Baseline vital signs must be recorded *prior* to the commencement of sedation. Thereafter, the child must be monitored at regular intervals during the procedure and the recovery period, until they are discharged from the facility. The child must never be left alone or unmonitored until fully recovered from all sedative, analgesic and dissociative drugs.

It is recommended that observations be recorded on a sedation monitoring flow chart (Appendix 7). The SP, or staff member designated to monitor the patient, must be in attendance at the patient's side at all times, and must be competent to recognise, and rescue the patient, from any complications.

## 8. Personnel

Whenever sedation is performed, there should be no less than two people present (i.e. the operator who is performing the procedure and an appropriately trained observer). If the operator also provides the sedation for the procedure (i.e. a single operator-SP), the observer will be responsible for monitoring the child under sedation and to assist the operator in the case of adverse events. If the operator expects of the observer to take part in the sedation (e.g. by topping up the sedation), the observer will only be responsible for monitoring the patient and providing sedation as requested by the operator. The observer will not be able to assist with the procedure and the operator takes full responsibility for the sedation as well as the procedure. Since children often need deep sedation for procedures to be completed safely, this scenario is only acceptable for brief, minor procedures[6] and where minimal sedation with basic or standard techniques are used.

For all other procedures, especially when advanced sedation techniques are used, a three-person model should be followed, with a team consisting of:

- the operator with an assistant responsible to only help him,
- a dedicated SP, and
- an assistant for the SP.

### *8.1 The sedation practitioner*

#### 8.1.1 Qualifications and training requirements

Relevant qualifications and regular updating of knowledge and skills remain the foundation of safe sedation practice. It is recommended that the SP should:

- have a primary, registered medical qualification,
- have full registration with the HPCSA as appropriate,

- have formal training in standard and advanced sedation techniques specifically for children, or be able to demonstrate equivalent experience and training (provision of audit records of safe administration of sedation drugs is also required),
- provide evidence of regular and recent paediatric sedation-related continuing professional development (CPD) activity appropriate to the sedation techniques provided,
- have a logbook, or equivalent, reflecting cases where sedation was done, as well as the technique used,
- comply with SASA recommendations for safe sedation practice in children, and
- have evidence available of up-to-date qualifications in BLS and APLS.

### 8.1.2 The single operator-sedation practitioner

The single operator-SP is a healthcare practitioner who provides the sedation and at the same time performs the required procedure. Since it may not be possible to give full attention to monitoring the child while also performing the procedure, a second trained individual is necessary to assist the operator-SP in this role. According to the Academy of Medical Royal Colleges,[13] the assistant of the operator-SP can fulfil this role for procedures less than 30 minutes.

It is recommended that the operator-SP should undertake the dual role of SP and operator only when basic or standard sedation techniques are employed and the level of sedation does not progress beyond minimal sedation or anxiolysis. It is recommended that combination of drugs not be administered.

Since minimal or moderate sedation may not be sufficient to complete most procedures safely in young children, taking on the role of single operator-SP in young children is not recommended. Older children, who will cooperate and follow instructions, can safely be managed in this way if the operator and assistant are appropriately trained. The trained second person must be present throughout the procedure and must be capable of monitoring the clinical condition of the child and assisting the operator-SP in the event of complications. The second person may have received only in-house training, including competency in airway rescue, provided that this training is fully documented.

### 8.1.3 The dedicated sedation practitioner

The dedicated SP takes full responsibility for the administration of sedatives, analgesics and/or dissociative drugs, and monitors the clinical effects of these drugs.

It is advised to use a dedicated SP in the following situations:

- The operator has no training in the administration of sedation in children.
- Fragile ASA II children.
- Children with comorbidities.

- The procedure is expected to be prolonged.
- The surgical procedures are complex.
- Advanced sedation techniques are to be used.
- Complex sedation techniques involving intravenous infusions (i.e. TCIs).

SPs and operators must only undertake procedures and interventions for which they have been specifically trained and for which they have been proven competent.

SPs (either single operator-SPs or dedicated SPs) should:

- have a good understanding of the pharmacokinetics and pharmacodynamics of the agents that they administer and specifically their use in children; this includes the pharmacology of the appropriate antagonists (which should be reserved for emergency use).
- understand the synergistic effects when combining drugs.
- be able to recognise and manage complications associated with the drugs in use,.
- be able to apply APLS techniques and manage, rescue and recover a child who unexpectedly enters a deeper-than-intended level of sedation.
- regularly audit their practice.

## *8.2 Observer and ancillary personnel*

An observer is always required for monitoring the child patient when a single operator-SP provides sedation, even for brief or simple procedures. The observer should have at least the equivalent of nursing training and must be proficient at maintaining airway patency and monitoring of vital signs. Such a person must be able to assist with ventilation if necessary.

All members of the sedation team must have received appropriate theoretical and supervised clinical training. Their knowledge and skills should continually be updated by way of medical education, attending in-house training sessions and airway certification, as well as taking part in simulation training for the management of emergencies. In-house training can involve various innovations in the form of formal lectures, supervised clinical training, monitoring, simulation of emergencies, documentation and recovery care. Evidence of in-house training must be documented and kept in the facility as proof of training or updating of knowledge and skills, which is an important medico-legal point.

Ancillary personnel must have a clear concept of their individual tasks. They must have adequate, current experience in their roles and must be involved in CPD and education in order to maintain their skills.

The following tasks must be completed with every sedation:

- Preprocedural screening, including patient evaluation, providing pre- and postsedation instructions and obtaining written informed consent (Appendices 3, 4, 8 and 9)

- Completing the preprocedural checklist (Appendix 11)
- Prescribing and administering sedation
- Patient monitoring (and rescue, where necessary) (Appendix 7)
- Performing the procedure
- Recovery and discharge after the procedure (Appendix 12)

## *8.3 Personnel requirements for each sedation endpoint (Section 2.2)*

The level of care is determined predominantly by the degree of preservation of the protective airway reflexes and the risk of respiratory depression.

### 8.3.1 Minimal sedation or anxiolysis

At this level of sedation, the airway, cardiovascular function and spontaneous breathing are usually unaffected. This level of sedation is suitable for the operator-SP, but in accordance with all international guidelines, there must be a second person, apart from the operator, who is responsible for monitoring the patient and helping with rescue, if needed. This is usually a level of sedation suitable for brief, simple procedures lasting less than 30 minutes. Clinical monitoring is extremely important. This level of sedation is often referred to as "changing the mood of the patient".

### 8.3.2 Moderate sedation/analgesia (conscious sedation)

A level of sedation where the airway is usually maintained, cardiovascular function intact and the patient is breathing spontaneously. For this level of sedation, the following staff are required:

- An SP
  - trained in the selection, assessment and evaluation of the child for PSA, and specifically in airway assessment;
  - trained in specific paediatric sedation techniques;
  - trained in resuscitation and airway management in children and experienced in APLS;
  - with an understanding of the pharmacokinetics and pharmacodynamics of sedative, analgesic drugs and dissociative agents, their possible synergistic effects and specific reversal antagonists, as related to children – the SP must demonstrate competency when using combinations of drugs;
  - trained and experienced in the use of the drugs for moderate sedation and analgesia techniques in children;
  - with an understanding of the procedure to be undertaken: painful or non-painful, duration, requirements for immobilisation; and

- with an understanding of the value of monitoring the patient, and to never leave the patient unattended.
- A trained and dedicated observer, usually a nursing assistant, experienced in airway management and monitoring, to ensure that:
  - the child remains conscious;
  - respiratory function is adequate;
  - vital signs are within normal limits; and
  - the child is rescued from deeper-than-intended levels of sedation.
- An assistant to the SP is recommended for procedures longer than 30 minutes.

The observer must also be trained in BLS.

For more complex procedures, where combinations of drugs are used, prolonged sedation is required, or in children with comorbidities, a dedicated SP must be present.

#### 8.3.3 Deep sedation/analgesia

Deep sedation/analgesia is part of the sedation continuum and the standard of care must be identical to that for an unconscious patient.

It is advised that a dedicated SP who is trained in paediatric sedation and preferably with experience in paediatric anaesthesia, as well as a trained assistant be present. The SP must have a valid APLS certification.

During deep sedation, intervention may be required to maintain the airway. Ventilatory efforts must be closely monitored as they may be inadequate, or even ineffective, against a closed glottis.

It is highly recommended that capnography is used to monitor ventilation.

#### 8.3.4 General anaesthesia

GA is not part of PSA, even though it is mentioned on the sedation continuum. SPs must be able to rescue patients who unintentionally slip into unconsciousness.

Guidance for GA is provided in the SASA Practice Guidelines 2018 (available from http://www.sasaweb.com).

### *8.4 Personnel requirements for PSA in children who need special care*

Children who require special care (Section 10.2) include those with medical, physical, intellectual, psychological or social circumstances that require a different approach to treatment. They may have physical limitations, learning difficulties or movement disorders that make

treatment (e.g. dental treatment) very difficult. Intravenous sedation is usually used to relieve anxiety, produce drowsiness and offer an amnesic effect. Some patients may have to be hospitalised the night before to have a sedative or hypnotic drug administered.

Sedation for these children must only be undertaken by SPs with experience in sedating children with special needs. It is often necessary to use deeper levels of sedation. It may be extremely difficult to judge the level of sedation, so adjustments in treatment protocols may be necessary. Careful monitoring of the airway is mandatory. These cases should therefore not be attempted by the single-operator SP and a dedicated SP should be employed.

## 9. Documentation required for procedural sedation and analgesia

Accurate documentation is crucial to protect the SP in case of legal challenges. If it was not written down, it never happened.

### *9.1 Before sedation*

Documentation before sedation is aimed at obtaining information about the child, as well as providing information to the parent/caregiver.

Recorded information should include the following:

- *Valid informed consent to sedation and analgesia for medical or dental procedures (Section 4 and Appendix 3)*
- *Medical history questionnaire (Appendix 4)*

  A recently updated medical history questionnaire should be evaluated by an appropriately trained SP, preferably before the day of the procedure. This must be checked again on the day of the procedure and before the initiation of sedation, for possible changes in the child's condition. It is important that the child's weight, and if available height, be indicated on the questionnaire, as drug dosages in sedation are calculated according to the weight of the child. This will also ensure that obese children are flagged beforehand, so that SPs may make an informed decision on whether the child is fit for sedation outside of a hospital setting. Significant underlying medical disorders (e.g. URTI, allergies, sleep apnoea, and uncontrolled asthma or diabetes mellitus) should be asked about. The use of chronic medication, including over-the-counter medications, should be noted.

  The name, address and contact number of the parent/caregiver must be obtained and recorded. It is important to ensure that a responsible person will provide aftercare at home. If no-one is available, the sedation should be rescheduled.