheless remimidazolam appears to be a useful drug for short sedation. Whether the others will prove better than propofol remains to be seen.

Bill Hamlin

Effect of Sedation on pain perception
Frolich M A, Zhang K, Ness T
J. Anesthesiology. 2013; 118(3):611-619

In the US in 2007 there were 45 million diagnostic procedures many of which were performed under sedation or anaesthesia. The most common IV sedatives are benzodiazepines, propofol and less frequently dexmedetomidine. Contrary to the belief of many clinicians that sedative drugs will reduce pain sensation, pre-clinical studies indicate, possibly, the reverse. The GABA receptor agonists midazolam and propofol have been shown to enhance pain, the alpha2 agonist dexmedetomidine, reportedly has no effect on pain perception.

Methods
90 volunteers aged 19-40 were recruited to rate their pain sensation in response to several experimental pain tasks, at baseline, and while being sedated with midazolam, propofol, or dexmedetomidine. A secondary study looked also at gender and race.

The following painful stimuli were used and scored on a mechanical slide algometer with no pain to worst pain imaginable being the scale limits.

Heat pain. A temperature probe at either 45, 47, or 49°C was applied for 3s to the forearm on 9 occasions, pain felt was recorded on the algometer.

Cold pain. This was induced by immersion of the volunteer's right hand into a plastic cup with water at 2-3°C for 20s then immersing it in warm water at 30°C, this was repeated twice and pain scored.

Electrical pain. A 2 ms electric current of 6, 8, and 10 mA was passed through the right middle finger and the pain scored.

Ischaemic pain. The right arm was exsanguinated and a tourniquet inflated, subjects then performed 20 hand grip exercises and rated pain every 30s for 5 min.

Once baseline scores had been recorded, volunteers were sedated by continuous infusion of the allocated sedative. This was target controlled to give calculated plasma levels. Doses were increased until participants were considered moderately sedated, at which point the tests were repeated.

Results
Clinically and statistically, the most significant finding was that midazolam increased cold, heat, electrical, and ischaemic pain sensation. Propofol increased heat pain, but reduced cold, electrical, and ischaemic pain. Dexmedetomidine increased heat and electrical pain, but reduced cold and ischaemic pain. Female subjects rated identical pain stimuli higher than male subjects, and with dexmedetom edetidine, higher doses were needed to sedate Caucasians compared with African Americans.

Discussion
The most important point is that midazolam is hyperalgesic for all tested modalities of pain with propofol and dexmedetomidine, having effects both ways. Scientists feel that the test pain of ischaemia and cold best reflect those of clinical pain because of their psychophysical properties. Although these are reduced with propofol and dexmedetomidine sedation, this is insufficient to omit the use of analgesics. The differences found in pain perception with gender and race should also be noted.

Bill Hamlin

Could conscious sedation with midazolam for dental procedures be an alternative to general anaesthesia?
Silay E et al, Niger
J Clin Pract, 2013; 16(2); 211-215

Severe anxiety and extreme fear experienced by young children has made many dentists refer to centres capable of general anaesthesia (GA) or conscious sedation (CS). The aim of this study was to evaluate the likelihood that CS with intravenous midazolam could become an alternative to GA for dental procedures.

Method
105 patients between the age of 2 and 12, mean age 6, were included. 58 were recruited to the GA group and 47 to the CS group. Choice of group was made by the parents, following a full explanation of both techniques. Ethical approval was obtained from the local ethical committee.

Patients were instructed to fast for 8h prior to procedure. GA patients had a pre-med midazolam 0.5 mg/kg intra-nasally, where necessary.

Procedures included restorative treatment, root treatment (GA group only), extractions, wisdom teeth extraction, and phrenectomy. All GA cases were intubated. The following observations were made: initial and repeat doses of anaesthetic and sedative, oxygen saturation and pulse rate, duration of procedure, behaviour under CS, physician's comfort, and recovery behaviour.

Results
No complications were noted in either group. The CS group received an average of 1.5 mg midazolam, with 32 receiving a further top-up dose because of the duration of the procedure. The O2 saturation was
significantly lower in the CS group, 98.4 vs 99 GA, and the duration of procedure significantly shorter at 30 min vs 60 GA.

“Although a sufficient level of CS was achieved, difficulties were noted by the physicians during the treatment of the cases under CS. Limited movements and limited crying were observed in most patients.” All procedures were completed but “difficulty in swallowing or total loss of the swallow reflex was experienced in some patients prompting the physicians to act in a more anxious and hasty manner”.

**Discussion**

Patients under GA received better care than those performed under CS. GA allowed comprehensive dental restoration of the mouth, whereas CS allowed only the primary problem to be treated. There were also questions about the quality of restorations done under CS in view of patient compliance and the need for haste. Sedationists were very reluctant to top up sedation for fear of side effects. CS using intravenous midazolam is not an alternative to GA.

**The effectiveness of a near-infrared vascular imaging device to support intravenous cannulation in children with dark skin colour: a cluster randomized clinical trial**

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This randomised controlled trial looked at the benefits of using a near-infrared vascular imaging device (VascuLuminator) for the cannulation of children with dark skin colour in a theatre environment. The study was carried out in a general hospital in Curaçao and included children from 0 to 15 years of age. The device was used by anaesthetists whose first attempt success rate was 63% with the VascuLuminator compared to 51% in the control group. The authors conclude that in this study the VascuLuminator was of limited value in the success rate of first attempt cannulation of children with dark skin colour.

Sadie Hughes

**Effect of aromatherapy with orange essential oil on salivary cortisol and pulse rate in children during dental treatment: A randomized controlled clinical trial**

doi:10.4103/2277-9175.107963

There has been a renewed interest in the use of holistic therapies as adjuncts to dentistry. This cross-over study investigates the use of aromatherapy oils in waiting rooms and the corresponding effect on dental anxiety in children waiting for dental treatment. The authors suggest the simple intervention of introducing aromatherapy with essential oil of orange to decrease patient anxiety. Each child received a dental prophylaxis and fissure sealant at each appointment, one appointment using aromatherapy and one without. Anxiety was measured using pulse rate and salivary cortisol levels. Although this is a small study of 30 children between 6 and 9 years old, the results are positive. The authors go on to say that further studies could be carried out with larger sample sizes, in younger children, children with history of previous dental treatment and for more complex dental procedures.

Sadie Hughes

**Oral surgery: The Indicator of Sedation Need (IOSN)**

Coulthard P, Dent Update 2013;40:466-471

In the new era of Commissioning Sedation Services, it is sometimes difficult for non-clinical commissioners to make a judgement on which patients should be offered sedation in order to provide a service based on clinical need, rather than patient demand. This paper describes the development of an index for sedation need, the indicator of sedation need (IOSN) tool. This tool provides a more comprehensive and accurate approach to assessing sedation need than the Modified Dental Anxiety Scale alone and uses information about a patient’s anxiety, medical status, behavioural status and treatment complexity. Research using the IOSN to measure sedation need in the general population (those accessing general dental practices and non-attenders) was found to be 6.7%.

Sadie Hughes

**Safety and predictability of conscious sedation in dentistry - a multi-centre regional audit: South and West Wales experience**


This article summarises an audit carried out to assess current practice within a local research network group in relation to the safety and predictability of dental treatment of under conscious sedation.

Of the nine participating centres, two were hospital based, one GDS and the rest CDS. The audit standards were set at a 90% completion rate and an adverse incident rate of 2% or less. Information was collected from 1,037 sedation episodes over the course of one year. The practitioners were given the option of recording additional drugs used, although the results are not published. The authors raise this point in the discussion identifying it as a potential source of improvement in data collection for future studies. The nine centres met the standards set and current practice in these centres was found to be safe and predictable. It was encouraging to read how successful sedation was in the participating centres, especially in the younger age group. It would be interesting to know which sedation methods were used at each centre and the proportion carrying out advanced sedation.

Local research networks amongst clinical practitioners are a valuable source of data, especially those in primary care. Unfortunately, current NHS financial implications and the drive to meet numerical targets make funding and time availability for research low priority for clinical directors in primary care. This audit highlights the proportion of low adverse events and high success rate for conscious sedation for dental treatment outside hospital settings and shows the benefits of multi-centre information collection. The authors are planning to refine the audit tool to improve the quality of data collection and hopefully more will be forthcoming from this sedation network group in the future.

Sadie Hughes
Introducing An Alternative Drug-Free Technique For Pain And Anxiety Control Into A Clinical Environment

Cognitive Behavioural Therapy: A discussion On Implementation Into Dental Practice

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Abstract
Pharmacological methods of pain and anxiety control include local anaesthesia and conscious sedation techniques. On occasion the anxiety levels of some patients are so extreme that alternative methods of pain and anxiety control are required. The provision of conscious sedation and even in extreme cases general anaesthetic can be useful. These methods are usually very effective in treating nervous patients and offering sedation services helps patients seek dental treatment more readily. However, by decreasing the demand for conscious sedation and certainly the demand for general anaesthetics the risks associated, waiting lists and costs incurred will also be diminished.

Despite recent advances in dental techniques and the provision of sedation services there has not been a marked decrease in dental anxiety within the general population. This could be because the anxieties are not being dealt with; they are just being managed by these techniques and patients still cannot cope with having dental treatment without these pharmacological methods.

Cognitive behavioural therapy is a non-invasive psychological intervention therapy. Psychological therapies have been shown to decrease dental anxiety. Therefore this therapy could be used to potentially decrease the demand for sedation. Implementing this into a general practice setting could certainly help a number of nervous but motivated patients. It also may improve waiting lists and costs from sedation procedures. The end goal is to help patients receive routine dental care with decreased pharmacological support. It is, however, important for dentists providing this to have sufficient and appropriate training.

Introduction to dental anxiety
Throughout the general population there is a high incidence of dental anxiety. This frequently leads to dental treatment being postponed and in some cases not being sought until there is a serious dental problem. It has been found that 40% of adult patients experience some form of dental anxiety and 5-7% of these patients avoid dental visits. After years of avoidance, leading to poor oral health extensive invasive procedures are often required and the thought of that alone can affect the patient’s anxiety further and emotional health. The General Dental Council states that “dentists have a duty to provide and patients have a right to expect adequate and appropriate pain and anxiety control.”

The anxiety of some patients is so extreme that alternative methods of pain and anxiety control other than behavioural management and local anaesthetic, are required. Pharmacological methods of pain and anxiety control include local anaesthesia and conscious sedation techniques. This highlights the need for conscious sedation and in some cases more extreme methods such as general anaesthetics. These methods are usually very effective in treating nervous patients and offering these services help nervous patients seek dental treatment more readily. However, there is a need to attempt to decrease the demand for conscious sedation and certainly the demand for general anaesthetics due to the risks associated, waiting lists and costs incurred.

Despite recent advances in dental techniques and the provision of sedation services there has not been a marked decreased in dental anxiety. This could be because the actual anxiety is not being dealt with; it is just being managed by these techniques and patients still cannot cope with having dental treatment without these pharmacological methods. The end goal is of course to provide dental treatment on these nervous and even phobic patients without the need of pharmacological methods. There are alternative drug free methods of a pain and anxiety control that can be used in a dental setting. These could be the key to providing dental treatment without the need for sedation. It is not to say that the patients will not be anxious, they would hopefully be able to manage their anxiety and cope with the treatment provided. These techniques include acupuncture, hypnosis, audio and visual distraction therapy, and cognitive behavioural therapy. These have all been shown to decrease dental anxiety. These may be used as an adjunct at first alongside pharmacological methods. Ideally it would be possible to treat phobic patients with these methods alone, along side teaching them alternative coping methods other than avoidance. Anxiety has been shown to increase postoperative pain, which in turn could result in a greater phobia of dental treatment, not only about the treatment involved but also regarding the pain experienced afterwards.

Overview of cognitive behaviour therapy
Cognitive behaviour therapy (CBT) is a non invasive psychological intervention therapy. This is one of the most commonly used therapies for treating neuroses such as anxiety and depression. Psychological therapies have been shown to decrease dental anxiety. Therefore this therapy could be used to potentially decrease the demand for conscious sedation and general anaesthetics giving patients the ability to accept dental treatment without the need of these measures. CBT is comprised of two elements. The cognitive part which addresses the patient’s thought patterns, in this case to look at the unhelpful and helpful thoughts of a nervous patient which in turn lead to the patients’ behaviours and challenge these thoughts in order to change the behaviours. The negative thought process can lead to a negative consequence, for
example, the patient feeling that they will feel pain from the injection and the treatment provided can, and often does in anxious patient, lead to the patient avoiding the appointment. The cognitive aspect of CBT aims to restructure the thought process in order to prevent the negative consequence from happening. Patients who are dentally anxious frequently expect to feel “…unexpected pain…” and it was found that patients who received CBT reported a decrease in both “…expected and experienced pain…” 18 The behavioural element targets the coping mechanisms the patient currently uses and aims to provide the patient with more effective and useful mechanisms to use throughout treatment enabling the patient to cope with dental treatment more successfully. These coping mechanisms include relaxation, distraction skills and systematic desensitisation. 19 The desensitisation can include pictures of dental instruments, hearing the noises of the dental hand pieces and watching DVDs of certain procedures. 20

This type of therapy is safe and has been proven to be effective. Implementing this in to practice could certainly help a number of nervous but motivated patients. Introducing a new idea or therapy is not as simple as just offering it to patients who attend their dental appointments, there as to be more structure to the implementation including planning, dentist training and patient selection.

Implementing CBT into a general dental practice setting

There are new therapies and treatments continually developing in order to improve upon current standards. In order for them to be accepted into clinical practice they have to have been through a series of trials and assessments. Figure 1 shows a simplified model of how evidence based medicine is brought into practice. This is a simplified version as in practice it is frequently not as linear as this figure illustrates.

This shows the basis of how CBT could be brought into dental practice. There has already been a great deal of research into the use of CBT in a dental setting but we are not at the stage yet where it has become a commonplace clinical procedure. In order to incorporate this into an everyday dental practice setting guidelines on how to use CBT in dental practice need to be published

Implementing this into a personal clinical setting

There are tools and models available to assist in the implementation of change, in this case introducing a new therapy, CBT is now a widely accepted form of treatment for anxieties, however incorporating this into a dental care setting is only in the very early stages of development in Guy’s Dental Hospital, London. In order to incorporate such a treatment a framework has been developed and is used throughout the NHS. Part of this framework for improvement and implementation of a change involves a cycle (figure 2).

Figure 2. The Plan Do Study Act (PDSA) cycle (modified)
The first phase of this cycle is regarded as the ‘plan’ phase during the PDSA modified model (Figure 2, see Appendix 1 for the complete unmodified model). This plan must incorporate the objective of the treatment, in this case in would be to reduce dental anxiety and allow a patient to receive dental treatment, attend regular appointments and finish courses of treatment ideally without the need for sedation or referrals to specialist centres. Also in this plan certain features need to be identified including who will be responsible for providing the treatment and who else needs to be involved or present, what the treatment will incorporate, where the sessions will be held how long for and when.

Therapist and premises
CBT is a relatively straightforward therapy that does not require too much depth into the patient’s past or social circumstances. It has been found to be effective at treating phobias. The relationship between the patient and therapist is extremely important during this type of therapy. The dentist-patient relationship, which may have already been established, would be a useful starting point. The therapy sessions could be held in the surgery or if the patient was too uncomfortable in this setting initially it could be held in a non-clinical room in the practice to acclimate the patient gradually to the settings. As the therapy progressed it could be moved to a clinical setting which would help to acclimate the patient to the surgery and make them feel more comfortable. Experiencing something else in the surgery other than treatment would help them feel safer in the surgery when it comes to providing treatment.

Patient selection
CBT can be use to treat a range of anxieties and phobias. On implementing this into a general dental practice setting it might be wise to start with a select number of patients with a specific anxiety. For example on patients who avoid dental treatment purely because of their needle phobia. In this way it could be started off in the surgery, as they are not too nervous to enter. In a recent study on patients who were needle phobic who received CBT therapy 89% of patients returned for a one year follow up, whereas previously their mean avoidance was seven years 25 and after five sessions of CBT their dental anxiety after one year had reduced. Scales would have to be used to determine this and questionnaires to develop an understanding into the patients general or specific anxieties. These scales, if done post operatively, will also provide evidence for the success of CBT would formulate part of the data for audit and evaluation, which is a necessary part of introducing a new treatment.

The sessions and structure
There has been development of a toolkit by King’s College London and SAAD, which can assist the dentist providing the CBT. This toolkit provides written materials, which can be used as aids throughout the therapy either as homework material or could be incorporated as part of the session. The person taking the therapist role (in this case in a general practice setting it would most likely be the dentist) works alongside the patient throughout their treatment, which would usually consist of between six to ten sessions. Each session is structured to cover specific areas of development. Homework plays an important role in this therapy putting the responsibility onto the patient who must build up their skills in between sessions. There is a clear evidence base for this therapy as a tool to be used as an adjunct to pain and anxiety control methods. To make it viable it has to be implemented into a clinical setting. The toolkit would provide invaluable information into the structure of these sessions (Appendix 2).

Training and supervision
Basic CBT training would be required initially by the dentist providing the treatment and attendance on courses would be advisable to maintain their knowledge and skills in the development of CBT. There is current research and funding into this looking at funding for CBT in general dental practices and community based services. Supervision and support for the dentist, ideally from another therapist or more experienced CBT provider to increase the competence and deepen the knowledge of the dentist. It is recommended that therapists should receive some sort of support, although not all receive it.

The second part of the cycle is the “DO” phase. This is when the treatment (or plan) is carried out. Throughout this treatment it is important to record data gathered from the patients involved in the treatment. This data would include questionnaires and scales such as the Modified Dental Anxiety Scale and Spielberger’s State Anxiety Inventory. There needs to be recorded of the pre operative questionnaires and also post operative so a comparison can be made.

In the third phase the data needs to be analysed and compared to the initial outcome measures. In the case of implementing CBT as a form of anti anxiety treatment it would be hoped that with the provision of CBT sessions the self reported anxiety decrease and ability to accept treatment and attend appointment would increase. From this analysis a summary can be drawn into how effective the treatment has been, the aspects that worked well and any changes that may need to be made.

The final stage of the cycle is interestingly not the final stage of the model. At this level the next cycle is planned from looking at the data and results gathered and a decision is made as to whether the change can be implemented. If another cycle is deemed necessary then the cycle begins again with relevant changes.

CBT in general dental practice is still very new and in the early stages of development. There is not currently a model of how it would work yet, however there is as service for CBT in general medical practice, known as the IPAT scheme. This programme was developed after a review by the National Institute for Health and Clinical Excellence (NICE) recommended the use of therapies such as CBT in the treatment of anxiety disorders and depression. It aims to increase the access to therapies via GPs or self referrals. After three years of this programme running, initially in just two pilot schemes, it has implemented in 95% of primary care trusts in England, proving to be very successful. From looking at this scheme it is evident that this could be used as the basis for introducing CBT into dental practice. It is thought that the initial cost of the programme would be outweighed by the cost that would be saved such as medical treatments, benefits and these people then returning to work. This could be the case within dental practice, patients would attended more appointments, finish treatment plans and there would then be fewer courses of incomplete treatment and decrease the emergency access needed by these patients. This framework could provide the basis for a CBT service in general practice.

There are several key points to the services provided within the medical setting; most of which are relevant to dentistry also.

- The referral process; once the therapy has been implemented there should be a referral process whereby patients can be referred by their general dental practitioner, doctor or via a self-referral.
- Patient centred goals; there is a strong emphasis on goals throughout the CBT process. Short-term therapies need goals in order to keep the focus.
Regional challenges

Implementing a new idea or therapy is a complex process and not “Resistance is a natural, universal, inevitable human response to change that someone else thinks is a good idea, and resisting change or improvement does not make someone bad or narrow-minded.”

Challenges

“Resistance is a natural, universal, inevitable human response to change that someone else thinks is a good idea, and resisting change or improvement does not make someone bad or narrow-minded.”

Implementing a new idea or therapy is a complex process and not without its challenges. The challenges fall into three main groups.

Internal patient problems, problems within the practice and regional/national problems. Each of these areas will be looked at in turn.

Internal patient challenges

As with all new therapies problems will be encountered which will lead to a need to adapt the service. To minimise the effect of this it may be best to try this out on a small number of patients first or to formulate a pilot study. This could be done with one or two clinicians and a select number of well chosen patients for one afternoon a week. The results would then need to be analysed to note the effectiveness.

This therapy will be aimed at nervous patients and at the initial appointment the aims and procedure and outline of the therapy will be discussed. This in turn could encounter problems, if the patient feels to nervous to attend the surgery knowing that they may not be receiving sedation and the end goal is to get them to have treatment without sedation then they may feel too anxious to attend. Patient selection is a key point here, highly motivated patients are required for this sort of therapy to work, also as a lot of homework is expected to get the full benefit of the therapy. Patients may enter this type of therapy without full knowledge of what is involved and expected. This may result in a failure to attend the appointments (much like the dental appointments) before the treatment is complete.

Challenges within the practice

Engaging other staff members may prove difficult, especially if they are very familiar with solely pharmacological methods they may be reluctant to change or recommend patients try this if they feel sedation is adequate. It has been shown that if a few colleagues are involved during the first pilot they will be less reluctant to change.

Regional challenges

Most of the research done on CBT has been in a controlled environment, there are no known pilot groups that have conducted trials and analysed research in a dental practice setting as of yet, therefore making it difficult to implement into a primary or secondary care setting without any previous pilots to look at. Time and funding is of course a large challenge. The initial start up costs may be expensive due to training and surgery time. If CBT is to be charged for privately then these costs may be covered however providing this therapy on the NHS or in a community setting there would be a funding issue.

Primary care trusts are looking into proving this service but no funding plans have been designed as of yet. It is important that the dentist providing the treatment receives supervision and this is itself may be difficult to provide since CBT in the dental practice is a new concept. There are weekend courses available but these, at present, are limited. The relationship between other dentists and other mental health workers is extremely important, dentists must be able to refer back to a more training psychologist or psychiatric unit if they feel the issues or anxieties extend beyond the dental anxieties.

Conclusion

There will always be a need for conscious sedation and general anaesthetic services but it is important that we look to keep these to a minimum and if possible reduce their demand by offering other, less invasive procedures in order to help people receive dental treatment without them. CBT is an ideal therapy to be used along side sedation at first and may result in it not being needed at all. The SAAD CBT Toolkit provides invaluable resources and information on CBT and it is more than likely that most dental practitioners who are interested in CBT this will be their first port of call. Although CBT in the dental practice setting does not dive to deep into a person psyche proper training is required to keep the sessions controlled and relevant. There will of course be challenges encountered, possibly the biggest gaining credibility within a general dental practice environment. This highlights the need for evaluation, audit and data recording to back up the treatment and show that the results are effective and an efficient way of helping nervous patients without the sole use of pharmacological agents. Reporting the performance of CBT is important to gain credibility and build up a referral base. In order for this therapy to be sustainable positive results such as increased attendance less missed appointments and a decrease in patient anxiety would help to support the funding and research into CBT in dental practice.

Appendices

Appendix 1

PDSA full cycle

Langley et. al

SAAD DIGEST | VOL.30 | JANUARY 2014
Appendix 2

Structure of the CBT sessions (from the SAAD CBT Toolkit)

Session one: assessment and case formulation
Set agenda
Introduce CBT

Session two: introduction to relaxation and distraction skills

Session three: systematic desensitisation

Session four: using cognitive techniques

Final session: closing and re-assessment

(Note some sessions may last more than one individual session).

References


Online CPD from the SAAD Website

Log-on to the membership area and follow the link ‘Online CPD’

Answer the multiple-choice questions relating to the refereed papers section of this issue of the SAAD Digest

CPD certificate provided as a download
A Study at Manchester Dental Hospital, of the Compliance of IV Sedation Patients and Their Escorts

Kate Lightfoot
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Winner of the SAAD Dental Student Essay Prize for 2013

Abstract
Oral surgery, under intravenous sedation, is carried out on a daily basis at Manchester Dental Hospital. This essay discusses the background of conscious sedation in the dental setting and looks at the compliance of patients (and escorts) when having intravenous sedation. The patient journey, from pre-operative assessment through to treatment is considered. Hospital instructions indicate an obligation for patients to attend with a responsible adult (eighteen or over) who remains with them throughout their treatment, escorts them home, and arranges their care for the next twenty-four hours. By following these instructions the patient should receive optimal care. Two questionnaires were devised and given to patients/escorts to assess their compliance with Manchester Dental Hospital post-operative protocols. 100% compliance was the set standard, with results presented as pie charts. This work began during the undergraduate summer vacation of 2012 and continued over a five-month period. Initial results suggested that compliance was generally good but certain improvements could be made. Suggestions for future development are presented. These aim to give clarity to all patients/escorts and their specific roles in the anticipated treatment.

Introduction
In November 1998, with their publication of ‘Maintaining Standards: Guidance to Dentists on Professional and Personal Conduct’, the General Dental Council (GDC) introduced new guidance on general anaesthesia (GA) for dentistry. In this document it is stated that:
• In assessing the needs of an individual patient, due regard should be given to all aspects of behaviour management and anxiety control before deciding to treat or refer for treatment under GA
• GA for dental treatment should only be administered in a hospital setting with critical care facilities.

For many years prior to this, general anaesthesia had been carried out in primary care settings. Unfortunately there had been several high profile cases of patient deaths whilst receiving dental treatment under GA outside hospital. During the period 1996-1999, there were eight deaths, of which five were children. Since the GDC publication there has been a striking overall decline in numbers of GAs administered for dental treatment. This fall in GA treatments has been associated with a subsequent growth in the use of conscious sedation as an alternative.

Conscious sedation can be defined as ‘A technique in which the use of a drug or drugs produces a state of depression of the central nervous system enabling treatment to be carried out, but during which verbal contact with the patient is maintained throughout the period of sedation. The drugs and techniques used to provide conscious sedation for dental treatment should carry a margin of safety wide enough to render loss of consciousness unlikely. The level of sedation must be such that the patient remains conscious, retains protective reflexes, and is able to respond to verbal commands.’ This definition is widely accepted by the National Dental Advisory Committee, Standing Dental Advisory Committee and the Dental Sedation Teachers’ Group.

Oral surgery, under intravenous (IV) sedation, is carried out on a daily basis at Manchester Dental Hospital (MDH) and the Dental Sedation Suite at Manchester Royal Infirmary (MRI). All adult patients receiving oral surgery treatment under conscious sedation at MDH/MRI are given a single drug - Midazolam (a benzodiazepine).

During my fourth year as an undergraduate I found the discipline of oral surgery challenging but extremely enjoyable and I was keen to expand my knowledge. I wanted to improve my skillset, particularly by encountering anxious patients having treatment under IV sedation. To enable this, I undertook a three-week placement shadowing various members of the oral surgery team. This was carried out during the summer vacation of 2012.

I became aware that, although the hospital provides information to all IV sedation patients, there is a minority of people who attend for their appointment who are subsequently refused treatment. This is often because they have not followed the required post-operative protocols, usually by not bringing a suitable escort with them. This has a potential financial implication for both theatre and staff time. There are, on occasion, valid reasons why every theatre slot is not used, e.g. staff holidays. However, full capacity cannot be reached if there are patients who do not telephone to cancel, cancel at short notice or do not comply with important instructions, e.g. providing an escort. It is crucial that these services are used efficiently.

From these observations, I became interested in the journey that a patient takes through the oral surgery department before their treatment takes place. I wished to see if there were any areas where improvements could be made, specifically in order to prevent patient non-compliance. It is initially decided at a consultation appointment whether a patient wants, and is suitable, to receive their treatment under conscious sedation. Before they may have treatment, they must have a pre-operative assessment with a specially trained nurse. I spent a clinical session with one of the pre-assessment nurses. The appointment involved a thorough investigation, including medical history, height, weight and blood pressure measurement. The patient is clearly told of the obligation for them to attend with a responsible adult (18 or over) who must be able to remain with them throughout their treatment time, escort them home and arrange their care for the next 24 hours. It is made clear that the home journey should be made by private car or taxi but not public transport. As the effects of sedation can last up to 24 hours, the patient is told that they must not drive, operate any machinery or use any domestic appliances. They should arrange for an alternative responsible adult, but not the patient’s escort, to carry out any necessary childcare. The patient is made aware that these instructions are for their safety, and compliance will result in the best care for them. If they are unable to confirm they will have an escort, arrangements are made to admit them as a hospital in-patient. It is recognised that people often find it difficult to retain large amounts of information so all the advice is reiterated in a leaflet for the patient to take home (Fig. 1). At the end of the assessment, the patient’s signature is required, to indicate their understanding of the treatment planned.
The patient is left to arrange a suitable escort. Currently the hospital relies on the patient to impart information to their escort, in whichever way they wish. There is no specific written advice for the patient to give to their escort.

When the appointment day arrives, the patient attends (with their escort), and after all the necessary checks, their treatment is carried out. Post-operative care begins immediately upon completion of treatment. A patient will remain in the hospital for a minimum of an hour after the last increment of sedative has been administered. Patients are then discharged into the care of their escort.

In their leaflet, MDH have specified a post-operative supervised recovery period of twenty-four hours. Guidance on this came from the Royal College of Surgeons in 1993, in which they suggested that the ‘next twenty-four hours’ following the procedure is an appropriate recovery period. More recently, the Scottish Dental Clinical Effectiveness Programme (SDCEP) have published guidance in their document ‘Conscious Sedation in Dentistry’. In it they state “a responsible adult escort must accompany the patient to their appointment and escort them home after treatment under conscious sedation. Arrangements must be made to ensure the patient is supervised for a minimum of the rest of the day. It is essential that the escort gives attention to the patient and therefore should not be responsible for children, elderly and/or dependent relatives.”

The whole process that the Oral Surgery Department follows appears to be extremely thorough. The instructions are clear and unambiguous, yet some patients still don’t follow them. As an undergraduate wishing to observe and gain experience, it is frustrating when precious clinical time is not utilised.

Having read more widely about difficulties with patient compliance, I was inspired to undertake a study looking at patients (and their escorts) to determine the level of knowledge in both sets of people. I was interested to discover where, and when, any improvements could be made to help reduce patient non-compliance. I kept a record of how many patients were refused treatment due to being unable to provide an acceptable escort. I also developed two questionnaires to give to patients/escorts to assess their intended compliance with MDH post-operative protocols. The questionnaires can be seen on the SAAD website, http://www.saad.org.uk/saad-digest/. The results are presented below.

**Methodology**

The study was carried out on a sample of consenting adult day-patients (over 18) treated with intravenous sedation (midazolam), and their escorts. The clinical settings were Manchester Dental Hospital and Manchester Royal Infirmary Dental Sedation Department. The patients were attending appointments with different surgeons from the Oral Surgery Department. A random sample size of 50 patients/escorts was chosen. Due to my undergraduate commitments, the questionnaires took five months to complete. Questionnaires were administered prior to any contact with nursing staff. In order to prevent bias, patients and escorts were isolated during questionnaire completion. They were offered no assistance, unless they had literacy issues, and in these cases the questionnaires were read to them. Excluded patients included those whose native language was not English and people who were hospital in-patients. Patients were also excluded if they had completed a questionnaire previously. The questionnaires were paired in order to relate patient and escort responses. Both patient and escort questionnaires were anonymous. The questionnaires were viewed after the clinical session had been completed.

**Results**

**Patients attending with a suitable escort:**

92% of patients attended their treatment session with a suitable escort, meaning that treatment was only prevented in 8% of cases. This 8% of patients take up a further appointment, as they have to return for a subsequent visit. It would be advantageous to redress this statistic in order to reduce the annual sedation waiting list figures and reduce costs.

** Patients acknowledging having received verbal and written post-operative sedation instructions:**
69% of patients recalled having been given written and verbal post-operative instructions. Only 20% of patients couldn’t recall receiving written instructions at all.

Patients reporting that they intend to return home by car or taxi:

![Pie chart showing percentage of patients reporting their intention to return home by car/taxi/other](chart1)

100% of patients reported they were planning to return home after sedation, by car (driven by the escort) or taxi. This was a positive result, as it shows compliance with instructions.

Patients aware that they should have 24 hours post-operative care:

![Pie chart showing amount of time patients expect to be cared for](chart2)

I decided that acceptable responses were 17-24 hours and 25-36 hours, with 61% of patients reporting these time lengths. A small number, 9%, of patients expect to have no care after arriving home. This has implications for their care, as there is the possibility of altered behaviour whilst under the effects of sedation, which could be dangerous to their health. They should not be using domestic appliances, e.g. kettles, in case they cause accidental injury to themselves.

Patients aware of treatment to be carried out:

![Pie chart showing anticipated treatment to be carried out](chart3)

100% of patients were aware of the treatment they would receive. The majority were attending for dental extractions. ‘Other’ included tooth exposure, apicectomy, bone-filing, bone-grafting and implant placement.

Patients aware of the sedation level they will experience during treatment:

![Pie chart showing how patients expect to feel during sedation](chart4)

46% of patients gave the correct response – ‘awake, relaxed and able to talk/respond’. 24% of patients appeared to believe they would be asleep during the procedure.

Escorts aware that the patient should have 24 hours post-operative care:

![Pie chart showing time the escort will remain with the patient](chart5)

Once again, acceptable responses were 17-24 hours and 25-36 hours, with 63% of escorts reported these time lengths. 3% of escorts stated that they would remain with the patient for no time.

Escorts aware they should be the sole carer for the sedation patient:

![Pie chart showing percentages of escorts caring for anyone else as well as the patient](chart6)
27% of escorts reported they would be caring for another person(s) whilst caring for the patient, without another responsible adult being present. In the majority of cases these extra dependents were children. If the patient were to be left alone without care, they could potentially suffer as a result of a complication.

Escorts reporting receiving advice:

<table>
<thead>
<tr>
<th>Percentage of escorts reporting receiving advice</th>
</tr>
</thead>
<tbody>
<tr>
<td>No advice</td>
</tr>
<tr>
<td>Talked to patient</td>
</tr>
<tr>
<td>Read the sedation leaflet</td>
</tr>
<tr>
<td>Talked to patient and read the sedation leaflet</td>
</tr>
</tbody>
</table>

35% of escorts reported having received no advice from the patient. Ideally, the escort should receive some level of advice about the post-operative care they are expected to provide.

Would an Escort Information Leaflet be useful?

<table>
<thead>
<tr>
<th>Percentage of escorts who thought an information leaflet would be useful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
</tr>
</tbody>
</table>

An overwhelming 84% of escorts believed that it would be of benefit to be provided with a leaflet on sedation aftercare. Of the 16% who answered ‘No,’ further questioning revealed that they had either previously worked, or currently worked, in a dental setting and considered themselves sufficiently knowledgeable.

Recommendations

At the end of my study, it became apparent that there were areas that could be developed. My first suggestion would be to trial an Escort Information Leaflet. During their pre-assessment appointment the patient must identify who will act as their escort. The Escort Leaflet could be sent by post directly. Alternatively an electronic copy could be sent to either an email address or to a mobile device (text).

By contacting the escort directly, it negates the need for the patient to pass on information. A further chance to give information to the escort is at the sedation appointment. This, in itself, is not ideal, but at least the escort has received some information before they commence care of the patient.

My second suggestion is an automated service to contact patients prior to their appointment. A telephone service would provide a reminder seven days before the appointment, giving the option to cancel or change. This would require them to acknowledge their intention to attend, and remind them to bring along a suitable escort. This may be useful especially if there has been some time between assessment and treatment appointments. If this confirmation is not made then the patient should be aware that this appointment could be given to another person. Obviously, there would be a cost implication for this service but it would, hopefully, outweigh the time and money caused by patient non-attendance/compliance. By implementing this system, I would hope that all available clinical time is used effectively.

Thirdly, one potential solution to the issue of patients not understanding what IV sedation entails would be to produce a short video showing its effects. A web link to this could be included on the patient advice leaflet and/or this video could be shown to the patient as part of the pre-operative assessment process.

Acknowledgements

I thoroughly enjoyed my time in the Oral Surgery department and it was a privilege to be allowed to be involved in the clinical settings. I would particularly like to thank my tutors, Dr Verena Toedtling and Professor Julian Yates for their inspirational suggestions, knowledge and encouragement. It was a fantastic learning experience to be allowed to work with them.

Conclusions

The dental hospital tries extremely hard to impart relevant information but there are still patients who do not follow instructions. This has several possible implications. If patients attend without an escort, their treatment cannot be carried out. In fact, it could be seen as unethical to treat them whilst knowing that they had no escort. Secondly, patient after-care could be considered less than adequate if patients and escorts are unclear of their roles.

On a more positive note, all patients questioned were aware of the treatment they would be receiving. Also all patients/escorts reported that their home journeys were to be made by car or taxi.

References:

Expanding the Scope of Practice - Should Dental Nurses Be Permitted To Administer Local Analgesia?

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Abstract

Dumbing down the profession or meeting the need of more patients by the optimum management of resources?

Unequivocally, patient safety and non-maleficence are central to this issue. Restrictions must be imposed to ensure this. Without doubt, continuing competence would have to be demonstrated by the registrant and they would only administer local analgesia after a written prescription by a dentist. Restrictions to infiltration analgesia would also seem prudent.

If all involved, including patient representatives, consider this of merit, several issues would have to be resolved such as who would be responsible for training, the content of the programme and funding for training. This is fundamental for the conception and implementation of such a qualification.

Recently, the issue of direct access has been opened. The profession has changed in recent years with more focus being placed on dentists to meet the need of patients burdened by dental disease, particularly the disenfranchised, by utilising the whole dental team. Notwithstanding this and it may seem counter intuitive, but if this role was extended to dental nurses, it may be most adopted in services where time is not so important such as the salaried and other secondary services.

The use of local anaesthetic has been part of dentistry for over 100 years since Carl Koller first introduced cocaine as a dental anaesthetic in 1884.1 By 1905, Alfred Einkorn had developed Novocaine as a local anaesthetic for dentists2 and since then there have been a variety of different local anaesthetics developed. In dentistry in the UK, dentists, dental therapists and dental hygienists can administer local anaesthetic, although under the Medicines Act 1968, the latter can only do so via a prescription from a dentist. The GDC Scope of Practice3 states that a dental nurse can prepare a local anaesthetic needle and cartridge for use by a clinician but cannot administer it themselves. This essay will explore the questions: should there be a local anaesthetic post qualification for dental nurses?; what possible benefits this could bring and what the practical implications would be?

Firstly, it should be pointed out that dental nurses in some other countries (e.g. USA) can administer local anaesthetic. This is part of their dental nurse training along with other duties including, placing rubber dam and taking impressions. If this kind of qualification were to be introduced in the UK, it might be worth looking at how the system currently works in the USA.

Probably the busiest dental environment, in terms of the number of patients seen in one day, is a general dental practice. A general dental practitioner can see 30-40 patients in an average day. So could a dental nurse who could administer local anaesthetic help the dentist during busy periods or might this be more of a hindrance?

The dentist will know from their day list and notes what each patient is attending for. There is the possibility that if the dentist is running late they could prescribe the administration of local anaesthetic to a dental nurse. This could save time and help ease busy periods, however, is it really practical? Quite often patients can attend expecting certain treatment but present with something different to the dentist on the day. For example, they could be coming in for obturation of an UR6 but on the day, they have toothache in another tooth or a lost restoration, that must be dealt with. This ambiguity in patients’ treatment might make the previous proposal impractical. Also, during busy periods, the dental nurse will also be busy setting up the surgery, sterilising instruments, processing x-rays, taking payments, etc. So will they really have enough time to do this?

Another busy dental environment is an out of hours emergency dental service. These services operate on a drop-in basis, where it is basically first come first seen, unless someone presents with severe dental trauma. Quite often, patients will have seen a nurse or spoken to a nurse on the phone before being seen by a dentist. Could a dental nurse who can give local anaesthetic help speed up such emergency services? Not all patients attending will need local anaesthetics. Some may just require antibiotics or adjustments to their dentures. It could be possible, if the patients are triaged properly, that the dental nurse administers the local anaesthetic to the patients that are to receive treatment whilst the dentist sees the patients who do not require any anaesthesia. This, however, still doesn’t exclude the problems of practicality mentioned above and could also be confusing. For example, will the nurse have enough time to carry out this extra duty as well as all their existing duties for that service? In reality, they probably don’t.

So a local anaesthetic post qualification might not be very effective in a busy environment where time is short, but what about a situation where more time is needed? Take the community dental service for example. Quite often this service receives requests from general dental practitioners to see and treat patients with special needs, and anxious children and adults. Longer appointments can be given to help these patients – who can be quite difficult to treat – receive the treatment that they need. These patients need quite a lot of support so the dental nurse plays a very important role in helping reassure, comfort and help calm patients in difficult situations. It could be quite helpful if the nurse was able to give local anaesthetic when treating these patients. Sometimes children and people with special needs can feel comfortable with some people but a bit awkward with others. For example, sometimes they won’t let the dentist look inside their mouths but will open it for the nurse. Could this prove the same when administering local anaesthetic? It would at least give the dental team some alternative options when treating these patients.
One area of dentistry that a local anaesthetic post qualification for dental nurses could be very beneficial would be in dental schools and teaching hospitals. Dental schools are very busy places and can see thousands of patients in just one day. A large volume of these patients are seen by dental undergraduates. Dental undergraduates treat patients under the supervision of a fully qualified dentist. Dental nurses also work alongside dental students by assisting them with treatment, sharing their knowledge about instruments and materials, setting up for procedures, supervising radiographs and cannulation (if they have the appropriate qualification), etc. There is no reason, if there was a local anaesthetic post qualification for dental nurses, why dental nurses couldn't help and share their knowledge with dental students in administering local anaesthetic.

The student clinic can be a very busy environment and sometimes students will have to wait to see or ask their supervisors about something they are having difficulty with. Sometimes it can be something quite simple like their local anaesthetic hasn't worked. A lot of time could be saved if a dental nurse could help with this matter instead of the student having to wait until their supervisor is free.

Most dental nurses in the UK hold the national qualification for dental nurses or a Scottish vocational qualification in dental nursing or similar. There could be an argument for creating a new post-registration exam for dental nurses working in dental hospitals and schools, for example, a “hospital exam for dental nurses”. This exam would of course be optional and could for example: teach nurses all about local anaesthetic and how to administer it; teach nurses in more depth about radiography and how to take radiographs; teach nurses how to take alginate impressions for study models; teach nurses how to apply rubber dams and teach nurses how to remove sutures, etc. Most of these duties are listed in the GDC’s scope of practice for dental nurses. These are all duties that would really benefit a nurse working in a teaching hospital. These are all things that a nurse could help dental students with and could be really advantageous to the dental hospital.

Post qualifications for dental nurses have been around for some years now. These include the NEBDN certificate in: oral health education; conscious dental sedation nursing; special care dental nursing; orthodontic nursing and dental radiography nursing. From August 1st 2008, the GDC also required dental nurses to be registered and just like dentists complete 5-year continuous cycles of continuous professional development. This shows there has been a real drive by the GDC to give dental nurses more roles and responsibilities and to make dental nursing more of a profession or career than ever before. Surely if dental nurses can become competent in taking dental radiographs or assisting with dental sedation (cannulation) then they can, with the appropriate training, become fully competent in administering local anaesthetic. It’s great that dental nurses have been given these opportunities to better themselves, learn new skills and develop their knowledge but are dental nurses on the whole even interested in doing this or are they quite happy to remain as they are. Also, will dentists want or even trust their dental nurse to administer local anaesthetic?

Since the introduction of the GDC’s scope of practice document in April 2009 there has been an influx of extended duties courses across the UK. These include duties such as: applying fluoride varnish as part of a public health program overseen by a dentist; repairing the acrylic part of removable appliances; pouring, casting and trimming study models and tracing celographs. The fact that there has been an increase in these courses shows that it could be quite realistic to be able to create, develop and implement a local anaesthetic post qualification course for dental nurses nationwide. In fact, there has already been a similar type of course introduced for dental hygienists who qualified before 2002.

In 2002, the GDC started to allow dental hygienists to administer local anaesthetic, as long as they had the necessary training and felt competent to do so. A direct outcome of this was a large number of training courses were set up across the UK and were then included in the pre-registration course for dental hygienists. Could this type of training course set up for hygienists, be applied to dental nurses for a post qualification in local anaesthesia? It would seem quite plausible in theory but would the benefits outweigh the practical implications in implementing such a course? For example, where would the funding come from to implement this new post qualification? How long will it take and who would initiate the set up? What would the cost be for nurses who want to take the course? For how long will the course last? Or how long will it take dental nurses to become proficient at administering local anaesthetics? Will patients be comfortable in accepting local anaesthetic from dental nurses? These are all questions which would surely have to be answered or explored before implementing this type of qualification.

The GDC would obviously play a big part in the creation and implementation of this type of qualification. Could they justify funding such a programme? Or would they even be interested in the first place? They have already introduced a new scope of practice for dental nurses giving them more extended duties, they might feel that there are enough already?

Another question would be how the nurse would train to become proficient in administering local anaesthetic? There would obviously have to be an equal mix of theoretical learning and practical application involved in the course. The dental nurse would have to learn the detailed anatomy of the nerve supply of the jaws and where to inject local anaesthetic to achieve a high level of anaesthesia. The practical element to the training could include some sort of logbook, with the nurse having to successfully perform a certain number of injections for each area of the mouth. For example, there are the injections to the maxillary nerves: the nasopalatine nerve and the anterior, middle and posterior superior alveolar nerves. There are also injections into the mandibular nerves: the inferior dental nerve, the mental nerve and the long buccal nerve. To pass the course the dental nurse could perhaps be required to to successfully complete 20 or 30 injections at each of these different injection sites. There could also be a requirement to complete a practical record of experience or witness testimonials and reflective accounts, as in the new national and SVQ qualifications, respectively. This could help enhance the learning experience even further. Last but not least, there would have to be some sort of written exam. Given the nature of the qualification, it would probably be wise to set quite a high standard for a pass in this exam.
At the heart of this post qualification is the dental nurse. As mentioned previously, some dental nurses might not want the responsibility of administering local anaesthetic. They might be quite happy leaving it to the dentist. Before even thinking about considering this post qualification it would seem prudent to carry out a survey amongst dental nurses to obtain their opinions and determine how many would consider doing it. It would also be wise to survey dentists, as they would play a considerable role in the implementation of the post qualification.

Like everything in life, there will always be opposition to new ideas and concepts and it is unlikely this will be any different for this proposal. Patients might easily accept the idea of receiving local anaesthetic from a dental nurse. They might even refuse it. I have seen patients refuse treatment from dental therapists, although on the whole, dental therapists are widely accepted amongst the public. Over time, people begin to accept things and they soon become the “new norm”. Dentistry in the UK is changing all the time, but is there enough room in the profession for this new post qualification? This question and others mentioned throughout this essay are very important and can only really be answered through open debate and discussion. Maybe it’s time to open the debate on a local anaesthetic post qualification for dental nurses across the country. However, people’s viewpoints and opinions can only give an insight on what might happen. Some questions will only be answered once the post qualification were fully implemented such as, are there really any practical benefits from a local anaesthetic post qualification for dental nurses?

Overall, there would seem to be a purpose for local anaesthetic post qualification for dental nurses in some areas of dentistry across the UK. Although it would at first appear beneficial to busy dental environments such as general practice and out of hours emergency services, the practical advantages do have their limitations. On the whole these practical limitations outweigh the benefits of such a qualification. However, there are some dental settings where it could be extremely useful, such as in the community dental services and in teaching hospitals and schools. If accepted by the dental profession and general public, it could be a very useful tool in these environments. This acceptance is very important if the post qualification was to be implemented. The GDC would have to play a big role in developing and implementing it but first of all they would have to believe that it could be beneficial to dentistry in the UK. As mentioned previously, this new post qualification could make a real difference in some areas of dentistry but is this enough to justify an entirely new post qualification? What do you think?

References
1) http://inventors.about.com/od/dstartinventions/a/dentistry_3.htm Accessed on 27.11.13
5) www.dentalprotection.org.uk/askdpl/hygienists_la Accessed on 27.11.13

SAAD ESSAY PRIZES
Three essay prizes are available annually
Drummond-Jackson Essay Prize of £500
Dental Student Essay Prize of £300
Dental Nurse Essay Prize of £300

Details on page 64
I am now 18 months into my PhD at the University of Sheffield and since my last update I am pleased to say that I have now been able to begin recruitment for the first stage of my study. This involves conducting a series of qualitative interviews with children aged 11-16 years who have had previous dental treatment with inhalation sedation, intravenous sedation or general anaesthetic. These participants are being recruited from the Paediatric Dentistry Departments of the Charles Clifford Dental Hospital in Sheffield and the Royal Liverpool University Dental Hospital. We plan to use the information we gain from these interviews to help develop a pilot decision aid for children undergoing dental treatment with sedation or general anaesthetic in the future.

Like many PhD students, I have been looking forward to getting out of the office and to begin collecting data on clinics; however, so far, things have not gone quite as smoothly as I would have hoped. The first hurdle I encountered, and a familiar one for researchers, was gaining ethical approval. Although there were no major ethical concerns associated with the project, I found that making the slightest changes to the patient information sheets pushed back our original planned start date by around two months. However, thankfully my colleagues who were already familiar with the ethical review process helped highlight these potential delays beforehand, meaning that I allowed some flexibility when developing the study timeline.

Following the relief of finally gaining a favourable ethical review, I was ready to start stage one of the study. After hearing of other students’ difficulties in recruiting participants, my first few weeks on the clinic appeared to get off to a brilliant start. In the first week 13 patients and their parents/guardians provisionally agreed to take part in the study. As I only required a sample size of 20 it seemed that, despite the early delays in gaining ethical approval, I would soon be ahead of schedule. However, despite this early optimism I soon came to realise that although a patient may say they are willing to take part in the study, until consent forms are signed and their interview has taken place, this initial eagerness may wane rather quickly. This meant that after the opening five weeks of recruitment I had only managed to conduct one interview, despite over 20 originally agreeing to take part. Due to the relatively high number of patients failing to attend the interviews, I decided it was time to change my approach. Instead of trying to ask patients and parents to come in at their earliest convenience I decided to try and arrange interviews around their next appointment at the dental hospital. I did this in the hope that although it may take an extra few weeks before the interview could take place, patients would be more likely to attend. Thankfully, we found this was the case, and in the following 4 weeks I managed to conduct a further 5 interviews. This means that with several more interviews booked for the coming month, the second stage of the study is firmly in sight! I am currently transcribing all the interview tapes and analysing the findings. I am hugely grateful for the honest reflections of the young people and their parents/guardians. It has been a good learning opportunity so far and I am realising that qualitative research is not as predictable as I had first imagined.
The Society has recorded its activities from its inception in 1957. The earliest records were in the form of “Digest Reports.” Initially these were transcribed from tape recordings which were made of every meeting. In addition, Stanley Drummond-Jackson wrote a “Librarian’s News Sheet” which contained news of possible interest collated by the Librarian. Members were invited to submit items. The first of the news sheets appeared in 1960. The reports were duplicated by the then popular Roneo machine. By 1969, SAAD membership had grown to over 2,000 and as such hand duplicating of publications proved to be very time-consuming even when the equipment functioned without breakdown. The decision was made to change to a printed format and SAAD Digest was born.

SAAD Digest was first published in 1970 with volume 1 number 1 dated January 1970. Digest evolved from “Digest Reports.” These reports were the transcriptions of SAAD meetings. Its history is chronicled in Peter Sykes’ History of the Society. The first Editor was Stanley Drummond-Jackson until his death at the end of 1975 when Peter Sykes was appointed Editor. In 1991, having edited the Digest for 15 years, Peter Sykes retired from that role to be replaced by Douglas Stewart. Douglas was the Editor until the middle of 1994, when he resigned from the role as he was returning to Australia to live and work. The third Editor was Andrea Wraith who held the position until she resigned from SAAD Council in 2004.

There was a year when the position was vacant prior to the appointment of the first Editorial Board whose members were Paul Averley, Bill Hamlin, Avril Macpherson, Chris Mercer, Nigel Robb and Fiona Wraith. Michael Wood joined the Board in 2007 to work on the production of the 2008 Digest where he remained until his untimely death in May 2013. Sadie Thomas joined the Board in June 2013.

The first article in Digest was entitled “The teaching of Anaesthesia in Dental Schools.” It was written by Professor Hopper and describes the debate regarding whether or not undergraduate students should be taught intravenous anaesthesia, or whether this should be a postgraduate subject. It is of note that at that point Leeds students administered, on average, 43 general anaesthetics prior to graduation. Compared with that, today all schools struggle to get students anywhere near 20 IV sedations!

Late in the same issue, David Main from Dundee reports on their school’s course on intravenous induction of anaesthesia which was started in 1965. The reason it was started was that at that point there were 800 new graduates entering the dental register, but only 500 training places for intravenous general anaesthesia available, in many ways a parallel with the issues we have meeting demand for training in conscious sedation in 2014.

Inside the back cover is an advert from The Blackwell Anaesthetic Company – a name that will be well known to many who have attended conferences and courses in the past.

The second issue starts with a guest editorial which includes the wonderful recommendation “Every graduate dentist should know how to do venepuncture, the [sic] technics of IV premedication and inhalation analgesia, and other procedures akin to general anaesthesia which, together are capable of altering and markedly improving dental practice.” The editorial then goes on to describe many of the same issues that are raised today to suggest that conscious sedation should not be taught.

Issues three, four and six include articles about the Langa Technique or Relative Analgesia, written by Dr Harry Langa himself. He must have been a good age as he had given his first postgraduate course in 1948.

Issue four also includes a report of some members attending a demonstration of the relatively new drug ketamine.

Volume 1 continued comprising some 12 issues up to October 1972. The first issue of 1972 includes an article on local anaesthesia by Roberts and Sowray. In that article there are some recommendations on vasoconstrictors. These recommendations include the suggestion “that no more than 8.8ml of a solution containing 1:200,000 should be used.” This recommendation refers to the use of felypressin in patients with ischaemic heart disease. This mirrors thinking in many countries today where felypressin is no longer available as a vasoconstrictor due to its potential for producing constriction of coronary arteries. The article also advises that there is no restriction in adrenaline use in patients taking mono-amine oxidase inhibitors – again ahead of its time.

Volume 2, the first issue of which was published in January 1973, opens with an editorial entitled “Setting our sights higher.” This is followed by an article on “Safer practice” by Frank McCarthy. In this article there is a description of a self-evaluation of anaesthetic practice. The self-evaluation process involves a manual being given to members, and after “adequate advance notice” is given “two – or three – colleagues attend the evaluator’s practice to observe two or three (not more) administrations of anaesthesia using whatever technique is customarily employed in the practice.” As the author read this, he was struck by the similarities between this and the Safe Practice Scheme currently being offered by SAAD.

The fourth issue contains a short article on the use of pentazocine and diazepam, commenting on the fact that the technique was “particularly good for prolonged conservation in the young teenager.”

The 12 issues of volume 4 were published in 1974-5, with the final issue in October 1975.

The first issue of volume 3 was published in January 1976 and opens with the report of the death of Stanley Drummond-Jackson, and a reprint of his obituary from The Times newspaper. The last of the 12
The second issue had an article by Bruce Litchfield, where he discusses the effects of drugs on memory and concludes that article with “Our most promising… it may be sometime that we now take for granted and as such it is interesting to read the reaction to the initial publication.

The first advertisement for the Drummond-Jackson Prize appears on page 199 of the issue published in January 1978—just over 2 years after his death. The description is “The prize will be awarded annually from part of the proceeds of the Drummond-Jackson Memorial Fund for the most meritorious essay on subjects related to the control of pain during dental treatment.” The prize in 1978 was £100 with a certificate being issued to the winner. In that advert a subject was specified and it was “Aspects of the control of pain during dental treatment.”

The main articles in the last two issues of this volume cover the local and systemic side effects of diazepam and another which includes a detailed look at the supply problems associated with mass produced needles—another issue that continues to raise comment to this day.

The first issue of volume 4 was published in January 1979. It has an article entitled “Attitudes to Sedation in Dentistry,” written by Anthony Colwyn (now Lord Colwyn) and Geoffrey Hind. Included in that article, amongst the many good points in the article, is a sentence that rings true of the author’s experience in the last few years. It is: “Why do some of our colleagues who do not wish to use sedation techniques often speak out so forcibly against us—while not even attempting to gain an insight into the work we are doing?” Messrs Colwyn and Hind explore the issues in a further two articles which resonate with many of the same issues that are discussed in current climates. Volume 4, issue 12, was published in October 1981.

Volume 5 spanned the years 1982 to 1984 and again contained 12 issues. In the first of these John Dundee writes on the subject of The Effect of Drugs on Memory and concludes that article with “Our preliminary studies with a water-soluble benzodiazepine produced by Roche Products under the name of midazolam………..have been most promising. ………………….It may be some time before this drug is available for routine clinical use but the currently available data does suggest that it would have a big future in the field and may very well be our drug of choice producing amnesia with a mild degree of sedation during conservative dental surgery.” Midazolam was introduced into clinical practice one year later and, the rest is history.

The second issue had an article by Bruce Litchfield, where he reports the acceptance of intravenous sedation in a series of studies with a total of 1,371 patients. This presents a good account of the success of the techniques as taught by SAAD during the 1960s and 1970s. Interestingly his list of references comprises eight papers—each and every one authored by him.

The issue published in July 1982 has the banner “25th Anniversary Edition” added to the front page. This issue marked the silver jubilee of SAAD. It is perhaps fitting that the major part of this issue is taken up by the Drummond-Jackson Prize winning essay.

Issue 4 has an interesting article by Graham Roberts. It would appear that there was debate at the time attempting to suggest that the use of inhalation sedation by the operator/SEDATIONIST was unsafe. In a long and detailed article this is rebutted. The debate about the operator/SEDATIONIST continues to this day with great debate about which techniques might or might not be appropriate.

The first issue of 1984 contains an article about the SAAD Evaluation Scheme. The scheme involves a visitation to the practice by two members of SAAD Council. It is consistent with the first description from some 11 years earlier as well as marked similarities with the current SAAD Scheme.

In the issue of April 1984 Gillman presents a review of the evidence for nitrous oxide acting on the opiate receptor complexes in the central nervous system. It is a concise review, which summarises much of the debate about the still obscure mechanisms of action of this wonderfully useful agent.

In 1985 there were three entries deemed worthy of publication. The winner was on the subject of transcutaneous monitoring and is discussed below. The two other received proxime accessit awards for entries about nitrous oxide and were published in issues 3 and 4 of this volume.

The issue of how to monitor sedated patients is an issue which continues to cause debate in the 21st century. Which devices should be in continuous use throughout the period of sedation? There is much debate and little quoted evidence. In volume 6, issue 2, the Drummond-Jackson Prize winner’s entry is entitled “Transcutaneous Oxygen and Carbon Dioxide Monitoring in Patients Undergoing Surgical Removal of Wisdom Teeth.” It is amazing that, given we have been able to monitor carbon dioxide levels transcutaneously since the late 1970s, these monitors haven’t come into more widespread use by now.

The first of the proxime accessit award winners listed and published was concerned with measuring nitrous oxide pollution. This is yet another issue which continues to rear its head from time to time. Two of the conclusions are fascinating as they contradict things that are said even today! The first is that using rubber dam with inhalation sedation reduces surgery pollution and the second is that discouraging the patient from talking reduces surgery pollution.

The second of proxime accessit award winners listed and published was entitled “Nitrous Oxide: Panacea or Poison?” This article’s main conclusion was that there should be a limit for occupational exposure and suggested a level of 400ppm. The article is unclear as to whether this was a threshold level or a time-weighted average.

The October 1986 issue of Digest contains one of the seminal papers in sedation literature. It is the first of a pair of John Dundee’s...
publications on the subject of sexual fantasy in patients who have received intravenous benzodiazepines. This paper along with his second publication, continue to be quoted as the definitive sources on the subject.

Regularly throughout the history of Digest there have been sections equivalent to today’s Journal Scan. In March 1988 the equivalent section was entitled Sedation Abstracts. The first abstract in Volume 7, issue number 2, is entitled “Sedation with Propofol.” The modest conclusion is “This paper seems to indicate that a study using propofol for dental sedation might prove to be valuable.” Throughout its history SAAD Digest has sought to bring innovation to the attention of SAAD’s membership and this modest review is a good example of this philosophy.

In October 1998 a paper on flumazenil by Whitwam and Hooper was published. Flumazenil, although discovered in 1978, was not introduced into the market until 1987. This paper was thus a timely source of information for SAAD members. This paper is still widely quoted as a reference for the efficacy and safety of flumazenil.

Volume 7 of Digest brought the first reduction in the number of issues per volume, where issues 11 and 12 were combined. Thereafter the number of issues dropped to 4 per year.

Volumes 8-10 of Digest were marked by a reduction of the number of original scientific articles published. A number of articles were reprinted from other journals such as Anesthesia Progress and Anaesthesia. The issues did continue to deliver Society News and useful tips for the membership. In a rare exception to the trend a comprehensive review of pulse oximetry was published in April 1993.

Original articles started to return to Digest in 1995 including a survey of the provision of general anaesthesia and sedation, and the publication of the project from one of the first candidates to complete the Extended Sedation Course in Newcastle. This course subsequently became the Diploma in Sedation. Three other articles from this group of students followed.

Each issue of the journal at this stage also included a journal scan. A large number of articles from a wide range of medical and dental journals were reviewed so that members could be kept up-to-date with developments published in journals that they would not have had access to in pre-internet days. The trend for reprinting articles from other journals also returned.

Digest also presented new guidelines to the members including, in 1997, the updated version of the resuscitation guidelines with developments published in journals that would not have had access to in pre-internet days. The trend for reprinting articles from other journals also returned.

In October 1998 the first of a series of articles under the group title of “Topics in Medicine” appeared. The first in the series covered asthma. These articles aimed to provide a useful guide to the prevalence and aetiology of the condition as well as the management of patients. Two further articles covering diabetes and COPD appeared in later issues.

Issue 1 of volume 17 published in January 2000 started with a marked similarity to volume 3 published in 1976 – namely the recording of the death of one of the greats of sedation. In this case it was that of Harry Langa, the founder of Relative Analgesia.

In 2001 there was a series of three articles on acupuncture by Tom Thayer, showing that the Digest continued to cover a wide range of topics of interest within the field of pain and anxiety control in dentistry.

In 2003 the International Federation of Dental Anesthesiology Societies held their triennial meeting in Edinburgh hosted by SAAD. The last issue of Digest in 2002 gave a major place to the promotion of the event and the second issue of 2003 contained all of the abstracts of that conference in keeping with the tradition of informing our members of the latest developments in pain and anxiety control.

At the end of 2004 the then Editor of Digest resigned and following the publication of volume 21, no. 2, in autumn of that year there was a gap until May 2006 when volume 22 was published. At this point the decision was taken that each volume would be a single issue published annually.

From its inception the Digest had been the responsibility of a single Editor working with the Society’s administrative support team. For the first time in 2005 an Editorial Board was appointed to take publication forward.

The first edition in the new format had but one original article, but also contained a number of well known items including Journal Scan with reviews of articles in both medical and dental journals.

Over the following years the number of submissions to Digest has continued to grow and the quality continues to improve such that it is rare to have articles that are not worthy of publication after the reviewers’ suggestions have been taken into account. In 2007 the first article from the SAAD Visiting Professor was published, and this became a regular feature culminating in a final article over a year after he had left the post.

In 2009 the Editorial Board launched a new series of articles under the series heading “What’s new in …”. The idea was to have a series of articles to give members an update on specific areas. The first one in the series was on local anaesthesia written by Stanley Malamed. The others in the series have been … paediatric conscious sedation, … phentolamine mesylate, … anxiety management without drugs, and governance for sedation.

Digest has an increasing number of scientific papers (six in 2013) as well as publishing the Essay Prize-winning entries, if deemed suitable for publication.

The aim is to both interest and educate its readers, and to that end, as of 2013, online verifiable CPD is available for the refereed papers.

Since it was launched the Digest has been the main way in which members of the Society have been able to keep up-to-date with current practice of sedation and also to be informed of the activities of the Society. Now the website is up and running, much more information can be made freely available to members more quickly. Digest is available on the website to all. If members wish to elect to receive it electronically in the future, it will be made available earlier within the members’ area of the website.

Here’s to the next 30 volumes, provided we don’t run out of drug pictures for the cover!

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Abstract

Conscious sedation is an integral part of modern day dental care and should be delivered through a high quality, effective and evidence-based approach. Commissioning of NHS dental services in England is currently under review by NHS England and the National Dental Commissioning Group. This group has identified the management of vulnerable people including anxious patients, as one of its priorities. The Society for the Advancement of Anaesthesia in Dentistry (SAAD) believes this provides an opportunity to influence the commissioning of NHS conscious sedation services. With this aim in mind, "Guidance for Commissioning NHS England Dental Conscious Sedation Services: A Framework Tool" was developed.

This guidance proposes a common approach to the organisation of NHS dental conscious sedation services in England, advocating the provision of Tier 1 and Tier 2 services in all regions. Its ethos is a "hub and spoke" model of service delivery with patient assessment delivered by experienced and well trained dental sedationists at its core. In line with the recent Francis Report fundamental standards for all aspects of dental conscious sedation practice are outlined, supported by a robust and predictable quality assurance process.

This work has been shared with key stakeholders in NHS England including the Chief Dental Officer and the Head of Primary Care Commissioning.

Background

Pain and anxiety control is an integral aspect of modern dental care and should be given due consideration as part of the overall management of all patients undergoing dental procedures. Within the new General Dental Council’s Standards for the Dental Team¹, standard 1.2.4 states “You should manage patients’ dental pain and anxiety appropriately.”

Whilst the vast majority of patients can be successfully managed with good patient and behavioural management techniques and effective local anaesthesia, there is still a significant cohort who require additional support often with the use of conscious sedation techniques. With this in mind it is of paramount importance that high quality, safe and effective services exist to meet the demands of these patients.

Currently, the commissioning of NHS dental services in England is in a period of transition including contract reform for the general dental services and a review and evaluation of specialised care provision, including oral surgery, orthodontics and secondary care. NHS dental services are the responsibility of NHS England and the 27 local area teams (LATs) throughout the country. These LATs are linked to the National Dental Commissioning Group which has the role of developing national guidance and sharing intelligence from the experiences of local areas. The main focus of NHS dental commissioning, as outlined in Securing Excellence in Commissioning NHS Dental Services², is targeted at developing clear patient care pathways, reducing inequalities in service provision and improving outcomes and the patient experience.

In line with these commissioning aspirations, there was a belief amongst the SAAD Board of Trustees that there was an opportunity to influence the provision of NHS dental conscious sedation services through development of a common commissioning framework which could be shared with NHS England and other key stakeholders. Our aim was to develop a framework which would support the development of specialised dental conscious sedation referral services within a locality to meet the needs of that population where conscious sedation is indicated for dental treatment.

This article aims to provide an overview of the commissioning framework tool along with some further clarification of certain key issues.

Aims of the Framework Tool

Guidance for Commissioning NHS England Dental Conscious Sedation Services³ is a common approach to the delivery of dental conscious sedation services throughout England. The framework is intended to support the delivery of high quality, safe and patient-centred care. It also encourages a culture of robust and transparent quality assurance and appropriate use of resources in a cost-effective and evidence-based manner.

The service design facilitates the use and implementation of a variety of conscious sedation techniques, but always underpinned by accurate patient assessment delivered by clinicians who are well trained and experienced in dental sedation and capable of making predictable decisions regarding patient care. The document also adopts the principles of the Francis Report⁴ with regards to fundamental, enhanced quality and developmental standards and is consistent with other current national guidance.

This framework tool sets out three clear aims for NHS England dental sedation services provision:

1. To provide access to high quality sedation services for local populations and ensure equity and consistency of provision,
2. To deliver appropriate, efficient and cost-effective services,
3. To reduce the numbers of patients referred for general anaesthetics in secondary care.

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In addition to these main aims there is also an expectation for commissioned services to establish positive working relationships with LATs and the newly formed local professional networks (LPNs). These relationships should be fostered through the development of local managed clinical networks encouraging the sharing of best practice, regular peer review and quality assurance.

**Service Design**

The central aspect of the proposed service design is the concept of a “hub and spoke” model covering a range of providers within the locality.

The central hub would have the capability of providing Tier 2 sedation techniques, more commonly referred to as advanced techniques, as described in the Standing Committee on Sedation for Dentistry’s Alternative Techniques document. These settings would also have capability for Tier 1 services or standard techniques to avoid the risk of over-prescription of advanced sedation techniques. It is anticipated that each region would have a network of Tier 1 centres to improve patient access to standard sedation techniques. Patient assessment could occur at all centres, but only undertaken by suitably trained clinicians capable of making decisions regarding all available techniques.

This central hub and its clinical team would also provide clinical leadership and guidance and there is an expectation to develop networks with other Tier 2 centres throughout England to promote training, peer review and innovation. As discussed above, the Tier 2 teams should also encourage collaborative working through development of managed clinical networks recognised by the newly formed local dental networks and other key stakeholders to inform commissioning structures and shape services.

The following statement taken from the framework tool epitomises this concept: “It is imperative that dental sedation services operate within well governed and organised clinical networks, which have strong clinical leadership and are managed by well trained, experienced and dedicated teams of dental professionals.”

**Clinical Quality Requirements**

The framework tool sets a number of fundamental standards relating to clinical quality under the following headings:

- Referral
- Assessment
- Treatment
- Monitoring
- Recovery
- Discharge
- Self-care and patient and carer information.

Whilst it is beyond the scope of this article to discuss all of these aspects in turn, it would be appropriate to pay specific reference to patient assessment.

Within the framework tool it is very clear that patient assessment for sedation should normally occur on a separate visit to treatment and be carried out via a systematic and reproducible approach. Patient assessment is key to the success of conscious sedation for dentistry and must explore and consider all aspects of the patient’s history and suitably prepare the patient for their treatment visit.

It should also be emphasised that the responsibility for a patient’s treatment plan resides with the treating clinician. Treatment plans received from referring colleagues should only be adhered to if the clinician is satisfied that it is appropriate, necessary, in the patient’s best interest and in accordance with current best practice and professional standards.

Due to the importance of providing high quality and predictable assessment, the guidance provides some clear advice regarding who should carry out patient assessments within a commissioned sedation referral service. It advocates that only those clinicians possessing a diploma or MSc in sedation, or those able to clearly demonstrate equivalent experience and training should carry out patient assessments for both Tier 1 and Tier 2 techniques.

**Premises and Equipment**

Additional information and guidance is provided within the framework tool relating to the premises where sedation occurs. There is a clear necessity that all premises are modern, safe, fit for purpose and meet all current regulatory and legislative requirements.

There is a recognition that facilities should be evaluated using an approved and reproducible approach and the use of the SAAD Standard Evaluation of Conscious Sedation Practice Toolkit is recommended. This toolkit is currently being updated and modified to greater compliment the commissioning framework tool and other recent guidance. It is anticipated that the new version will be released early in 2014.

**Performers and Workforce**

It is considered of paramount importance that all commissioned dental conscious sedation services are led by a dentist with a diploma or MSc in sedation or able to demonstrate equivalent experience and training. This approach ensures a greater level of focus on the precise aims and objectives of the service and provides well directed clinical leadership specific to the needs of dental patients.

Further recommendations regarding the training and necessary experience of all members of the clinical team are included in the framework tool. There is a clear expectation that all members of the team should not only possess appropriate qualifications, but ensure their knowledge and skills are kept current through regular team training, feedback and professional development.

**Conclusions**

The recommendations described in SAAD’s commissioning framework tool aim to facilitate the commissioning and implementation of high quality, safe and predictable dental conscious sedation services. The guidance provides some generic structures and minimum standards, but there is an appreciation that
individual regions will need to further develop certain aspects, e.g. referral criteria, care pathways and payment structures to facilitate the introduction of new services.

To ensure full compliance with the standards outlined within the framework tool and wider national guidance, services need to be adequately resourced and invested in by commissioners and NHS England. The systematic review of all dental conscious sedation services should be encouraged and where existing services are shown to fall short of these standards serious consideration should be given to re-commissioning to ensure full compliance.

SAAD has shared this proposed framework tool with all key stakeholders including NHS England, the Chief Dental Officer and the Department of Health and will continue to advocate its wider adoption and implementation.

References
4. The Mid Staffordshire NHS Foundation Trust Public Inquiry. Chaired by Robert Francis QC, February 2013 Source??

Membership Area of the SAAD Website

To access the membership area you must first register by emailing your membership number to fiona@saad.org.uk. Your log-on details will then be emailed to you.

Once logged on you can

• Post on the SAAD forums
• View the FAQ section
• Access online CPD
• Register for the courses at preferential rates
• Access the SAAD DSTG list of mentors
• Purchase SAAD literature at preferential rates
• Download the SAAD logo for use on your literature and website
• Pay your subscription online
The document ‘Standards for the Dental Team’ came into effect on Monday 30 September 2013, replacing the previous guidance ‘Standards for Dental Professionals’ and was issued by the General Dental Council (GDC), the UK’s dental regulator. The standards were developed following intensive consultation with patients and the public and include nine key Principles (the core ethical principles of practice) which apply to all registrants:

1. Put patients’ interests first
2. Communicate effectively with patients
3. Obtain valid consent
4. Maintain and protect patients’ information
5. Have a clear and effective complaints procedure
6. Work with colleagues in a way that serves the interests of patients
7. Maintain, develop and work within your professional knowledge and skills
8. Raise concerns if patients are at risk
9. Make sure your personal behaviour maintains patients’ confidence in you and the dental profession.

Each Principle has a set of Standards that must be met and each Standard has guidance to help registrants meet that Standard.

The GDC’s Standards do not provide any clinical advice for dental professionals; rather it’s a guide which dental professionals are asked to follow at all times. For more information about the GDC’s new Standards, or to read ‘Focus on Standards’, visit the Standards page of the GDC website at www.gdc-uk.org/dentalprofessionals/standards If you have any questions about how to communicate effectively with patients, how to maintain appropriate records, or anything else to do with Standards, you can contact a member of the Standards Team at standards@gdc-uk.org

Some of the key new issues addressed in the ‘Standards’ include:

- Principles on communication and personal behaviour (being fluent in written and spoken English)
- Greater emphasis on softer skills
- New requirements to display indicative prices for treatment (price lists should be displayed in reception or waiting areas).

Communicating with patients was a major focus for the GDC in the development of their new Standards. Throughout the review process, patients told the GDC they were more trusting of dentists and dental care professionals who explained all of the options available to them, including the cost of a treatment, as well as giving them time and the opportunity to ask questions. These expectations support contemporary sedation guidance recommendations that a thorough patient assessment takes place at a separate occasion to the treatment visit for the majority of cases.

Part of communicating effectively with patients involves managing their dental pain, discomfort or anxiety. One of the most common reasons patients complain to the Dental Complaints Service (which is run by the GDC and arbitrates on complaints about private dental care), is a lack of effective communication around pain management. Once a complaint is made by a patient, a full investigation will be carried out by a fitness-to-practise case worker at the GDC. At this point, the dental professional will be asked to provide evidence on how they managed a patient’s treatment.

The online “Standards and how they affect your dental care” document for patients gives information on what patients can expect from their dental professional and makes clear (in relation to Principle 1.5) that “They must treat you in a hygienic and safe environment and they must do their best to manage any dental pain or anxiety you may have.”

It also emphasises that “Your dental professional should not do anything for you without getting your permission first. They must explain your options and the possible costs for any treatment. They can tell you which option they think is best but the final decision is yours. If there is any change to your treatment or to the cost, they must get your agreement to the change before going ahead.” (Principle 3.1). For treatment involving conscious sedation or general anaesthetic written consent is mandatory (3.1.6).

SAAD members and providers of conscious sedation services in the UK are strongly encouraged to familiarise themselves with the new GDC Standards. All registrants have a duty to comply with these Standards, as well as complying with contemporary guidance on conscious sedation.

Advanced Conscious Sedation Training - The Pilot Course, Training and Impact on a Hospital Service.

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Abstract

Advanced conscious sedation techniques for dental procedures include continuous propofol infusion and combinations of midazolam and fentanyl. A course based on the Independent Expert Group on Training & Standards for Sedation in Dentistry (IEGTSSD) training syllabus was set up in 2012 to provide training in these techniques. Training involved: self-directed study modules; attendance at didactic teaching day; presentation by candidates of knowledge; medical emergency simulated training; written examination; supervised cases; and submission of case logbook. A dedicated clinic was set up by dentists to provide training for supervised cases.

Results: nine dentists are now trained in advanced sedation techniques and over 250 patients have been successfully treated using continuous propofol infusion.

Conclusion: the advanced sedation training course based on the IEGTSSD curriculum was a successful way to train dentists experienced in standard sedation techniques to be confident and knowledgeable to deliver advanced sedation in a dental setting. Patients mostly preferred propofol to midazolam, however, as amnesia is not guaranteed; propofol may be more appropriate for mild to moderately anxious patients.

Introduction

The standard techniques of intravenous conscious sedation with midazolam, or inhalation sedation with nitrous oxide and oxygen, have high success rates in providing safe and effective treatment for patients who are anxious or undergoing unpleasant dental procedures. Although these techniques are successful in the vast majority of patients, there are some cases where alternative drugs, such as propofol, may have potential benefits. Until now there has been a lack of defined training standards for providing these techniques. In 2011 the IEGTSSD published a training syllabus to facilitate development of training in advanced sedation techniques.

The essential criteria for entry to an advanced conscious sedation training course are:

- 4 years GDC post-registration
- Evidence of training in basic techniques with 100 cases documented in previous 2 years
- Current immediate life support training
A postgraduate qualification (MSc/Dip/Cert) in sedation is desirable.

Pilot Course

The first pilot course on advanced conscious sedation techniques based on the IEGTSSD syllabus was run as a combined venture by the South West Deanery, the Department of Sedation and Special Care Dentistry at Guy’s Hospital, King’s College London Dental Institute, and the Society for the Advancement of Anaesthesia in Dentistry (SAAD). Table 1 outlines the components of the course.

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<th>Components of the Advanced Sedation Course</th>
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<td>Self-directed study module</td>
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<td>Attendance at didactic teaching day</td>
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Table 1

A major component of the course was a self-directed study module based around a list of references that were provided beforehand to all the successful candidates. This included:

1. Relevant cardiovascular and respiratory physiology (control of BP, respiration, etc)
2. Pharmacology of benzodiazepines, opioids and propofol
3. Indications for advanced sedation techniques
4. Equipment for administering advanced sedation (syringe drivers, TCI, etc)
5. Existing guidelines for using advanced sedation techniques
6. Team training and responsibilities
7. Recommendations on CPD for seditionists using advanced techniques

The didactic training session was run in Bristol in September 2012 and again with a second cohort in May 2013. The day included
lectures, tutorials and assessments, and the candidates presented aspects of the material they had prepared. (Picture 1)

Picture 1. Presentation by a candidate on the advanced sedation training course

The course covered a variety of advanced sedation drugs and techniques, however, the focus was on continuous propofol infusion and the combination of fentanyl and midazolam sedation. A tutorial was given followed by a hands-on practical element which allowed candidates to become familiar with several different types of infusion pumps. (Picture 2) The pumps varied from the old Graseby style to the newer TCI (Target controlled infusion) pumps.

Picture 2. Infusion pump tutorial

The last part of the day involved looking at sedation complications and medical emergencies and this training was carried out on a simulated patient with a video link to the other candidates. (Pictures 3 and 4) This was particularly useful as it allowed real-time experience and provided valuable peer review. It highlighted areas for discussion such as the importance of good team work and communication.

Picture 3. Sedation complication simulated training

Picture 4. Video link of simulation

At the end of the day all the candidates took part in a written examination and the results were sent by post.

On satisfactory completion of the didactic and practical course, candidates were required to undertake 20 cases of advanced sedation under supervision and submit a logbook for review.

Supervised cases and logbook

A dedicated Advanced Sedation List (ASL) was set up at Guy’s and St Thomas’ NHS Foundation Trust for internal staff to gain experience after they had completed the initial training. The clinic was run with one dentist trained in advanced techniques supervising and two trainees. One of the trainees would treat the patient as the dentist and the other administer the sedation. The majority of patients had continuous propofol infusion as a single drug sedation technique. All patients had pre-operative non-invasive blood pressure monitoring and were monitored continuously during sedation using clinical monitoring of consciousness and pulse oximetry. The propofol infusion rate was continuously adjusted to provide anxiolysis. Patients were not starved before the procedure as protective reflexes are maintained. A record was kept for audit purposes.

The indications for propofol sedation were defined as:

- A short procedure
- A long procedure
- Tolerance to benzodiazepines
- Patients with mobility problems where the quick recovery of propofol is an advantage
- Patients with a short working window under sedation with benzodiazepines which did not allow enough time for treatment to be carried out

Failed midazolam sedation was not taken as an indication for propofol sedation.

Contraindications for propofol sedation were defined as:

- History of epilepsy
- Allergy to egg/soya
- Extremes of weight/age

Nine members of staff have now completed this training, and the required number of supervised cases in advanced sedation techniques. All the dental nurses have also been given additional training so that they are able to assist on the advanced sedation clinics.
The department now runs between 4 and 6 sessions per week using a dedicated dental bay (Picture 5), and over 250 advanced sedation cases with the use of propofol have been completed to date. Essential data to show safety, clinical effectiveness and patient satisfaction have been collected for each case.

![Picture 5. Advanced Sedation Clinic using propofol](image)

There has been great success with this service and we have achieved a 100% safety record with no adverse events. The oxygen saturation levels for patients undergoing procedures with the use of propofol have typically stayed at around 95-97% and all patients have remained conscious throughout. The authors plan to publish a further paper based around these safety data including other monitoring data.

The majority of patients have reported that they preferred sedation with propofol in comparison to midazolam, that the drug made them feel very relaxed about their treatment, that they trusted the dentist, and that they liked the feeling of still being able control their environment. All patients said that they felt much better going home, due to a quicker recovery. There were a few patients who felt they preferred the amnesia that midazolam offered. The authors feel that propofol may be more indicated for mild to moderately anxious patients. This is the focus of a research project looking at patient satisfaction and memory of the procedure.

Due to the continuous infusion of propofol allowing continuous sedation, and the shorter recovery time, more treatment can be carried out in one visit. Patients have reported that they value having more procedures completed at each visit. This factor is also beneficial for service provision.

Staff have really enjoyed learning the technique and have said that they feel it is a real benefit to be able to offer advanced sedation techniques when appropriate. All clinicians who have been trained feel confident in assessing patients for advanced techniques and using the techniques, the nurses all enjoy working on the advanced sedation lists. In some circumstances this approach has avoided the need to use general anaesthesia and the more radical treatment plan that often comes with it.

By collecting data, we hope to show that when dental teams are trained appropriately to use advanced sedation techniques, they are safe, effective and a benefit to service provision. These data will be published in the near future.

The training and service has created a valuable teaching platform whereby undergraduate and postgraduate dentists are able to observe treatments being carried out using advanced sedation techniques, and has facilitated the start of some high quality research.

The trained staff are now able to train other staff from different disciplines, thereby providing greater choice for patients and enhancing overall quality of care.

**Conclusion**

The advanced sedation training course based on the IEGTSSD curriculum was a successful way to train dentists experienced in standard sedation techniques to be confident and knowledgeable to deliver advanced sedation in a dental setting. Patients mostly preferred propofol to midazolam, however, as amnesia is not guaranteed; propofol may be more appropriate for mild to moderately anxious patients.

**References**


**PRACTICE EVALUATIONS**

Have your Practice evaluated in accordance with the SAAD Safe Practice Scheme: Conscious Sedation Evaluation for Dentistry in the UK.

The Evaluation document may be downloaded from the SAAD website. [www.saad.org.uk/documents](http://www.saad.org.uk/documents)

Contact fiona@saad.org.uk for further details or to arrange an evaluation
This was another fine, well organised and interesting SAAD Annual Symposium. ‘Commissioning Sedation Delivering for Patients’ was an important theme to consider at a stage when we are looking to the future and attempting to fine-tune the constituents of an ideal sedation practice – especially for the benefit of those at the top who are supposed to oversee and finance the service.

I say supposed to because we have seen over the years that the officials on high, with some exceptions, seem to have had a blinkered approach to what is actually happening on the front line and do not really appreciate the crucial role of dental sedation practices in dealing with the challenges of treating dentophobic patients, adults and children alike, with a good degree of success and in a safe and caring environment.

As a result, there has been a disparity throughout the country as to how local health organisations have assessed and dealt with requests for contracts for sedation services in their area. On the one hand, the need for dental sedation has been recognised, and respectable contracts offered to practices, but on the other hand, some dentists have struggled to even convince local officialdom of the need for a dental sedation service. As for the contracts which have been offered, there is considerable variance in the target figures and the manner of remuneration.

The positive aspect was that we were gathered together to discuss a robust strategy for the future, increasingly confident that dental sedation is now an accepted entity in the field of dentistry – although we kept being reminded to remain cautious and keep looking over our shoulders for the obstinate views of sceptics on high.

What was clear was that the sterling efforts of Chris Holden, Nigel Robb and David Craig and others on the political front have been fundamental in keeping dental sedation above the waterline and ensuring its survival. Their reports of the interminable high level meetings, invaluable and essential negotiations, was the usual litany of dealing with intractable committee members and ignorance in the ranks, including of the Chairman of one group who had little idea at all of what dental sedation was about.

Chris Holden stated what we all know as obvious, that dental sedation is different from the concept of sedation as practised in most hospital settings – that it is 'conscious sedation' and that it is a brief and simple procedure. 79% of hospital morbidity figures comprised an alarming number of patients who were having sedation for endoscopy or other GI procedures. Dentistry is not endoscopy but if it is linked to sedation, then the warning signals start to ring and there remains that on-going struggle to maintain the status of the dental operator sedationist, although as Chris explained, that seems to have been accepted for now.

Under-sedation is unwarranted and pain control is essential. There were also calls for capnography to be used routinely – in endoscopy critically important, but in conscious dental sedation? Although I do remember a sedation meeting a few years ago where a Consultant in A&E predicted that capnography would be made mandatory in all forms of sedation and we should be ready to adopt it, it is a relief that that prediction seems not to have been fulfilled. What was clear was that dental sedation needs the support of anaesthetists – we need them to be on our side.

But back to the beginning …. Paul Averley and Paul Howlett started off the proceedings by explaining the background to the ‘Guidance for Commissioning – A Framework Tool’ which is essentially another updated document which attempts to guide the health Trusts on how to assess an existing or prospective sedation practice. This was being developed with the National Sedation Commissioning Group and some key features were being proposed. One was the proposal of placing the onus of the patient’s overall dental care and treatment plan on the treating dentist, rather than the referrer, although the present system does seem to be working reasonably well. Another was the recommendation for a 24-hour consent period before sedation, although exceptions would have to be made for emergency cases and perhaps regular sedation patients.

However, what was contentious was the call for the dentist who would be assessing the patient to hold a ‘Diploma in Dental Sedation’. This would mean essentially that if the operator sedationist did not hold such a diploma, then an ‘assessor’ with a Dip DS would have to be summoned to come and assess sedation patients on their suitability to undergo the procedure. How would this work in practice and, crucially, who would fund the assessor? The drama of this proposal became apparent when, on a show of hands, it transpired that fewer than 50% of the attendees held such a diploma, not even some of the senior academics. Essentially, if this were a central condition for commissioning, a number of sound sedation activities would be in jeopardy.

This question lingered in our minds during the day ‘is there any justification for commissioning to limit sedation services to clinicians holding a DWSI in dental sedation? We had to wait for the excellent Q&A session at the end to learn that the proposal was for a ‘Diploma or equivalent’ and as David Craig pointed out, this was an ‘aspiration’ which would be necessary for the robustness of a dental sedation service and for commissioning. In any case, this proposal would have to be studied in more detail and it could be some years before it were fully implemented.
Bryan Kerr, currently locum Consultant in the Department of Sedation and Special Care Dentistry at Guy’s Hospital in London, discussed the syllabus and sedation techniques advocated in the Advanced Sedation course. Standard dental sedationists need to have the option of advancing their skills for the sake of their patients and to explore new drug combinations, for example the combination of midazolam and fentanyl. For these advanced techniques, dental sedationists would be required to be competent in ILS and in ‘rescue’ – a word which we all agreed was rather alarmist in the context of conscious sedation.

David Dawson, Consultant anaesthetist at Bradford Teaching Hospitals NHS Foundation Trust, spoke on Sleep Disordered Breathing and Obstructive Sleep Apnoea, and diagnosis and treatment of OSA. It was refreshing to have another Consultant anaesthetist acknowledging the experience of dental practitioners in administering dental sedation and admitting for good value that he had never used the reversal drug flumazenil in his life.

Dr Dawson did bring to our attention these sleep conditions of which we have to be aware. He cited the case of a patient who succumbed to 0.5mg of midazolam, an extreme case, but nevertheless reinforcing the common sense dental sedation approach to utilise small incremental doses. That message, no doubt, needs to reach the medical sedationists as well.

Sarah Kime, a dentist in South Tyneside is on the Specialist List for special care dentistry, informed us that 24.5 million of the UK population have some form of learning disability, are medically compromised or have physical, emotional and anxiety related problems. Her role was to manage the very difficult cases in this group – and as she related, she led a dedicated team which had become increasingly confident with experience over the years. Nevertheless, treatment was challenging and required extraordinary management techniques to treat what was often a ‘moving target’ – there was no doubt that this was an admirable service.

The lunch break was preceded by the SAAD prize presentations. Lowry Thomas was awarded the SAAD prize for the highest score in the NEBDN sedation exams for the academic year 2012/13. SAAD offers three essay prizes, the Drummond Jackson prize won by Elin Robinson, The Dental Student prize won by Kate Lightfoot and the Dental Nurse prize won this year by Rowan Noble. All three essays were accepted for publication in this SAAD Digest.

Marguerite Reith, Principal Dental Officer, East Midlands and Anglia Region, gave us an interesting insight into the provision of dental sedation to military personnel on referral. She pointed out that the Armed Forces are a microcosm of society, and dental anxiety in the Armed Forces tends be similar in proportion to that of the general population, and therefore there was need for a sedation option to be available to military patients. She fulfilled this role, also training nurses in-house and providing sedation to those patients who were essentially courageous but dentophobic – who would rather face enemy fire than a dentist! She explained the difficult logistics of arranging treatment for patients who could be re-assigned at short notice, an administrative phenomenon given the term ‘posting turbulence’. There was complete accord with her conclusion, ‘We owe our Armed Forces excellent dental care and especially conscious sedation if they require it.’

Damien Reilly is a Specialist in Special Care Dentistry who teaches in the Special Care Dentistry Department at Guy’s Hospital in London. He spoke on the provision of sedation in obese patients, raising awareness and approach to management. The body mass index, BMI, was a reasonably good indicator of obesity, if interpreted sensibly – kg/height in metres – 30+ taking you into the fat zone. He reminded us of the fact that health problems are substantially increased and that every system in the body is affected by obesity. As to the practicality of dealing with a very heavy patient, there was the obvious need for a sturdy chair – 146kg lifting capacity was the recommendation – obviously, this would not be standard equipment in a normal dental practice. As to the treatment of these obese patients in general practice, the advice was the common sense approach of ensuring airway management and the ‘gut feeling of quitting while ahead’. What was still unclear, and Damien admitted as such, was how to broach the subject of a patient’s being overweight, with sensitivity and without offence, especially if the decision was made to refer to specialist services for the simple reason that the patient was ‘too big’.

Sanjay Chopra, a specialist Oral Surgeon, a member of the Independent Expert Group for Training and Standards for Sedation in Dentistry, has helped develop various new documents including recommendations in CPD for sedation practitioners and reminded us that conscious sedation is an integral part of dentistry but nevertheless, there were also non-pharmacological and psychological approaches to treating nervous patients.

If there was a tinge of sadness, it was the absence of the popular and well admired Michael Wood, a senior sedation figure, who sadly had died earlier in the year. His presence and contribution to the cause of sedation in dentistry will be sorely missed.
Commissioning Sedation Delivering for Patients
SAAD Annual Symposium Abstracts
Saturday 21 September

Guidance for Commissioning
Paul Howlett

The functions of the group have been listed as:
- To set standards for the use of conscious sedation in dentistry
- To promote the highest standards of practice for conscious sedation in dentistry
- To encourage and assist the development of high quality undergraduate training and assessment in conscious sedation
- To encourage and assist the development of nationally agreed standards for high quality postgraduate training and assessment for conscious sedation in dentistry
- To act as a resource for consultation by healthcare professionals, trainers and organisations
- To work towards the development of:
  - a nationally agreed curriculum
  - a national standard for postgraduate qualifications
  - national accreditation of training programmes
  - accreditation of trainers
  - accreditation of workplace-based environments

The membership of the group includes representatives from The Dental Faculties (including FGDP) of all of the UK and Irish Royal Colleges of Surgeons, The Royal Colleges of Anaesthetists (UK and Ireland), SAAD, DSTG, British Society of Paediatric Dentistry, Specialist Advisory Committee for Special Care Dentistry, The UK Committee of Postgraduate Dental Deans and Directors, NEBDN, a representative of the Consultants in Dental Public Health, Dental Defence Organisations, an educationalist and a patient representative.

Meetings of the group to date have been held as follows:
- November 2011
- March 2012
- June 2012
- November 2012
- January 2013
- March 2013
- April 2013
- June 2013
- September 2013

The meeting that was scheduled to take place in November has been moved to December 2013.

The majority of the work that has been carried out has been completed by small working parties. The working parties of the group are:
- Syllabuses
- Sedation techniques
- Care pathway / patient information
- Training and Assessment

The Syllabus working party reported in October 2012, by which time it had produced a document containing 5 syllabi (Dentists (basic), Dentists (advanced adult), Dentists (advanced paediatric), Dental Hygienists/Therapists and Dental Nurses). The work of this group was largely based on reformating and updating existing syllabi rather than creating entirely new documents.

Intercollegiate Advisory Committee on Sedation for Dentistry
Nigel Robb

The Intercollegiate Advisory Committee on Sedation for Dentistry (IACSD) was originally formed to produce guidance on sedation for dentistry that was to have replaced the 2003 SDAC and 2007 documents. That committee broke up in 2011 and the Independent Expert Group on Training and Standards for Sedation in Dentistry (IEGTSSD) completed some of the work when it published the advanced sedation technique syllabi and CPD guidance that were presented to the SAAD Symposium in 2011.

Subsequent to the publication of the IEGTSSD documents, two pilot sedation courses covering the use of propofol and the combination of an opioid and midazolam in adult patients were run as a joint project between SAAD, The Department of Sedation and Special Care Dentistry at Guy’s and The School of Oral and Dental Sciences, University of Bristol.

The IACSD Mk 2 was convened in 2012. It has a much wider membership than IACSD Mk 1, but much the same remit. The main aims were defined as:
- Much wider membership but similar terms of reference to IACSD (I)
- Reviewing and redrafting clinical guidance
- Education, training & assessment
- Care pathway / patient information

Paul's presentation to the SAAD Symposium is covered in the article on page 37.
The Sedation Techniques working party reported in January 2013. The main areas that were covered were:

- Who does what to whom and where?
- Review of dental sedation drugs and techniques (IHS, midazolam (IV, oral and IN), IV opioid + midazolam, propofol, ketamine, sevoflurane)
- Operator-sedationist and non-operator-sedationist techniques
- Team training
- Where each technique may be used (primary, salaried, secondary care)
- Life support and ‘rescue’ skills
- ‘Basic’ and ‘Advanced’ techniques?

The most contentious issue for this group in terms of the amount of discussion time that it occupied was whether a technique involving an opioid and midazolam could be an operator-sedationist technique. This was eventually resolved in favour of the operator-sedationist technique.

Recently the question that had caused the formation (and the subsequent break up) of IACSD Mk 1 was finally considered. That was the management of young people. After much debate the following was agreed by the group:

- Young people between eight and twelve years of age who cannot have their dental treatment carried out under LA or LA + nitrous oxide/oxygen or LA + midazolam (IV, IN, oral) must be referred for management by a team led by Consultants/Specialists in paediatric dentistry and Consultants in anaesthesia in a hospital setting. Children under eight years of age who cannot be managed using either LA or LA + nitrous oxide/oxygen must be referred for management by a team led by Consultants/Specialists in paediatric dentistry and Consultants in anaesthesia in a hospital setting.

The Training and Assessment working party reported in May 2013. The remit of this group was to look at:

- Existing programmes for IHS and midazolam
- Entry to training in other techniques
- Core content of courses for sedationists and DCPs
- Programme delivery
- High fidelity simulator training
- Supervised clinical practice
- National formative and summative assessment strategy
- Accreditation of trainers/clinical mentors

The Care pathway/patient information working party had the following remit:

- Pathways for adult and paediatric patients
- Management options, indications and contraindications
- Information for referrers
- Adult and paediatric information leaflets

This working party, despite being one of the first formed, has produced very little. It is currently focusing on the patient information that should be provided.

Their report has been supposed to be produced in draft form at the last 3 meetings. At the meeting in September 2013 a draft was tabled, which had a huge number of spaces and still needs much writing. The aim was to publish in autumn 2013, but as the next meeting is in December, publication will not before 2014 at the earliest.

Those who have represented SAAD and DSTG on this group have put in a lot of effort to ensure that the final document will not contain anything that would be a threat to the safe and effective provision of conscious sedation for dentistry.

**Safe Sedation Practice for Healthcare Procedures**

*Christopher Holden*

The Academy of Medical Royal Colleges published guidance in 2001 to address avoidable morbidity and mortality arising from sedation in clinical practice. The Academy of Medical Royal Colleges arose out of the conference of Medical Royal Colleges in the mid 1990s and is concerned with education, training and quality improvement, amongst other issues.

Standards and guidance are again being addressed by this group in 2013 in an attempt to provide generic guidance directed to fundamental standards that might be applied to all those who provide sedation. In consultation with 22 organisations, a multidisciplinary working party is working on the current guidance and Dentistry has been represented in this process.

The draft document discusses the background and changes that have occurred since 2001. It reflects on the definition of sedation both in terms of the American Society of Anaesthesiologists’ defined three levels and the definition of conscious sedation used in the UK. There is guidance on the practical components of good sedation looking at the target state, pre-assessment, information, consent, fasting and patient management including the choice of technique to be used. There is further focus on titration, multiple drug use, the frail and elderly and the at-risk patient, together with consideration of monitoring and the use of supplementary oxygen. Guidance for the operating team and the role of the operator/sedationist versus a dedicated sedationist is discussed, along with the importance of record keeping and proper discharge.

The need for education and training standards to be formalised along with competencies for the safe and appropriate administration of sedation and prompt recognition and treatment of sedation related complications is stressed. The Academy points to specified and approved post-graduate training curricula which will be the future for all competency based sedation training. An emphasis is made on the continuum of the depth of sedation and a summary of the team skills, monitoring, environment and facilities that are required for minimal sedation/anxiolysis, moderate sedation/conscious sedation, and deep sedation. Of course the latter does not apply to Dentistry.

In summary, the guidance is that sedation is necessary but not without risk. There has been failure in the past to ensure adequate standards of training and practice and this new document supports formal competency-based training for all healthcare professionals. The Academy sets the fundamental standards highlighted by the Francis Report and defines a zero tolerance approach to any breach of such standards. The document is designed as a baseline for all forms of sedation and in all areas of practice. The Academy acknowledges additional standards from specialists groups may add to, but not subtract from, the fundamental standards set out in this Report which is currently in its final draft stage.

**The Advanced Sedation Course**

*Bryan Kerr*

The detail of Bryan’s presentation can be found in his article on page 41...
Sedation and GA Complications in Patients with Sleep Apnoea

David Dawson

As many populations increase in obesity, the prevalence of Obstructive Sleep Apnoea (OSA) has more than doubled over the last 20 years. Patients with undiagnosed OSA will be presenting for dental sedation or anaesthesia and they will tend to be at higher risk of a number of peri-operative complications. In particular, they are more sensitive to sedative and analgesic medication and these agents are likely to cause severe respiratory depression.

A point has been reached where we should consider using a simple questionnaire to identify those likely to be at risk, and then to use a screening test, such as overnight oximetry, to identify individuals with severe OSA. This will allow us to plan the appropriate level of care and reduce risk for our patients.

There is an increasing level of interest in this problem. The Society of Anesthesia and Sleep Medicine held its third annual conference in October 2013 and the American Society of Anesthesiologists is soon to publish an update of its recommendations on this subject. Summaries of this information in a blog at www.osarm.co.uk.

Special Care Sedation

Sarah Kime

Special Care Dentistry is concerned with the improvement of oral health of individuals and groups in society who have a physical, sensory, intellectual, mental, emotional or social impairment or disability or, more often, a combination of these factors. As in the general population, many special care patients are anxious about going to the dentist, and sedation can be helpful to enable these patients to receive dental treatment – where otherwise the only option may be for them to have treatment under general anaesthetic. The standard techniques of inhalation sedation using nitrous oxide, and intravenous sedation using midazolam are suitable for many special care patients. For some patients intravenous access can present a challenge, and in these the technique of intranasal sedation to relax the patient enough to allow intravenous cannulation has been found to be an effective, safe and acceptable technique. Multidrug techniques can also be used, with a dedicated sedationist administering these. Sedation can be indicated in patients who have medical conditions that are aggravated by stress, who have movement disorders and who have behavioural/co-operation problems. Careful patient selection is obviously necessary to allow dental treatment to be carried out safely and successfully, and it is essential that the appropriate technique be administered in the appropriate environment by a team experienced in the dental treatment of special care patients under sedation. When providing special care patients with sedation, there are extra ‘challenges’ to consider when assessing the patient, and then during the sedation and dental treatment of the patient – these include recording of physiological data and communication. In cases where there is any deviation from standard practice this and reasons for this variation should be documented.

Conscious Sedation in the Armed Forces

Marguerite Reith

The mission statement of the Defence Dental Services (DDS) is: “To deliver effective military oral health care and oral health advice in order to maximise the fighting power of the Armed Forces”.

This tri-Service organisation is responsible for the comprehensive dental care of approximately 160,000 military patients. UK military personnel are drawn from all spheres of our society, so it is not surprising that their treatment needs are representative of the wider population.

Sedation provision in the DDS was formalised in 2005 in response to the need for a more structured service. Since then, several DDS practitioners have undertaken diploma-level qualifications in
conscious sedation or have received sedation training as part of a surgical dentistry qualification. DDS Foundation Dentists receive lectures in conscious sedation and practical instruction in cannulation as part of their modular training package and selected dental nurses receive a combination of in-house training, external training (such as the courses run by SAAD) and clinical mentoring in order to achieve 'Second Appropriately Trained Person' status. Some of these nurses go on to complete the NEBDN Certificate in Dental Sedation Nursing.

A number of challenges exist to the provision of sedation for military patients. For example, suitable escorts may be difficult to secure, patients may be required to travel long distances to access care and the 'posting turbulence' experienced by DDS personnel makes matching up sedationists and second appropriately trained persons in a suitable location problematic. In addition, consideration must be given to whether a patient's requirement for conscious sedation renders them non-deployable.

Currently a small number of dentists in the DDS regularly carry out sedation on referral from other dental centres and, although these practitioners are not ideally distributed geographically, all sedation treatment needs can be met within DDS primary care in order to best address the requirements of military patients.

Bariatric Sedation Presentation

Damien Reilly

Rapidly rising obesity levels present numerous challenges for healthcare, not least for the dental profession. To enable access to care and maintain the excellent safety record of dental sedation, it is important for dental staff to have an awareness of the implications of obesity for our practice.

Health implications of obesity can be many and varied but include hypertension, cardiovascular disease and type II diabetes. Obese patients are more likely to have compromised respiratory function than the non-obese. This doesn’t necessarily mean that patients are not suitable candidates for sedation. However, it does mean that particular care should be taken at the sedation assessment visit, given the increased likelihood of poor health.

Physical barriers such as stairs, cramped surgeries and inadequate chairs in the waiting room cause difficulties of access for obese patients. Legally, dentists have a responsibility to provide a safe environment for both patients and staff, this includes knowing the working limit of our dental chairs and not exceeding it and risking injury to the patient and/or dental staff.

For more complex cases, a decision may be made that it is most appropriate to refer to a specialist centre for treatment. In making this choice, important factors to consider are the general health of the patient, their ASA classification, the extent of their obesity, the degree of their anxiety and the complexity of their proposed treatment. The clinical experience of the sedationist and ability of the dental team to manage a medical emergency should it occur, must also be assessed.

Sedation in a Specialist Referral Practice

Sanjay Chopra

Sanjay Chopra is a founder Partner of Highland View Dental Surgery, established in 1995. This is multidisciplinary referral practice for a wide range of routine and specialist dental services. The practice's main focus is to cater for nervous and phobic patients and they offer a wide range of techniques for control of pain and anxiety, particularly Conscious Sedation.

Sanjay Chopra's presentation focused on why such practices are necessary, and how they fit into the community along with other dental service providers. He also explained the types of service which can be offered in such a practice, and how sedation services can facilitate most routine and specialist treatments including Oral Surgery, Implant Dentistry, Periodontics, Endodontics and Orthodontics.

Sanjay gave insight into how to go about setting up and running a specialist referral practice offering sedation, with regards to facilities, staffing, equipment, training and management. He then explained briefly the recent documents which need to be observed in order to comply with current guidance.
The 2013 SAAD Annual General Meeting was held on Saturday 21st September, once again at the Royal Society of Medicine HQ in London, following a very successful Annual Conference, attended by around 160 delegates.

Following the adoption of the minutes of the previous AGM (2012), The President (Dr Carole Boyle) gave her annual Report, in which she detailed a busy first Presidential year. She alluded to the high profile enjoyed by SAAD at a national level, and thanked those members who take on the representational roles which ensure that the Society has a political voice. She reported that free membership for undergraduate dental students had been introduced in order to engage with younger members of our profession to ensure the future of sedation in the United Kingdom. It had been her sad duty to represent SAAD at the funeral of our late colleague Michael Wood earlier in the year, and she paid tribute to his huge contribution to the Society. She thanked her Board colleagues for their continued hard work in running the Society.

The Secretary (Dr Francis Collier) reported a busy year for correspondence, with requests for advice on a wide range of issues related to sedation practice. He reported that the SAAD website had been restructured, and an online CPD facility had been included in the new format. SAAD’s relationship with AAGBI remained cordial, and he thanked Busola and Jessica for their support. He also paid tribute to the tremendous work done by Fiona Wraith.

The Treasurer (Dr Stephen Jones) reported that SAAD had resourced a range of activities considered by the Board to be essential to the well being of the practise of dental sedation in the UK. Although there has been a deficit for the second year running, SAAD’s accountants Silver Levene advised that there are adequate reserves to cover this net outflow of resources. Dr Jones concluded that we need to continue to be prudent in the management of our financial resources in order that SAAD remains able to deliver its stated charitable aims and objectives.

Dr Nigel Robb retired as Immediate Past President and, in recognition of his work for the Society, had earlier been presented with Honorary Life Membership.

Dr Paul Averley was confirmed in his post as President-Elect, and was supported by SAAD members with a show of hands.

Dr Paul Averley and Dr Chris Holden were due to retire from the Board by rotation. Due to the untimely death of Dr Michael Wood and the resignation from the Board of Dr Bill Hamlin, two more Board places fell vacant. Dr Hamlin will, however, remain on the Editorial Board of the Digest.

There were four nominations to the Board:
• Dr Will Botha, nominated by Dr Tony Caen and seconded by Dr Gideon Bosch
• Dr Sarah Higham, nominated by Dr Carole Boyle and seconded by Dr David Craig
• Dr Chris Holden, nominated by Dr Anita Toft and seconded by Dr Nigel Robb
• Dr Dave Pearson, nominated by Dr Michael Wood and seconded by Dr David Craig.

As there were four vacancies and four nominations, the four nominees were appointed to the Board. Dr Boyle welcomed Dr Botha, Dr Higham, Dr Holden and Dr Pearson to the Board.

There was no other business to discuss. Dr Boyle closed the meeting and thanked members for attending. The next AGM will take place on Saturday 14th September 2014.

Francis I Collier
Honorary Secretary SAAD
The DSTG symposium was held in the impressive setting of Cardiff’s Millennium Stadium this year. This is the second time the symposium has been held in Cardiff, having been previously held there 13 years ago. Scientific sessions were devoted to education in teaching sedation and how the dental team is taught and practice in simulation.

Dr Shelagh Thompson, of the local organising team, welcomed the delegates to Cardiff and thanked Sheila Oliver and Mick Allen for their help in organising the meeting, before she chaired the first scientific session.

Professor Mike Lewis, Dean of Cardiff University Dental Hospital opened the meeting by thanking the organisers. He commented that DSTG had grown and matured since the last meeting. He advocated the link sedation creates between dentists and anaesthetists and supported the importance of undergraduate and postgraduate training in dental sedation.

The first presenter was the Chief Dental Officer for Wales, Dr David Thomas, who explained he is very supportive of sedation practice in the UK, having spent 20 years working in general dental practice. The theme of his presentation was ‘Future aspirations in conscious sedation – Wales and beyond’. He discussed the significance of reduction in dental decay in children, and quoted a 6% reduction in dental decay in the overall child population of Wales, proving the success of national preventive programmes like ‘Designed to Smile’ and how delivery to lower socio-economic groups has reduced dental health inequalities with an overall reduction in dental decay in deprived areas of 17%. He noted following the Adult Dental Health Survey (2009) that with older adults retaining more teeth, the need for dental services will be greater, including using sedation as an adjunct. Of note from the survey was the fact that 11% of the population have extreme anxiety, although in Wales with a population of 3 million people, only 10,000 received sedation, far fewer than expected, indicating that the demand exceeds supply. He felt he would make it his priority to develop sedation services depending on population need, including the use of workforce analysis. He had difficulty obtaining data on sedation services in Wales but reported that 1,821 patients were referred to Cardiff University Dental Hospital’s sedation unit from April 2010 to March 2011, with 356 receiving new patient assessments that year, indicating a large shortfall. Similarly, in the Community Dental Service of the 7 Local Health Boards (LHB) in Wales had no data on sedation practice and within the General Dental Service in 2012/13, the FP17s reported 960 sedation episodes, with 15 sedation providers (1 children only, 8 adult only and 6 a mixture of adult and children). In contrast, 25 practitioners provided private sedation services, but he questioned quality and safety issues and he would follow this up in the near future.

He supported the use of Health Needs Assessment and the use of the IOSN but stated that if 5-7% patients require sedation, a figure of 80,000 patients/year, as there have been no patient complaints regarding lack of sedation services, how many people actually need it?

Following the 2002 survey in South Wales on barriers for delivering sedation which he undertook, he found significant barriers for practitioners included: time to undertake training, cost for additional facilities, with no support from healthcare commissioners, patient preferences for general anaesthesia and unsuitable, medically compromised patients. He covered the future dental objectives in Wales, including access to dental services including sedation; personal responsibility for health; Designed to Smile programme and affordability. He commented on the ‘Together for Health’ (2013) document recommendations that Health Boards develop plans for integrated care between primary and secondary care and access to specialist services, with the subsequent development of managed clinical networks (MCN) which is developing a sedation care pathway in South Wales. He indicated the MCN plans to increase sedation services and reduce dental general anaesthesia, advocating the stricter GA triage system in Cardiff.

Finally, he discussed the way forward in Wales, for LHBs to consider the real need for sedation services, review existing services quality and safety and commissioning sedation services but more importantly, considering preventive approaches in particular water fluoridation to reduce the need for GA and sedation services across the board.

Dr David Craig, Consultant/Head of Sedation and Special Care Dentistry, Guy’s and St Thomas’ NHS Foundation Trust, London was the next presenter. He gave an update on IACSD guidance on advanced sedation. He discussed the difficulties obtaining agreement on the guidance and the redevelopment of IACSD (Mark I) to IEGTSSD to IACSD (Mark II), indicating that sedation is a highly regulated area of dentistry. The National sedation guidelines produced by the Department of Health (2003), Royal College of Surgeons (England) (2007) on alternative sedation techniques, NICE guidelines (2010) and IEGTSSD (2011) were the documents currently being followed by IASCD, although much debate was had between the use of the terms ‘alternative’ and ‘advanced’ sedation, with no foregone conclusion!

IEGTSSD, led by Nigel Robb completed IACSD (Mark I) work with advanced adult and paediatric sedation syllabuses and CPD requirements published in September 2011. He explained that a pilot course in adult advanced sedation (Guy’s, Bristol and SAAD), based in Bristol simulation centre, was held in September 2012, including lectures and self-directed learning. Hands-on experience with propofol, opioids and benzodiazepines was given in the simulation centre, with assessment subsequently using MCQ exams, with two candidates completing the course, having used propofol and fentanyl/midazolam sedation techniques.
He explained IACSD (Mark II) is a larger member group, well represented from many institutions though with not as many practitioners, established to redraft clinical guidance and clarify grey areas from 2003/2007 guidance regarding education, training and assessments, care pathways and patient information. Richard Ibbetson is the chair. Between November 2011 and April 2013 there have been 7 meetings with the next in June 2013, although all members do not attend these meetings.

He explained the issues have been subdivided into four working groups:

- Syllabuses
- Sedation techniques
- Care pathway/patient information
- Training/assessment (quality assurance)

He overviewed the work of these groups. The syllabus working group has 5 syllabuses (dentists (basic sedation; adult advanced sedation; paediatric advanced sedation), dental therapists/hygienists and dental nurses), based on other syllabuses, but in a better format, and members must comply with current national guidance.

The sedation techniques working group report in January 2013 produced a table of sedation techniques demonstrating ‘who does what to whom and where’, with most problems resolved.

The training and assessment group met in May 2013 and felt no change was needed in undergraduate training as DSGT had made this work effectively but advanced techniques especially paediatric sedation need work, including who can access the training and how to deliver training. David discussed the difficulty of delivering training in advanced techniques, advocating high fidelity simulation and summative assessments, adapted from other areas, to include work-based assessments as assessments are too crude at present. He advised that trainers need to be accredited with formal qualifications with work needed in this area.

The care pathway group has produced no report, and is still in deliberation.

The IASCD publication needs some work to be completed, but its publication is expected in Autumn 2013, to produce ‘one standard’ nationally.

He concluded that the Academy of Medical Royal Colleges was producing guidelines for medical and dental sedation, with two dental representatives on the panel, Chris Holden and Richard Ibbetson, which may be published at the same time as IASCD guidance. However, there are many issues with the medical specialties than dentistry at present.

Shelagh then had the pleasure of introducing the Head of the Department of Anaesthetics, Intensive Care and Pain Medicine, Cardiff University, Professor Judith Hall as the next speaker, who discussed the positive interface between dentists and anaesthetists in Cardiff, declaring dental sedation ‘a brave new’ world as there has always been a wariness between the two professions. Alternative sedation techniques initiated the joint working of dentists and anaesthetists in Cardiff 5 years ago with joint training of the second year MSc conscious sedation students. She explained Dr Steve Pugh initially organised the three-day introductory course, including a full-day simulation of sedation-related complications, given to the students by the anaesthetic team, which was soon to be led by Dr Shefali Kadambande. She explained that joint anaesthetic-led propofol sessions with collaborative working are a core part of the course.

Following her work in Africa, she strongly urged that appropriate environments are just as important as teaching. She advocated a 5-year re-appraisal of the course, including new guidance, sevoflurane sedation, simulation-based education research and undergraduate education.

Most importantly she stressed the need for risk reduction including improved technical skills and human factors. She felt that supervised training was essential with concentration on particular areas of sedation producing better performances. Advanced sedation techniques – a multifactorial sedation technique requires better concentrated training, as the more supervised experience students get, the more proficient they get. She explained that we need to know how many attempts are needed to gain competence, which is currently unknown in dental sedation training. Secondly, she focused on training frequency: in paediatric doctors trained in CPR, one group at 4 months and one group at 8 months, unsurprisingly after 8 months, their practice degraded faster than those at 4 months. She advocated that training has better outcomes with work-based training and repeat episodes over a period of time.

Finally, she overviewed human factors, commenting interestingly on biological variation and accidents occurring due to seven consecutive human errors but particularly with communication problems. She advocated the importance of communication within the dental team. Team training strategies need to include: situational awareness, decision-making and team-working.

The final presentation of the morning was a collaborative presentation demonstrating the interface between the dentists and anaesthetists in Cardiff University Hospital. Firstly, Dr Shefali Kadambande, Consultant Anaesthetist, spoke about the advanced dental sedation sessions she runs in Cardiff University Dental Hospital’s Blue room, using propofol TCI +/- midazolam/opioids/entonox and behavioural management, overviewing the local patient selection criteria and joint multi-disciplinary assessments. She overviewed the equipment available and procedures. She reported there are 20 sessions undertaken as part of the MSc year 2 per academic year, with one treatment and one assessment undertaken at each afternoon session. She overviewed new developments including an anaesthetic protocol sheet, patient information leaflet on advanced sedation techniques and use of patient satisfaction surveys on the unit.

Dr Kadambande was followed by Dr Sharmila Khot, Consultant Anaesthetist, who overviewed how she organised the simulation training in 2009 and initiated the course in 2010 as part of the dental MSc, and how reluctant some of her anaesthetic colleagues were to dentists practising alternative sedation techniques, due to their poor airway management skills and if dentists were to provide these techniques they needed to be at the standard of an established specialist i.e. an anaesthetist. She felt the course organisation and learning outcomes were developed over time.
Initially, she explained that 9 anaesthetists were needed to run the simulation training of the dentists and she stressed they had anaesthetic team meetings and team practice prior to training to see if they were comfortable with dentists using these techniques, with learning on both sides - both the trainers and the MSc students. The anaesthetists agreed on joint care due to lack of manpower, mounting waiting lists and management/cost issues associated with anaesthetist-led sessions in hospital theatre suites.

She was positive about simulated-learning as an active learning tool, where knowledge is retained longer after training sessions, focusing on the collaborative learning approach. She explained the learning domains including: cognitive, affective and psychomotor, with simulation engaging all faculties of learning as it is reflective, structured and supervised. She overviewed the simulation sessions as clinical scenarios with two dentists managing the scenario together in a role-play, with an emphasis on monitoring, with observation from the remaining trainees and trainers and a group debrief following the scenario. Simulation training is a full day for year 2 MSc students and a half day for year 1 MSc students.

Learning outcomes were developed over time, she explained, using Bloom’s taxonomy of learning in action: remember, understand, apply, analyse, evaluate and create.

Dr Shelagh Thompson, Honorary Consultant in Special Care Dentistry and Sedation, Cardiff University Dental Hospital, then gave the dentist’s perspective on simulation sedation training, and its development and improvement over time with students’ evaluation input, with most students finding the simulation component excellent/very good, following 5-6 years of data collection. She was pleased to note that this data had been included as an oral presentation at IADH (2010) and as a poster presentation at ADEE (2013). She explained that the dentist-anaesthetist training team had post-course reviews to facilitate required changes. She noted that students’ confidence post simulation training had improved for all medical emergency scenarios compared to their confidence pre-course, with the education format well received and the translation of training to clinical practice producing better management techniques. However, she concluded that although dental interest in simulation training is global, there are very few publications. She noted that work was being done in simulated practice in the UK in both Oxford and Scotland.

Dr Sheila Oliver, Senior Lecturer, Cardiff University Dental Hospital, concluded the morning session, with her presentation on assessment and feedback. She was extremely passionate about the role of feedback and how assessment drives learning, quoting Rowntree that ‘feedback is the life line of learning’ and how important it is for us to get it right. She overviewed our assessment tools, with simulation training now being used by year 4 undergraduate students and used within OSCEs. She noted a pilot study being undertaken by a final year student on patients as assessors, using patient questionnaires as feedback as a novel approach to learning. She stressed the importance of work-based assessments for postgraduate training and the use of e-portfolios for self-reflection, a core component of adult learning. She explained how simulation measures both reaction and self-reflection. Currently, she explained that feedback is given to postgraduate students in several formats: clinically (one-to-one and hot reviews), joint assessments of case-based PowerPoint presentations and using multi-short answers, written assignments and a dissertation. She suggested that taping simulation scenarios may assist with self-assessments and the introduction of e-assessments, as in Amsterdam. Sheila noted the issues of cost as a drawback to setting up simulation training. However with the imminent arrival of revalidation by the GDC, simulation training may be helpful to assist dentists with self-assessment through their career pathway and CPD.

She concluded on the future of appraisal using a 360-degree approach involving patients, students and staff’s abilities using a software programme and how simulation training provides great future research opportunities.

Afternoon lectures

Dental nurse training – the real picture

Kirstie Moons, Sian Evans, Kath Hayes

In this lecture the NEBDN certificate and the current training programme for dental nurses was discussed. It is only suitable for candidates engaged in assisting routine inhalation sedation and intravenous conscious sedation. It consists of three parts.

- Part A: completion of 50 log sheets (to include 5 IS, 5 IV, 5 other sedation cases and 25 recovery cases).
- Part B: 2 case studies consisting of 2,000 words each (1 IV, 1 IS, one of which must be a paediatric patient).
- Part C: evidence of competence (which includes preparing the patient and the surgery for a sedation procedure, assisting during sedation, safety checks on the IS machine and taking a patient’s blood pressure).

The speakers explained that the record of experience is the most difficult aspect to complete for dental nurses in practices. Failure to complete this ROE is the most common reason candidates do not complete the certificate. There has been a lack of uptake of the course since active marketing and the course did not run between 2009 and 2012.

Gaining experience is difficult for the nurses who are undertaking the training, as there are problems with accessing cases in differing modalities and finding placements. There is no possibility for them to have experience in the hospital due to insurance and indemnity.

Questionnaires were sent to practices providing sedation in Wales to assess the current position and future needs for dental nurse sedation training. There was a small sample group and only a 30% response rate. The study revealed that 100% would like their nurses to hold a sedation qualification. 66.7% of the practices do support the record of experience. Of the 19 assisting dental nurses, only 6 held a sedation qualification. 66.7% of the practices do support the NEBDN certificate and the current training programme for dental nurses.

There is a need for training in one modality only and perhaps this could be met by setting up a new course.
A question at the end asked if credits could be available for those nurses on the course unable to complete the full course for the record of experience. It was agreed that this was a good idea and that it would be looked into.

Developing the team and improving care: inhalation sedation for Therapists/Hygienists
Joy Lewis

This lecture looked at the role of therapists from past to present. Mrs Lewis discussed her previous and present role as a therapist. The career as a “dental auxiliary” was originally advertised as “A career for women aged 17-25”!

Her training began in New Cross hospital in London, the sister hospital to Guy’s, where she was taught deciduous extractions, restoration (apart from class 4) fissure sealants, fluoride application, oral hygiene instruction and infiltrations.

In the late 70s the diploma in dental therapy was introduced.

She discussed how her role has changed from 1995 to working now. In 1995 she did not carry out any treatment under sedation and in 2013 she regularly treats patients under GA and conscious sedation. She has been using inhalation sedation for patients requiring scaling and restorative work since 2010.

Her role now consists of:
- UG teaching
- Research
- Pre- and post-GA advice
- Acupuncture
- Acclimatization
- CBT (alongside Prof. Tim Newton)

Free Papers

1. Multi-centre regional audit conscious sedation in South and West Wales.
   A. Muthukrishnan, S. Thompson, J. McGregor

This audit was to assess current practice in relation to safety and predictability of dental treatment carried out under conscious sedation. It also aimed to establish a network of sedation practitioners within South and West Wales. It was a clinical cross service, multi-centered and cross healthcare boundary audit. Nine centres collected data on 1,037 sedation episodes over the course of a year. The participants consisted of 2 hospitals, 6 community centres and 1 general dental practice. Data was recorded in a logbook and there were no exclusion criteria as it was an audit. There was a 92% completion rate. The minor adverse incident rate was 2.6%. It was difficult to assess adverse events and there is a need to define adverse events. The adverse events recorded included oxygen desaturation (below what % and for how long needs to be defined), an unrousable patient, deep sedation, nose piece not fitting and being unable to find a vein in an obese patient. There was no oral surgery or paediatric sedation centres included in this audit. The network which was established is very useful as there are some practices in remote areas. Further research and evaluation is recommended using a refined audit tool.

2. Intravenous sedation: why does it fail and the cost implications
   K. Parker, J Patel, M Eghtessad

This study was carried out to identify the reasons for failed IV sedation. The current waiting list for oral surgery under IV sedation is 6 weeks at the Eastman. There are 14 appointments a week each consisting of 45 minutes. She explained the reasons for failed sedation include DNA/cancellation, no/inappropriate escort, underlying medical conditions, inappropriate blood pressure, inability to cannulate, inappropriate response and a procedure too lengthy for the appointment given. The aim of the study was to identify the reasons for failed sedation on this clinic so that the failure rate can be reduced thus improving waiting times, costs and clinic efficiency. Over 3 months, 24% of the sedations failed.

The reasons for these failures were:
- 54% DNA/cancellation
- 15% arrived late
- 12% unable to cannulate
- 8% pt chose LA
- 8% no escort
- 8% procedure too long

Out of those who attended and the sedation was unsuccessful 50% had treatment carried out under local anaesthetic. This suggests the need for an objective tool to highlight the need for sedation so resources can be used appropriately, such as the IOSN tool. It was also suggested that due to the high DNA/cancellation rate patients should be contacted to confirm the appointment.

A remark at the end of the presentation offered an alternative to phoning the patients; by giving the patient a screening appointment first followed by a treatment planning appointment they find that the patient usually turns up for their planned treatment appointment.

3. Audit of the use of intranasal/intravenous sedation for the dental treatment of adults with severe disabilities
   S. Rooprai, H. Hossenally, A. Reynolds

This paper was presented by Sundeepr Rooprai, a DF2 dentist in Bart’s community dental service. He explained the advantages of intranasal sedation in patients with disabilities. This audit was to assess the safety, efficacy and cost effectiveness of using IV/IN sedation. It included adults over 16 years of age, who would not tolerate cannulation and had a disability. Most of the patients had previously had IV/IN sedation for treatment. The cost effectiveness was discussed and estimated that an IV/IN session costed between £160 and £465. This is cheaper than a GA session costing around £800. IV/IN is also more accessible and acceptable to the patient and there are fewer risks associated with it. GA is not justified for a routine exam and scale and polish which is what a lot of these patients require and a routine basis. From this audit there was a 95% success rate with IV/IN sedation (5% were referred for a GA). 84% of the treatment was done within one session.
IFDAS 2013

The Executive Board of the International Federation of Dental Anaesthesiology Societies now has three-monthly Skype meetings, in an attempt to improve communications and expand membership internationally as the opportunity arises, rather than by consideration only at its triennial meetings. SAAD activity is reported to this Executive on a regular basis.

The IFDAS Horace Wells Award is is the highest award given by the International Federation. IFDAS states that it is necessary and important to provide opportunities for members to gain recognition for outstanding contributions to the field of dental anaesthesiology and/or to the furthering of the goals of the International Federation of Dental Anaesthesiology Societies. Recognising deserving colleagues is an important way to acknowledge career achievement and to set the bar for younger colleagues.

At the moment, the IFDAS Secretary General is accepting nominations for the 2015 Horace Wells award. The Executive is counting on individual member societies to identify potential honourees. International Societies are invited to communicate to their President the names of worthy colleagues who they feel have contributed in an outstanding way to IFDAS and/or to the field of dental anaesthesiology. Members are encouraged to include as much detail as possible about the activities and accomplishments of the nominated person. The President of each IFDAS full member society is encouraged to transmit the name of that candidate along with descriptions of their activities and accomplishments to the IFDAS Secretary General.

If any member wishes to have a nomination considered for the 2015 Horace Wells award, that nomination must be received by the IFDAS Secretary General no later than 1st April 2014.

The thirteenth triennial IFDAS Congress in Kona, Hawaii, attracted 29 oral presentations and 42 poster presentations. All presentations were largely grouped contributions from Russia, Japan, Germany, Canada, Italy, USA, UK and Iran.

Preparations for the 2015 Berlin meeting are now in progress with a predicted 650 participants.

It is expected that with the implementation of the regular Skype meetings communications from IFDAS will improve so our members will be better informed about activities in the future.

RA LOAN

Inhalational Sedation and Scavenging System

Available for a six-month loan to SAAD members

Opportunity to purchase the system after the loan period

Details of the scheme at www.saad.org.uk or email fiona@saad.org.uk
Nigel Robb
Honorary Life Membership

SAAD has recently presented Nigel Robb with an Honorary Life Membership of the Society, upon the completion of his one-year term as Immediate Past President. Nigel has been a member of the SAAD Teaching Faculty for many years, a Board member since 2000, and President of SAAD 2009-2012. He has been editor of the SAAD Digest since 2006.

Current SAAD President, Dr Carole Boyle presents Dr Nigel Robb with his Honorary Life Membership

Annual Symposium and AGM

Saturday 13 September 2014

The Royal Society of Medicine,
1 Wimpole Street, London W1G 0AE

Enquiries:
Details will be posted on the SAAD website and included in the SAAD Newsletter Email
I trained as a medical doctor in Pretoria, South Africa and after completing my degree in 2001, moved to the United Kingdom. Since 2004 I have been involved in advanced sedation, mainly in the field of dentistry. In 2008 I completed a post-graduate diploma in sedation and pain control under the tutorship of Professor James Roelofse at the University of the Western Cape, South Africa.

My experience covers the spectrum of dental and surgical procedures under sedation for both adults and children. I mainly practise in London as a peripatetic sedationist in private as well as NHS dentistry and elective surgical procedures, including plastic surgery procedures and oral surgery. I also have a particular interest in the advancement of paediatric sedation in dentistry, and in this regard am closely involved in providing advanced sedation at a leading private paediatric dental practice in south-west London.

In order to provide the best possible sedation service to my patients, I regularly attend international conferences and symposiums on sedation. I firmly believe that the only way of promoting and establishing good paediatric sedation practice is by studying international evidence-based techniques. Further to this, I collaborate closely with Prof. Roelofse in my paediatric sedation practice, where I can draw on his vast experience and knowledge in this field. I also presented on our work in paediatric sedation at the 2012 annual SAAD symposium, which was well received.

As a medical doctor working in the field of dental sedation, I hope to bring a unique perspective to the SAAD Board and be able to contribute in this way. As my personal interest lies in the field of paediatric sedation, I hope to provide my expertise in evolving and establishing SAAD’s views and policies in this field. I feel this will be crucial in the future if we are going to continue to provide a safe and effective sedation service to our paediatric patients. I am also very pleased to know that I will be joining a Board which is formed of like-minded experts in this field, who no doubt will support my personal aspirations.

Apart from paediatric sedation, I also work closely with other medical colleagues who are all experts in the field of advanced sedation in adults, and will therefore hopefully be able to contribute as a SAAD Board member in the promotion and evolution of the use of advanced sedation techniques in dentistry.

As well as being a member of SAAD, I hold memberships with the ADA (Association of Dental Anaesthetists), The Society for Pediatric Sedation (USA) and SOSPOSA (Society Of Sedation Practitioners Of South Africa).

Outside of the world of sedation, I am very much a family man. As a father of three little boys, there is not much time for anything else! I love wildlife and being in the outdoors, something I had the privilege of enjoying often, growing up in South Africa.
Unlike some of my colleagues, being a dentist wasn’t something that was woven into my DNA. School careers advisors, work experience and encouragement from an older sibling already studying dentistry found me taking up my place at Guy’s in 1989. I loved my time there, living in London and enjoying student life. I did my VT training in the Isle of Dogs, after which I got a job in a busy NHS practice in Balham where I was able to gain the experience necessary to become a competent and confident dentist.

In 1998 I felt I was ready to tackle a new challenge and having enjoyed sedation as an undergraduate, beginning the Diploma in Sedation at Guy’s felt like a natural step. I loved the course and quickly felt that I had found my niche in dentistry. I was lucky enough to be asked to stay on as a member of staff, where I remained for three years, teaching both undergraduates and postgraduates. At this time I also worked at Mortimer Market in a clinic providing dentistry for HIV-positive patients, whilst filling the remainder of my time with a part-time job in general practice. In both settings I continued to develop my skills in standard sedation techniques.

In 2003 I left the UK armed with a rucksack and went travelling solo around Asia. After arriving in Australia, I began teaching in the sedation department in Westmead Hospital in Sydney. We ran the only postgraduate sedation qualification available in Australia, taking two years to complete and attracting students from all over the country. I taught advanced sedation techniques whilst also being responsible for the day to day running of a busy clinic. My four years spent there saw me treating special care patients, children and patients with complex medical issues. Whilst there I was able to develop my sedation skills and learn new techniques, some of which differ from those used in the UK.

I returned to the UK in 2007 with a baby, a man and a container full of furniture. Shortly afterwards I became a SAAD member and have since taught regularly on the courses in London. I am lucky to work in a great practice in Cheltenham where we provide RA and intravenous sedation for a wide range of patients. It may sound like a cliché but I love being able to provide treatment for people who are dentally phobic, as it can be life changing for them. I also give lectures on sedation and medical emergencies to dentists, nurses and hygienists in the Gloucestershire area. I particularly enjoy mentoring colleagues who are starting out on their sedation careers.

I have two lovely daughters, Ella and Anna, and a husband Nick (the one I brought back from Australia). I love cooking and have cupboards full of ingredients that are difficult to pronounce. Other interests include hatching travel plans, circuit training and eating crisps at my book club.

Sarah Higham
New SAAD Trustee
My interest in oral surgery began when I was given a 29s by my local dentist and took out my upper A. Some years later I made the long voyage from Coventry and gained my BDS at Birmingham University in 2000. I enjoyed my vocational training year in West Bromwich, but wanted to learn more about secondary and tertiary care. I was referring a number of patients and was intrigued to find out how they were managed, while being acutely aware I needed to improve my oral surgery skills.

I went on to undertake 3 years of maxillofacial Senior House Officer jobs including a 6-month rotation in restorative, paediatric and oral surgery sedation. Unfortunately as my oral surgery and sedation experience increased, so did my BMI. In an attempt to limit the damage, I took up cycling and following an alcohol-induced brainstorming session, I joined 3 colleagues and cycled from John o’Groats to Land’s End.

I worked for a few years as a Staff Grade oral surgeon at Birmingham Dental Hospital and an honorary Lecturer in oral surgery and sedation for the University of Birmingham. I began lecturing beyond the locality in oral surgery, in medical management of dental patients and sedation. I was very lucky to be invited to lecture on the SAAD teaching faculty.

I was also fortunate to be accepted onto an oral surgery SpR training programme in 2009, leading to my CCST in oral surgery and M Oral Surg in 2012. I am presently undertaking a 2-year post-CCST oral surgery training programme in the West Midlands Deanery, towards the ISFE in oral surgery. I have been able to spend this time undertaking a fellowship with the NHS leadership academy and the King’s fund, gaining a PG Cert in leadership and service improvement. This fellowship helped me with the implementation and improvement of an oral surgery sedation service within University Hospitals Birmingham. I am now completing my research and M Phil write up. I hope to be able to spend more time actively promoting dental sedation and reducing the uptake of general anaesthesia for oral surgery.

Outside of dentistry, my midlife crisis involved a shift from cycling to triathlon. With help from a very supportive and at the time heavily pregnant wife, I completed Ironman UK in 2011. I am very glad I did it then as my BMI has again increased with my son’s development and I feel any further sporting achievements will have to be lived through him!
Q. Do I need two dental nurses to assist me when I carry out conscious sedation and dentistry on a patient?
A. The basic sedation team remains a suitably trained sedationist/operator supported by an appropriately trained dental sedation nurse. Whilst some clinicians like to operate routinely with a second nurse present, this is additional to basic requirements. However, under these circumstances, arrangements need to be in place for a third party to be able to assist, e.g. should radiographs need to be processed or extra materials brought which had not been envisaged before the session commences.

Q. When should I be recording blood pressure for my patient who is receiving intravenous sedation? Should I be recording blood pressure throughout the period of the sedation?
A. You should be recording blood pressure at the pre-sedation appointment, as part of your assessment of the patient’s ASA status and fitness to undergo intravenous sedation. It should also be recorded prior to the start of each episode of sedation. It is mandatory in these two situations. Beyond this, some clinicians like to take a blood pressure recording periodically throughout the procedure, e.g. every 10 minutes. I would personally take a blood pressure recording as part of my discharge procedure just prior to the patient leaving my care to go home with their escort.

Q. I carry out inhalation sedation with nitrous oxide and oxygen in my surgery. Although it is generally well ventilated, should I really have an ‘active’ form of scavenging available for when I use my RA equipment?
A. Whilst ‘passive’ forms of scavenging in the form of good general ventilation of the surgery such as opening windows and ventilation fans placed low on an external wall is desirable, this in itself is inadequate if inhalation sedation using nitrous oxide and oxygen is provided on a regular basis. ‘Scavenging of waste gases must be active and sufficient to conform to current COSHH standards’ (Section 2.3.3, SDCEP Conscious Sedation in Dentistry, Dental Clinical Guidance 2012). It is necessary to provide a surgery working environment for yourself and your staff in which the time weighted average level of nitrous oxide over an 8-hour period is no more than 100 parts per million. Advice on and provision of suitable equipment to conform to these standards may be readily acquired from the specialist firms from whom the inhalation sedation units are purchased.

Q. Some people tell me that they discharge unaccompanied patients who have had RA sedation after only 30 minutes, knowing that they intend to drive a motor vehicle. Can this be right?
A. The rationale for saying that a patient may drive so soon after an RA administration has been justified by the wording in a sample post-sedation instruction notice which appears in an appendix of the SDCEP Dental Sedation Guidance (2006 revised 2012), which advises ‘Unaccompanied adult patients who have received nitrous oxide/oxygen inhalation sedation must adopt caution before driving……and may be asked to remain in the clinic for up to 30 minutes after treatment is complete’. However, some clinicians adopt a more cautious approach still, and for example, the patient notices available from SAAD advise patients that they should ‘be cautious over the next two hours’ and that ‘it would be safer not to……drive any vehicle or ride a bicycle’. It should always be remembered that there may be some element of variability in the time required for recovery between individual patients.

Q. I have been told by a colleague that unless I carry out at least 200 intravenous sedation cases every year, I cannot describe myself as ‘current’ and ‘safe’. Please advise me in which regulatory document I may find this stated?
A. You will not find this stated in any guidance document, partly because the answer cannot be as simple as that. The figure of 100 cases over a two-year period is documented as a requirement to be considered for entry to an advanced techniques training programme. If this figure is used then figures of 4 per month per 100 per year would be adequate. However, a certain amount of ‘common sense’ needs to prevail over the issue, as clearly a clinician with wide and longstanding experience including more complex cases will have a greater fund of experience to draw on than somebody with a minimal portfolio of very simple cases. It may be considered that the more experienced clinician would require fewer cases than the less experienced to remain ‘current’ and ‘safe’.

Q. I am working in a primary care clinic where an anaesthetist provides the sedation. Does this mean that we should be able to provide sedation for patients who are classified as ASA III?
A. Patients who fall within ASA I and ASA II at assessment are usually suitable to receive conscious sedation in a primary care setting. Patients who are classified as ASA III are inherently less stable in terms of their underlying medical problems and for this reason it is usually advisable to treat such patients in a specialised sedation environment. Whilst there is no doubt that a more experienced sedation team may justifiably provide care for more complex cases in primary care, each sedation case needs to be assessed individually and it should be recognised that those patients who fall well within ASA III are most appropriately managed in an environment where enhanced medical support is more immediately available.

Q. Please can you advise on regulations which I can read regarding the provision of intravenous sedation in general dental practice?
A. There are a number of guidance documents which may be helpful in this regard. Most of these can be accessed through the SAAD website. I would suggest looking at:

• Safe Practice Scheme: Conscious Sedation Evaluation in Dentistry in the UK (SAAD 2013).
• Conscious Sedation in Dentistry: Dental Clinical Guidance (SDCEP 2006 revised 2012).
• Standards for Conscious Sedation in Dentistry: Alternative Techniques (Standing Committee on Sedation for Dentistry 2007).
• Conscious Sedation in the Provision of Dental Care (Standing Dental Advisory Committee on Dental Sedation 2003).
Dr Michael Norman Wood
1963 - 2013

SAAD trustee and editorial board member Michael Norman Wood, 49, passed away on 21st May in Houston, Texas where he was a keynote speaker at a paediatric sedation conference.

Michael, known to his friends as ‘Woody’, was born on 2nd August 1963 in Cape Town, South Africa to Michael and Annette Wood and has two younger sisters Sharon and Tanya.

He also leaves behind his beloved wife Greer whom he married in 1994, his daughter Kathryn and sons Dylan and Aiden.

Michael attended Fairbairn High School in Cape Town and went on to study dentistry at Stellenbosch University in 1981. He graduated in 1986 with a prize in endodontics, following which he did two years of compulsory national service. During this period he completed his honours degree. Michael then worked for the state providing dental care for the underprivileged areas of Cape Town. He was a keen sportsman and played both first league cricket and squash.

Michael did his MSc diploma in conscious sedation and special care dentistry from King’s College London in 2001 and then taught paediatric sedation and special care dentistry techniques to undergraduate and masters degree students at King’s until 2007. He was an active member of SAAD from 2001 and took part in the SAAD training courses and helped to draw guidelines. He also had many papers published in the SAAD Digest.

Michael came to the UK in 1991 and worked for Bekker and Prades in south London until 1996, when he bought Leagrave Dental Anaesthetic Clinic in Luton, where he treated patients initially under GA and later with various forms of sedation. The clinic expanded and moved to its present site on Dunstable Road in 2001. This surgery is a referral centre for paediatric, anxious and phobic oral surgery and patients with special needs. In 2001 GA in dental practices was stopped, so Michael turned the clinic into ‘Leagrave Dental Sedation Clinic’ and carried out in excess of 5,000 sedations per year for a combination of both adults and children. Michael trained his associates and dental nurses in sedation to a very high standard. The large numbers of patients allowed him to obtain a vast amount of data and he carried out regular audits and research projects.

Michael was a great supporter of IV sedation for children and for the use of ketamine as an alternative to GA for dental treatment. He was in the process of publishing evidence for ketamine use in children when he passed away. His colleagues have decided to analyse and publish the data that he collected in over 4,000 children.

Michael was very active and involved in every area of dentistry; he was the treasurer of the Local Dental Committee for many years and he was on many other committees such as the Shadow Commissioning Group, the CCG Estates Group, Local Professional Network and the Oral Health Advisory Group to name just a few. Michael was also, on many occasions, called to act as an expert witness in court. Michael also travelled the world giving presentations at international dental conferences on paediatric sedation techniques and special care dentistry. One week before he died he was informed that he had obtained his fellowship from the Royal College of Surgeons Edinburgh.

Most recently Michael achieved a life-long ambition by climbing Mount Kilimanjaro to raise money for Keech Cottage Hospice for Children.

A memorial service was held in Michael’s honour on Friday 7th June 2013, the attendance was quite amazing with Michael’s family, friends and colleagues, some of whom travelled from different countries to attend the event.

On the 2nd August 2013, which would have been Woody’s 50th Birthday, his team at Leagrave Sedation Clinic unveiled a plaque dedicated to his memory which was placed at the entrance to the clinic.
NATIONAL COURSE IN CONSCIOUS SEDATION FOR DENTISTS AND DENTAL NURSES

Patients appreciate being offered sedation for their dental treatment, whether they are fearful, phobic or simply have a long and tedious procedure in prospect.

The SAAD course provides underpinning knowledge and training in the clinical skills required to provide the basic sedation techniques. Alternative sedation techniques are introduced and discussed.

It is designed both as an introduction and as an update for more experienced sedationists. Guidance is given regarding further training and the acquisition of clinical experience.

Dentists are encouraged to enrol their dental nurses on the parallel course as successful sedation depends on effective team work.

SAAD’s teaching is provided by a faculty that includes some of the best-known names in conscious sedation in the UK. The courses are ‘busy’ but fun with many opportunities for hands-on sessions.

Quotes from recent evaluation forms:
‘A lively weekend with friendly and approachable lectures.’
‘I am now confident that I can provide a better service to my patients.’

The course is held at
Mile End Road Campus, Queen Mary, University of London.
It is registered with the FGDP and the KSS deanery for 12 hours CPD.
SAAD Supplies

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*If four or more items are ordered together, the postage and packing will not be more than £15.60.
The postage and packing charges are for UK addresses. For international delivery please contact Fiona Wraith.
It is now possible to place orders on-line at www.saad.org.uk Be sure to log-on if you want to claim member’s reduced prices.
For further information please refer to www.saad.org.uk or contact Fiona Wraith on fiona@saad.org.uk or 01302 846149.

SAAD Subscriptions

Subscription fees for 2014 fall due in January 2014.
If you are unsure if you have paid your subscription fees please contact fiona@saad.org.uk or 020 7631 8893.

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You are invited to express your views on any subject related to CONSCIOUS SEDATION, ANALGESIA OR DENTAL ANAESTHESIA

- Write an essay on one topic in ENGLISH in A4 format with double spacing, as a Microsoft word document. Drummond-Jackson not exceeding 5,000 words, Dental Nurses not exceeding 2,500 words, Dental Students not exceeding 3,000 words.
- Entries must be received and acknowledged by 31st March 2014.
- Essays must be written in accordance to SAAD’s Guidelines for Authors available from the SAAD website and on page 68 of this Digest.
- The decision of the panel of assessors appointed by SAAD will be final.
- Entries, accompanied by name, address and telephone number, should be emailed to fiona@saad.org.uk

NEW!

WEBSITE www.saad.org.uk

- Forums for general discussion
- Forum for adverts (equipment, positions vacant, positions sought etc)
  - Online CPD
    Log-on the membership area and follow the link ‘Online CPD’
    Answer multiple choice questions related to the refereed papers in this issue of the Digest. Download your CPD certificate
    - Latest news relating to conscious sedation
    - SAAD courses
details, dates and application forms – online registration
  - Online shop for SAAD literature
  - Sedation related documents for downloading
  - Membership details and subscribe online facility
  - Download back issues of the Digest and Newsletter
  - Details of RA machine loan scheme, research grants and essay prizes
    - Online registration for the conference
    - SAAD contact numbers and email addresses

IN THE MEMBERSHIP AREA
(to register please email your membership number to fiona@saad.org.uk)

- Frequently asked questions - requests for advice received by the Secretary
- Media page – members of SAAD may use the SAAD logo on their literature.
The logo is available in PDF or JPEG format to download from the website.
- Documents – course handbook and the SAAD/DSTG list of mentors
  - Pay subscriptions online
  - Online shop for SAAD literature at reduced rates
Guidelines for Authors

The SAAD Digest accepts manuscripts either by email or mail.

**Manuscripts** should be word-processed in Microsoft Word format and double-spaced with a margin of at least 4 cm on the left-hand side. The pages should be numbered consecutively with numbers centred at the bottom of each page. The first page of the manuscript should give only the title of the article, and the author’s/author’s name(s), qualifications and address(es).

**Submission:** in the case of paper submission, authors should send two copies of their paper to: Fiona Wraith, Executive Secretary, SAAD, 21 Portland Place, London, W1B 1PY. A copy of the paper on disc should also be submitted.

Authors are also encouraged to submit their manuscripts via email to fiona@saad.org.uk.

In both cases the submission should be accompanied by a covering letter signed by all of the authors and received by the submission deadline of 15 August.

**Peer review** is by at least two referees and the Chairman of the Editorial Board. Statistical advice may be sought if felt appropriate.

**Length of contributions:** ideally, contributions should be no more than 3,000 words, including tables and figures. Tables and figures will count as 100 words. Case reports may be submitted, but should be no more than 750 words in length.

Titles must be descriptive of the contents of the article, but yet concise. Papers should be introduced with a short abstract.

**Abstracts** should be able to stand alone. The abstract should not contain references or abbreviations, and should be no longer than 200 words.

**Data or tables** may be submitted in Microsoft Excel format or embedded in the text of the Word document. Figures or images should be submitted as external files in TIF, JPEG or EPS format. The SAAD Digest is published in colour and colour illustrations are preferred.

**Illustrations.** If a person is recognisable from a photograph, written consent must be obtained prior to publication, and a copy sent to fiona@saad.org.uk. The submission of electronic images on disc or by email is preferred. If submitting hard copy, please do not submit the original until the manuscript has been accepted for publication. Once the manuscript has been accepted, the submission of photographs or slides for professional scanning is required.

Units used in the manuscript must conform to the Système Internationale d’Unités (SI).

**References** must be in the Vancouver style. They should be numbered in the order in which they appear in the text. The numbers should be inserted in superscript each time the author is cited (‘Jones’ reported...’ or ‘Smith et al!’ found...’ or ‘Other reports have...’). A full list of references must be provided at the end of each manuscript. The reference list should give the names and initials of all the authors unless there are more than six, in which case only the first three should be given in full, followed by et al. The authors are followed by the title of the article; the journal title abbreviated as per Index Medicus and Index to Dental Literature; year of publication; volume number; and first and last page numbers in full. Titles of books should be followed by the place of publication; publisher; and year.

**Examples of reference style:**

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**Reference to a report**


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**Ethics:** articles reporting clinical research should include a statement indicating that Ethical Committee approval has been granted.

**Acknowledgements** should be included in one paragraph between the text and the references. Permission and approval of the wording must be obtained from those who are listed. In the case of research supported by industry, this must be acknowledged in the covering letter or email on submission of the manuscript.

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**CPD Questions:** once a paper has been accepted, the author(s) will be approached to provide two to three multiple choice questions and answers on the content of their paper. These may be included in the CPD section of the journal, which gives an opportunity for readers to test their knowledge on the content of the article (see example below)

**Example**

Basic Sedation techniques include:

- A titrated dose of intravenous midazolam
- Alfentanil and propofol infusion
- C a titrated dose of sevoflurane in oxygen
- D a titrated dose of nitrous oxide in oxygen

**Answers:** A, D

The Editorial Board reserve the right to edit the manuscripts for clarity and to conform to acceptable style and the space available for publication. Proofs will be supplied for correction of misprints – material changes can only be made in exceptional circumstances.
The MC1 RA flow-meter from McKesson is an independent mixture control machine manufactured in the UK. The company provides a complete range of specialist equipment for inhalation sedation and relative analgesia.

MC1 is available as either a mobile or piped system. McKesson also supplies and installs medical gas delivery systems; representatives will be pleased to discuss the options available and give a free quotation. The illustration shows the MC1 RA as an integral part of the Cestrident surgery concept.
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<td>SIVA</td>
<td>Annual Scientific Meeting</td>
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