SECTION 3: APPENDICES AND REFERENCES

APPENDICES.

Appendix 1
Australian and New Zealand College of Anaesthetists PS21

Appendix 2
Standardised anaesthetic chart

Appendix 3
PS9

Appendix 4
(i) Results for the midazolam and fentanyl cohort

(ii) Results for the midazolam, fentanyl and propofol cohort

Appendix 5
Dental Board of Australia. Registration guideline. Conscious Sedation Area of Practice Endorsement.
Appendix 1

Australian and New Zealand College of Anaesthetists PS21

GUIDELINES ON CONSCIOUS SEDATION FOR DENTAL PROCEDURES

1. INTRODUCTION

Sedation for dental procedures (with or without local anaesthesia) includes the administration by any route or technique of all drugs which result in depression of the central nervous system. The objective of these techniques is to produce a degree of sedation of the patient, without loss of consciousness, so that uncomfortable procedures may be facilitated. The drugs and techniques used should provide a margin of safety which is wide enough to render loss of consciousness unlikely. Loss of consciousness constitutes general anaesthesia and carries specific risks. These guidelines are not intended for very light techniques such as nitrous oxide/oxygen mediated sedation (see para 9).

These techniques are not without risk because of the:

1.1 Potential for unintentional loss of consciousness.

1.2 Depression of protective reflexes.

1.3 Depression of respiration.

1.4 Depression of the cardiovascular system.

1.5 Wide variety and combinations of drugs which may be used, with the potential for drug interactions.

1.6 Possibility of excessive amounts of these drugs being used to compensate for inadequate analgesia.

1.7 Individual variations in response to the drugs used, particularly in children, the elderly and those with pre-existing medical disease.

1.8 Wide variety of procedures performed.

1.9 Differing standards of equipment and staffing at the locations where these procedures may be performed.

It is important to recognise the variability of effects which may occur with sedative drugs, however administered, and that over-sedation, airway obstruction or cardiovascular complications may occur at any time. To ensure that standards of patient care are satisfactory, equipment and staffing of the area in which the patient is being managed should satisfy the requirements in the appropriate ANZCA Professional Documents.
2. GENERAL PRINCIPLES

2.1 The patient should be assessed before the procedure and this assessment should include:

2.1.1 A concise medical history, examination (including blood pressure measurement), performance of appropriate investigations and identification of risk factors. The American Society of Anesthesiologists classification system is convenient for this purpose. (See Appendix 1)

2.1.2 Informed consent for sedation as well as the planned procedure.

2.1.3 Instructions for preparation for the procedure (including the importance of fasting), the recovery period, and discharge of the patient (including avoidance of driving, other dangerous activities, undertaking responsible business).

2.2 If the patient has any serious medical condition then the appropriate treating general medical practitioner and/or their specialist should be consulted prior to any planned treatment under sedation. If the patient is deemed to be seriously medically compromised then an anaesthetist should be present to administer sedation and to monitor the patient during the procedure.

2.3 The practitioner administering sedation requires sufficient knowledge to be able to:

2.3.1 Understand the actions of the drug or drugs being administered.

2.3.2 Detect and manage appropriately any complications arising from these actions. In particular medical and dental practitioners administering sedation must be skilled in airway management and cardiovascular resuscitation.

2.3.3 Anticipate and manage appropriately the modification of sedative drug actions by any concurrent therapeutic regimen or disease process which may be present.

2.4 Techniques intended to produce loss of consciousness must not be used unless an anaesthetist is present.

2.5 A written record of the dosages of drugs and the timing of their administration must be kept as a part of the patient’s records. Such entries should be made as near the time of administration of the drugs as possible. This record should also note the regular readings from the monitored variables.

2.6 Techniques which compensate for inadequate local analgesia by means of heavy sedation must not be used unless an anaesthetist is present.

3. STAFFING

3.1 If an appropriately trained medical or dental practitioner is not present to administer sedation and monitor the patient, there must be an assistant present during the procedure, appropriately trained in observation and monitoring of sedated patients, and in resuscitation whose sole duty shall be to monitor the level of consciousness and cardio-respiratory function of the patient.
3.2 If at any time spontaneous respiration and/or protective reflexes are lost, or the patient does not respond to verbal commands or stimulation, both the proceduralist and assistant must devote their entire attention to monitoring and treating the patient until recovery, or until such time as another medical or dental practitioner becomes available to take responsibility for the patient's care.

3.3 If general anaesthesia or loss of consciousness is sought for the procedure, then an anaesthetist must be present to care exclusively for the patient.

4. **FACILITIES**

The procedure must be performed in a location which is adequate in size and staffed and equipped to deal with a cardiopulmonary emergency. This must include:

4.1 An operating table, trolley or chair which can be readily tilted.

4.2 Adequate uncluttered floor space to perform resuscitation.

4.3 Adequate suction and room lighting.

4.4 A supply of oxygen and suitable devices for the administration of oxygen to a spontaneously breathing patient.

4.5 A self inflating bag suitable for artificial ventilation together with a range of equipment for advanced airway management.

4.6 Appropriate drugs for cardiopulmonary resuscitation and a range of intravenous equipment. (See Appendix II)

4.7 A pulse oximeter.

4.8 Ready access to a defibrillator.

5. **MONITORING**

All patients undergoing intravenous sedation must be monitored continuously with pulse oximetry and this equipment must alarm when certain set limits are exceeded. There must be regular recording of pulse rate, oxygen saturation and blood pressure. According to the clinical status of the patient, other monitors such as ECG or capnometry may be required.

6 **OXYGENATION**

Degrees of hypoxaemia occur frequently during intravenous sedation without oxygen supplementation. Oxygen administration diminishes hypoxaemia during procedures carried out under sedation and should be routinely available.
Pulse oximetry enables the degree of tissue oxygenation to be monitored and must be used on all patients during sedation.

7. DRUGS USED FOR SEDATION

A variety of drugs and techniques are available for sedation. The most common intravenous agents used are small doses of a benzodiazepine (such as midazolam) for sedation and small doses of opioid (such as fentanyl) for analgesia. Even small doses of such drugs may result in loss of consciousness in some patients.

Intravenous anaesthetic agents must only be used by an appropriately trained medical or dental practitioner, and titrated in doses which do not allow intended loss of consciousness. Continuous monitoring of consciousness by whatever means must be established. These agents must not be administered by the proceduralist without the presence of an appropriately trained assistant whose sole duty is to monitor the level of consciousness of cardio-respiratory function of the patient (see 3.1).

8. TRAINING IN SEDATION FOR DENTAL PROCEDURES

An appropriately trained medical or dental practitioner should be present and be responsible for administration of sedation. The clinician is to be one of the following:

8.1 A dentist who has successfully completed relevant postgraduate training leading to an accredited qualification accepted by the relevant Health Authority. An example is the Diploma in Clinical Dentistry (Sedation and Pain Control) from the University of Sydney, or an equivalent course (as defined by the relevant regulating authority).

8.2 A medical practitioner with formal training at least equivalent to the Diploma in Clinical Dentistry (Sedation and Pain Control) from the University of Sydney, or training in accordance with ANZCA current professional requirements.

8.3 A specialist anaesthetist.

9. SPECIALISED EQUIPMENT FOR NITROUS OXIDE SEDATION

When nitrous oxide is being used to provide sedation, the following equipment requirements must be satisfied:

9.1 There must be a minimum oxygen flow of 2.5 litres/minute with a maximum flow of 10 litres/minute of nitrous oxide, or in machines so calibrated, a minimum of 30% oxygen. There must be the capacity for the administration of 100% oxygen.

9.2 The circuit must include an anti-hypoxic device which cuts off nitrous oxide flow in the event of an oxygen supply failure, and opens the system to allow the patient to breathe room air.

9.3 There must be a non-return valve to prevent re-breathing, and a reservoir bag.
9.4 The patient breathing circuit must provide low resistance to normal gas flows, and be of lightweight construction.

9.5 Installation and maintenance of any piped gas system must be according to appropriate standards.

9.6 Servicing of equipment and piped gases must occur on a regular basis and at least annually.

9.7 An appropriate method for scavenging of expired gases must be in use.

9.8 There must be a low gas flow alarm.

9.9 Risks of chronic exposure to nitrous oxide should be considered.

10. DISCHARGE

The patient should be discharged only after an appropriate period of recovery and observation in the procedure room, or in an adjacent area which is adequately equipped and staffed. Oxygen must be available in any area used for patient recovery.

Discharge of the patient should be authorised by the practitioner who administered the drugs, or another appropriately qualified practitioner. The patient should be discharged into the care of a responsible adult to whom written instructions should be given. Transport should normally be by car.

Adequate staffing and facilities must be available in the Recovery Area for managing patients who have become unconscious or who have suffered some medical mishap. Should the need arise the patient must be transferred to appropriate medical care.

A number of ANZCA Professional Documents should be noted where appropriate, particularly the following:

PS1  Recommendations on Essential Training for Rural General Practitioners in Australia Proposing to Administer Anaesthesia
PS2  Recommendations on Privileges in Anaesthesia
PS4  Recommendations for the Post-Anaesthesia Recovery Room
PS6  Recommendations on Minimum Requirements for the Anaesthesia Record
PS7  Recommendations on The Pre-Anaesthesia Consultation
PS15 Recommendations for the Perioperative Care of Patients Selected for Day Care Surgery
PS16 Guidelines on the Standards of Practice of a Specialist Anaesthetist
PS18 Recommendations on Monitoring During Anaesthesia
T2  Recommendations on Minimum Facilities for Safe Anaesthesia Practice Outside Operating Suites
TE3  Policy on Supervision of Clinical Experience for Trainees in Anaesthesia
APPENDIX I

The American Society of Anesthesiologists’ physical status classification system:

Class I: A normal, healthy patient.
Class II: A patient with mild systemic disease.
Class III: A patient with severe systemic disease.
Class IV: A patient with severe systemic disease that is a constant threat to life.
Class V: A moribund patient who is not expected to survive without the operation.

*Excerpted from American Society of Anesthesiologists Manual for Anesthesia Department Organization and Management 2001. A copy of the full text can be obtained from ASA, 520 N Northwest Highway, Park Ridge, Illinois 60068-2573*

APPENDIX II

Emergency drugs should include at least the following:

- adrenaline
- atropine
- dextrose 50%
- lignocaine
- naloxone
- flumazenil
- portable emergency oxygen supply
**Appendix 2**

Standardised anaesthetic chart used to record the data

Name:....................................................... Date:..................................................

Weight:......................................................

1. Patient fasting for 6 hours       [YES]       [NO]   Reception
2. Patient empty bladder          [YES]       [NO]   check
3. Pickup organised              [YES]       [NO]
4. Contact lenses out             [YES]       [NO]
5. Emergency drugs, equipment ready [YES]       [NO]   Surgery
6. Medical history taken and checked [YES]       [NO]   check
7. Consent checked                [YES]       [NO]

**RECORD OF AGENTS RECEIVED**

1. **R.A.**
   - Started at........................... Procedure.........................
   - Finished at........................... Concentration N₂O................%

2. **Agents given (time after the hour)**

<table>
<thead>
<tr>
<th></th>
<th>Tm</th>
<th>Amt</th>
<th>Tm</th>
<th>Amt</th>
<th>Tm</th>
<th>Amt</th>
<th>Tm</th>
<th>Amt</th>
<th>Tm</th>
<th>Amt</th>
<th>Tm</th>
<th>Amt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midaz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(mg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fentanyl</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(µg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Propofol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(mg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keflin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(gm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Ab</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(mg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infusion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ml)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. Local anaesthetic

<table>
<thead>
<tr>
<th>Tm</th>
<th>No. of Amp</th>
<th>Tm</th>
<th>No. of Amp</th>
<th>Tm</th>
<th>No. of Amp</th>
<th>Tm</th>
<th>No. of Amp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lignocaine</td>
<td></td>
<td></td>
<td></td>
<td>PeriPress</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maracaine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(one ampule = 2.2ml = 44mg. Max single adult dose = 7mg/kg)

4. Comments:

Vein - site

- dorsum hand
- medial cubital
- lateral cephalic
- cephalic snuff box
- basillic
- ventral wrist

Cannula access [good] [moderate] [poor]

.................................................................
## ***RECORD OF TREATMENT***

<table>
<thead>
<tr>
<th>Time (minutes)</th>
<th>Blood Pressure</th>
<th>Resps per minute</th>
<th>End Tidal CO2</th>
<th>Oxygen Saturation</th>
<th>End Tidal CO2</th>
<th>Respiration Rate</th>
<th>Systolic</th>
<th>Diastolic</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>95</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>105</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>115</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>120</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>125</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>130</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>135</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>140</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>145</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>155</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>160</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>165</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>170</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>175</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>180</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>185</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>190</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>195</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Annotations:

- **Blood Pressure**
  - Systolic: \( \uparrow \)
  - Diastolic: \( \downarrow \)

- **Oxygen Saturation**: \( O \)

- **End Tidal CO2**: \( \Theta \)

- **Resps per minute**: \( X \)

- **Pulse Rate**: .

**Remember.....**

* 99 – 95% is OK
* 94% is mildly hypoxic
* 93 – 90% is hypoxic
* < 90% is an acute hypoxic crisis
Guidelines on Sedation and/or Analgesia for Diagnostic and Interventional Medical, Dental or Surgical Procedures

This document is intended to apply wherever procedural sedation and/or analgesia for diagnostic and interventional medical, dental and surgical procedures are administered, especially where sedation and/or analgesia may lead to general anaesthesia. The Australian and New Zealand College of Anaesthetists recognises that practitioners with diverse qualifications and training are administering a variety of medications to patients to allow such procedures to be performed. This document addresses pertinent issues for all practitioners involved in such activities.

1. DEFINITIONS

1.1 **Procedural sedation and/or analgesia** implies that the patient is in a state of drug-induced tolerance of uncomfortable or painful diagnostic or interventional medical, dental or surgical procedures. Lack of memory for distressing events and/or analgesia are desired outcomes, but lack of response to painful stimulation is not assured.

1.1.1 **Conscious Sedation** is defined as a drug-induced depression of consciousness during which patients are able to respond purposefully to verbal commands or light tactile stimulation. Only exceptionally will interventions be required to maintain a patent airway, spontaneous ventilation or cardiovascular function. Conscious sedation may be achieved by a wide variety of drugs including propofol, and may accompany adequate local anaesthesia. All conscious sedation techniques should provide a margin of safety that is wide enough to render loss of consciousness unlikely.

1.1.2 **Deep levels of sedation**, where consciousness is lost and patients only respond to painful stimulation, are associated with loss of the ability to maintain a patent airway, inadequate spontaneous ventilation and/or impaired cardiovascular function. Deep levels of sedation may have similar risks to general anaesthesia, and may require an equivalent level of care.

1.1.3 **Analgesia** is reduction or elimination of pain perception, usually induced by drugs which act locally (by interfering with nerve conduction) or generally (by depressing pain perception in the central nervous system).

1.2 **General Anaesthesia** is a drug-induced state characterised by absence of purposeful response to any stimulus, loss of protective airway reflexes, depression
of respiration and disturbance of circulatory reflexes. General anaesthesia is sometimes indicated during diagnostic or interventional medical or surgical procedures and requires the exclusive attention of an anaesthetist, or other appropriately trained and credentialled medical specialist within his/her scope of practice (see College Professional Document T1 Recommendations on Minimum Facilities for Safe Administration of Anaesthesia in Operating Suites and Other Anaesthetising Locations).

### 2. AIMS AND RISKS OF PROCEDURAL SEDATION AND/OR ANALGESIA

2.1 The aims of procedural sedation and/or analgesia are to ensure patient safety and comfort, and to facilitate completion of the planned procedure. In order to achieve these aims, a range of sedation options may be required during any one procedure, with a continuum from no medication, through conscious sedation and deep sedation, to general anaesthesia. While no sedation or conscious sedation with small doses of drugs such as benzodiazepines and opioids are options for some patients and proceduralists, many patients and proceduralists want deep levels of sedation or general anaesthesia to be an option during each procedure.

2.2 Practitioners authorised or credentialled to administer procedural sedation and/or analgesia should be aware that the transition from complete consciousness through the various depths of sedation to general anaesthesia is a continuum and not a set of discrete, well-defined stages. The margin of safety of drugs used to achieve sedation and/or analgesia varies widely between patients and loss of consciousness with its attendant risk of loss of protective reflexes may occur rapidly and unexpectedly. Therefore practitioners who administer sedative or analgesic drugs that alter the conscious state of a patient must be prepared to manage the following potential risks:

- **2.2.1** Depression of protective airway reflexes and loss of airway patency.
- **2.2.2** Depression of respiration.
- **2.2.3** Depression of the cardiovascular system.
- **2.2.4** Drug interactions or adverse reactions, including anaphylaxis.
- **2.2.5** Individual variations in response to the drugs used, particularly in children, the elderly, and those with pre-existing medical disease.
- **2.2.6** The possibility of deeper sedation or anaesthesia being used to compensate for inadequate analgesia or local anaesthesia.
- **2.2.7** Risks inherent in the wide variety of procedures performed under procedural sedation and/or analgesia.
- **2.2.8** Unexpected extreme sensitivity to the drugs used for procedural sedation and/or analgesia which may result in unintentional loss of consciousness, and respiratory or cardiovascular depression.

2.3 Over-sedation, airway obstruction, respiratory or cardiovascular complications may occur at any time. Therefore, to ensure high standards of patient care, the following guidelines are recommended.
3. PATIENT PREPARATION

3.1 The patient should be provided with written information, where possible, which includes the nature and risks of the procedure, preparation instructions (including the importance of fasting), and what to expect during the immediate and longer term recovery period, including after discharge.

3.2 Informed consent for sedation and/or analgesia and for the procedure should be obtained according to applicable legislation (see College Professional Document PS26 Guidelines on Consent for Anaesthesia or Sedation).

4. PATIENT ASSESSMENT

4.1 All patients should be assessed before procedural sedation and/or analgesia. Assessment should include:

4.1.1 Details of the current problem, co-existing and past medical and surgical history, history of previous sedation and anaesthesia, current medications (including non-prescribed medications), allergies, fasting status, the presence of false, damaged or loose teeth, or other evidence of potential airway problems.

4.1.2 Examination, including that relevant to the current problem, of the airway, respiratory and cardiovascular status, and other systems as indicated by the history.

4.1.3 Results of relevant investigations.

4.2 This assessment should identify those patients at increased risk of cardiovascular, respiratory or airway compromise during procedural sedation and/or analgesia, as in such cases, an anaesthetist should be present to care for the patient. These patients include the elderly, those with severely limiting heart, cerebrovascular, lung, liver or renal disease, morbid obesity, significant obstructive sleep apnoea, or known or suspected difficult endotracheal intubation, acute gastrointestinal bleeding particularly with cardiovascular compromise or shock, severe anaemia, the potential for aspiration of stomach contents (which may necessitate endotracheal intubation), previous adverse events due to sedation, analgesia or anaesthesia, and patients in ASA Grades P 4-5 (see Appendix I and College Professional Document PS7 Recommendations on the Pre-Anaesthesia Consultation).

5. STAFFING

5.1 Except for very light conscious sedation and/or analgesic techniques such as inhaled nitrous oxide or low dose oral sedation, there must be a minimum of three appropriately trained staff present: the proceduralist, the medical or dental practitioner administering sedation and monitoring the patient, and at least one additional staff member to provide assistance to the proceduralist and/or the practitioner providing sedation as required.
5.2 The assistant to the medical or dental practitioner administering sedation/anaesthesia must be exclusively available to that practitioner at induction of and emergence from sedation/anaesthesia, and during the procedure as required. If general anaesthesia is intended, and especially in emergency situations where endotracheal intubation is planned, a fourth person to specifically assist the anaesthetist throughout the procedure is required (see College Professional Document PS8 Guidelines on the Assistant to the Anaesthetist).

5.3 The practitioner administering procedural sedation and/or analgesia requires sufficient training to be able to:

5.3.1 Understand the actions of the drugs being administered, and be able to modify the technique appropriately in patients of different ages, or in the case of concurrent drug therapy or disease processes.

5.3.2 Monitor the patient’s level of consciousness and cardiorespiratory status.

5.3.3 Detect and manage appropriately any complications arising from sedation.

5.4 A medical or dental practitioner who is skilled in airway management and cardiopulmonary resuscitation must be present whenever procedural sedation and/or analgesia are administered.

5.5 Techniques intended to produce deep sedation or general anaesthesia must not be used unless there is present an anaesthetist, or other appropriately trained and credentialled medical specialist within his/her scope of practice (see College Professional Documents PS1 Recommendations on Essential Training for Rural General Practitioners in Australia Proposing to Administer Anaesthesia, PS2 Statement on Credentialling in Anaesthesia, PS8 Guidelines on the Assistant to the Anaesthetist, PS16 Statement on the Standards of Practice of a Specialist Anaesthetist, TE3 Policy on Supervision of Clinical Experience for Trainees in Anaesthesia, T1 Recommendations on Minimum Facilities for Safe Administration of Anaesthesia in Operating Suites and Other Anaesthetising Locations).

5.6 In situations other than those when an anaesthetist must be present (noted in 4.2 and 5.5), administration of sedation and/or analgesia and monitoring of the patient should be performed by another appropriately trained medical or dental practitioner working with the proceduralist.

5.7 If such an appropriately trained medical or dental practitioner is not present solely to administer sedation and/or analgesia and monitor the patient, there must be an assistant to the proceduralist present during the procedure, who is appropriately trained in observation and monitoring of sedated patients, and in resuscitation, and whose primary duty is to monitor the level of consciousness and cardiorespiratory status of the patient, and who must be immediately available to manage the patient should there be any need. This person may, if appropriately trained, administer sedative and/or analgesic drugs under the direct supervision of the proceduralist, who must have advanced life support skills and training (see 5.4). Propofol, thiopentone and other anaesthetic agents must not be used in these circumstances. If loss of consciousness, airway obstruction or cardiorespiratory insufficiency occur at any time, all staff must devote their entire attention to monitoring and treating the patient until recovery, or until such time as another medical or dental practitioner becomes available to take responsibility for the patient’s care.
6. FACILITIES AND EQUIPMENT

The procedure must be performed in a location which is adequate in size, and staffed and equipped to deal with a cardiopulmonary emergency. These facilities and equipment must be sufficient to maintain basic life support until more specialised help, equipment and drugs become available. At a minimum this must include:

6.1 Adequate room to perform resuscitation should this prove necessary.

6.2 Appropriate lighting.

6.3 An operating table, trolley or chair which can be tilted head down readily is preferable but not mandatory.

6.4 An adequate suction source, catheters and handpiece.

6.5 A supply of oxygen and suitable devices for the administration of oxygen to a spontaneously breathing patient.

6.6 A means of inflating the lungs with oxygen (e.g. a self-inflating bag and mask) together with ready access to a range of equipment for advanced airway management (e.g. masks, oropharyngeal airways, laryngeal mask airways, laryngoscopes, endotracheal tubes).

6.7 Appropriate drugs for cardiopulmonary resuscitation and a range of intravenous equipment and fluids including drugs for reversal of benzodiazepines and opioids (See Appendix II).

6.8 A pulse oximeter.

6.9 A sphygmomanometer or other device for measuring blood pressure.

6.10 Ready access to an ECG and a defibrillator.

6.11 A means of summoning emergency assistance.

6.12 Within the facility there should be access to devices for measuring expired carbon dioxide.

(See College Professional Documents T1 Recommendations on Minimum Facilities for Safe Administration of Anaesthesia in Operating Suites and Other Anaesthetising Locations, PS15 Recommendations for the Perioperative Care of Patients Selected for Day Care Surgery.)

7. SPECIALISED EQUIPMENT FOR INHALATIONAL SEDATION

When inhalational agents such as nitrous oxide or methoxyflurane are being used to provide sedation, risks of chronic exposure should be considered, and the following special requirements must be satisfied:
7.1 The patient breathing circuit should be of lightweight construction, should have a reservoir bag for inspired gases, and must provide low resistance to normal gas flows.

7.2 Installation and maintenance of any piped gas system must be according to appropriate standards.

7.3 Servicing of equipment and piped gases must occur on a regular basis and at least annually.

7.4 There must be a non-return valve to prevent re-breathing.

7.5 An appropriate method for scavenging of expired gases must be in use.

7.6 When nitrous oxide is used there must be a minimum oxygen flow of 3 litres/minute with a maximum combined flow of 10 litres/minute, or, in machines so calibrated, a minimum of 30% oxygen. The circuit must include an anti-hypoxic device which cuts off nitrous oxide flow in the event of an oxygen supply failure, and opens the system to allow the patient to breathe room air.

7.7 There must be the capacity for the administration of 100% oxygen.

7.8 There must be a low gas flow alarm.

8. TECHNIQUE AND MONITORING

8.1 Reliable venous access should be in place for all procedures when procedural sedation and/or analgesia are used. It is acknowledged that this may not be practical in some patients receiving non-intravenous sedation (e.g. small children, intellectually disabled patients), in which case a note should made in the medical record.

8.2 As most complications of sedation are cardiorespiratory, doses of sedative and analgesic drugs should be kept to the minimum required for patient comfort, particularly for those patients at increased risk.

8.3 Monitoring of the depth of sedation, typically by assessing the patient’s response to verbal commands or stimulation must be routine. Loss of patient response to stimulation or verbal commands indicates that loss of airway reflexes, respiratory and/or cardiovascular depression are likely, and sedation should be lightened accordingly. It is recognised that monitoring of verbal response may be difficult in some patients (e.g. small children, patients with intellectual disabilities or language difficulties).

8.4 All patients undergoing procedural sedation and/or analgesia must be monitored continuously with pulse oximetry and this equipment must alarm when appropriate limits are transgressed.

8.5 In all patients there must be regular recording of pulse rate, oxygen saturation and blood pressure throughout the procedure. It is acknowledged that monitoring prior to commencement of sedation may not be practical in some patients (e.g. small
children, patients with intellectual disabilities), in which case a note should made in the medical record.

8.6 According to the clinical status of the patient, other monitors such as ECG or capnography may be required (see College Professional Document PS18 Recommendations on Monitoring During Anaesthesia).

9. OXYGENATION

9.1 Hypoxaemia may occur during procedural sedation and/or analgesia without oxygen supplementation. Oxygen administration diminishes hypoxaemia during procedures carried out under sedation /or analgesia, and must be used in all patients for as much of the procedure as possible. It is acknowledged that oxygen administration prior to commencement of sedation may not be practical in some patients (e.g. small children, patients with intellectual disabilities), in which case a note should made in the medical record.

9.2 Pulse oximetry enables the degree of tissue oxygenation to be monitored and must be used in all patients during procedural sedation and/or analgesia. If hypoxaemia is detected staff should devote their whole attention to correcting this situation which may include ceasing the procedure until the hypoxaemia is corrected.

10. MEDICATIONS

10.1 A variety of drugs and techniques are available for procedural sedation and/or analgesia. The most common intravenous agents used are benzodiazepines (such as midazolam) for sedation and opioids (such as fentanyl) for analgesia. Even small doses of these drugs may result in loss of consciousness in some patients. Special care is required when local anaesthesia of the larynx and/or pharynx has been administered to facilitate the procedure.

10.2 Intravenous anaesthetic agents such as propofol must only be used by a second medical or dental practitioner trained in their use because of the risk of unintentional loss of consciousness. These agents must not be administered by the proceduralist.

11. DOCUMENTATION

The clinical record should include the names of staff performing sedation and/or analgesia, with documentation of the history, examination and investigation findings. A written record of the dosages of drugs and the timing of their administration must be kept as a part of the patient's records. Such entries should be made as near the time of administration of the drugs as possible. This record should also note the regular readings from the monitored variables, including those in the recovery phase, and should contain other information as indicated in the College Professional Document PS6 Recommendations on the Recording of an Episode of Anaesthesia Care.
12. RECOVERY AND DISCHARGE

12.1 Recovery should take place under appropriate supervision in a properly equipped and staffed area (see College Professional Document PS4 Recommendations for the Post-Anaesthesia Recovery Room).

12.2 Adequate staffing and facilities must be available in the recovery area for managing patients who have become unconscious or who have suffered complications during the procedure.

12.3 Discharge of the patient should be authorised by the practitioner who administered the drugs, or another appropriately qualified practitioner. The patient should be discharged into the care of a responsible adult to whom written instructions should be given, including advice about eating and drinking, pain relief, and resumption of normal activities, as well as about making legally-binding decisions, driving, or operating machinery.

12.4 A system should be in place to enable safe transfer of the patient to appropriate medical care should the need arise.

13. TRAINING IN PROCEDURAL SEDATION AND/OR ANALGESIA FOR NON-ANAESTHETIST MEDICAL PRACTITIONERS

13.1 It is recommended that non-anaesthetist medical or dental practitioners wishing to provide procedural sedation and/or analgesia should have received a minimum of 3 months full time equivalent supervised training in procedural sedation and/or analgesia and anaesthesia or similar approved course. They should participate in a process of In-Training and Competency Assessment. Training should include completion of a crisis resource management simulation centre course.

13.2 It is recognised that there will be non-anaesthetist medical or dental practitioners who have had many years experience in procedural sedation and/or analgesia, but who may not have had a period of formal supervised training as described. Such longstanding clinical experience may be deemed equivalent to a formal period of training as described.

13.3 Credentialling, training and clinical support of such medical or dental practitioners should be achieved by close cooperation from nominated anaesthetists in the hospital or procedural centre, or for remote or rural practitioners with anaesthetists in a major centre particularly when intravenous or intramuscular sedation is practiced.

13.4 Regular certification in cardiopulmonary resuscitation, and evidence of relevant Continuing Professional Development, are required for credentialling.

14. REFERENCES

The following references provide evidence to support the recommendations made in this document.

14.1 Cote CJ, Wilson S. Guidelines for monitoring and management of pediatric


14.3 Cravero JP, Blike GT. Review of pediatric sedation. Anaesthesia Analgesia 2004; 99: 1355-1364


14.7 American Society of Anesthesiologists. Statement on granting privileges for administration of moderate sedation to practitioners who are non anaesthesia professionals. <www.asahq.org/publicationsAndServices/standards/40.pdf> 2006


All College Professional Documents must be complied with, but particular note should be taken of the following:

PS1 Recommendations on Essential Training for Rural General Practitioners in Australia Proposing to Administer Anaesthesia

PS2 Statement on Credentialling in Anaesthesia

PS4 Recommendations for the Post-Anaesthesia Recovery Room

PS6 The Anaesthesia Record. Recommendations on the Recording of an Episode of Anaesthesia Care

PS7 Recommendations on the Pre-Anaesthesia Consultation

PS8 Guidelines on the Assistant to the Anaesthetist

PS15 Recommendations for the Perioperative Care of Patients Selected for Day Care Surgery

PS16 Statement on the Standards of Practice of a Specialist Anaesthetist

PS18 Recommendations on Monitoring During Anaesthesia

PS26 Guidelines on Consent for Anaesthesia or Sedation

T1 Recommendations on Minimum Facilities for Safe Administration of Anaesthesia in Operating Suites and Other Anaesthetising Locations

TE3 Policy on Supervision of Clinical Experience for Vocational Trainees in Anaesthesia

APPENDIX I

The American Society of Anesthesiologists’ (ASA) classification of physical status:

P 1 A normal healthy patient

P 2 A patient with mild systemic disease

P 3 A patient with severe systemic disease

P 4 A patient with severe systemic disease that is a constant threat to life

P 5 A moribund patient who is not expected to survive without the operation

P 6 A declared brain-dead patient whose organs are being removed for donor purposes

E Patient requires emergency procedure
APPENDIX II

Emergency drugs should include at least the following:

- adrenaline
- atropine
- dextrose 50%
- lignocaine
- naloxone
- flumazenil
- portable emergency O₂ supply

APPENDIX III

Personnel for Procedural Sedation and Analgesia

**Scenario 0: Two personnel – Sedation by Proceduralist**

- Medical or dental practitioner proceduralist with airway and resuscitation skills, and training in nitrous oxide or low dose oral sedation techniques
- Assistant with training in monitoring sedation
- Conscious sedation using nitrous oxide alone and/or low dose oral sedation alone in ASA P 1-2 patients
- Heavy oral sedation and intramuscular or intravenous sedative/anaesthetic/analgesic agents must not be used

**Scenario 1: Three personnel – Sedation by Proceduralist**

- Medical or dental practitioner proceduralist with airway and resuscitation skills, and training in sedation
- Assistant with training in monitoring sedation
- Assistant to assist both
- Conscious sedation in ASA P 1-2 patients
- Propofol, thiopentone and other intravenous anaesthetic agents must not be used

**Scenario 2: Three personnel – Sedation by Medical Practitioner**

- Proceduralist
- Medical or dental practitioner with airway and resuscitation skills, and training in sedation
- Assistant to assist both
- Conscious sedation in ASA P 1-2 patients
- Propofol, thiopentone and other intravenous anaesthetic agents may only be used by a medical or dental practitioner trained in their use

**Scenario 3: Four personnel – Sedation by Medical Practitioner**

- Proceduralist
• Medical or dental practitioner with airway and resuscitation skills, and training in sedation
• Assistant to assist each
• Conscious sedation in ASA P 1-3 patients
• Propofol, thiopentone and other intravenous anaesthetic agents may only be used by a medical or dental practitioner trained in their use

Scenario 4: Three personnel – Sedation by Anaesthetist

• Proceduralist
• Anaesthetist
• Assistant to assist both
• Conscious, deep sedation or general anaesthesia in all patients
• All approved anaesthetic drugs may be used

Scenario 5: Four personnel – Sedation by Anaesthetist

• Proceduralist
• Anaesthetist
• Assistant to assist each
• Conscious sedation, deep sedation or general anaesthesia in all patients
• All approved anaesthetic drugs may be used

* Recommended if assistance is likely to be required for the majority of the case (e.g. complex or emergency patients)
# Please refer to Section 4.2

COLLEGE PROFESSIONAL DOCUMENTS

College Professional Documents are progressively being coded as follows:

TE Training and Educational
EX Examinations
PS Professional Standards
T Technical

POLICY – defined as ‘a course of action adopted and pursued by the College’. These are matters coming within the authority and control of the College.

RECOMMENDATIONS – defined as ‘advisable courses of action’.

GUIDELINES – defined as ‘a document offering advice’. These may be clinical (in which case they will eventually be evidence-based), or non-clinical.

STATEMENTS – defined as ‘a communication setting out information’.

This document has been prepared having regard to general circumstances, and it is the responsibility of the practitioner to have express regard to the particular circumstances of each case, and the application of this document in each case.

Professional documents are reviewed from time to time, and it is the responsibility of the practitioner to ensure that the practitioner has obtained the current version. Professional documents have been prepared having regard to the information
available at the time of their preparation, and the practitioner should therefore have regard to any information, research or material which may have been published or become available subsequently.

Whilst the College endeavours to ensure that professional documents are as current as possible at the time of their preparation, it takes no responsibility for matters arising from changed circumstances or information or material which may have become available subsequently.

Promulgated (as P9): 1986
Date of current document: February 2010