Aga Khan University Hospital

Title:	Procedural Sedation and Analgesia		
Department / Division:	Department of Anaesthesiology		
Department:	Multidisciplinary		
Approved By:		**Document No.:**	Anes-PP-001
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Chief Medical Officer and Associated Dean Clinical Affairs		**Revision No.:**	08
		Prepared By:	Sedation Oversight Group
Chief Nursing Officer		**Total Pages:**	Page 1 of 18

1. **Purpose:**

1.1. The primary purpose of this policy is to provide guidelines to all users of sedation with standard operating procedures.

1.2. To ensure safe provision of Procedural Sedation Services to the patients.

2. **Scope:**

2.1. **Location:**

2.1.1. These guidelines apply to all locations where Sedation is administered within the scope of AKUH, Karachi. (Refer Annexure: 7.12)

2.2. **Inclusion:**

2.2.1. The policy includes all adults and children who are undergoing diagnostic, therapeutic or surgical procedures requiring medications to control pain and apprehension.

2.3. **Exclusion:**

2.3.1. Intubated patients who are receiving IV Sedative Agents, Patients receiving IV Sedative Agents for treatment of medical conditions such as seizures, alcohol withdrawal etc. and patients who are receiving IV Sedative Agents either by direct injections or Patient Controlled Analgesia (PCIA) for control of pain or anxiety which is not related to the medical procedure.

2.4. **Contraindications:**

2.4.1. There are no absolute contraindications to procedural sedation and analgesia (PSA). Relative contraindications may include older age, significant medical comorbidities as heart failure, chronic obstructive pulmonary disease, neuromuscular disease, dehydration, anemia,

signs of a difficult airway, airway obstruction and mediastinal mass and incomplete NPO status.

2.5. **Medications:**

2.5.1. Includes Midazolam, Lorazepam, Diazepam, Pethidine, Nalbuphine, Fentanyl, Propofol, Ketamine, Choral Hydrate and *Dexmedetomidine*. The respective antidotes for these medications are also included in this policy (Refer Annexure 7.1) Propofol, Ketamine and *Dexmedetomidine* can only be used by the physician who are credentialed for advance level of sedation.

2.5.2. The elderly tends to have higher rates of adverse events due to an increased sensitivity to sedative drugs, medication interactions, and higher peak serum levels of administered drugs. High risk patients should therefore have a lower starting dose, slower rates of administration and longer intervals.

2.5.3. Medications should be given in small incremental doses titrated to the desired end point. Sufficient time must elapse between doses to allow the effect of each dose to be assessed before the subsequent dose.

2.6. **Personnel**:

2.6.1. Procedural Sedation can only be ordered by physicians, who are privileged for it.

2.6.2. Qualifications and/or skills of staff involved in the procedural sedation process:

2.6.2.1. Valid BLS Certification (for Nurses and Doctors).

2.6.2.2. Basic Certification Courses for Basic Level of Procedural Sedation

2.6.2.3. Advance Certification Course for Advance Level of Procedural Sedation.

2.6.3. The person performing, procedural sedation should be certified and competent enough in:

2.6.3.1. Techniques and various modes of sedation

2.6.3.2. Pharmacology of sedation drugs and the use of reversal agents

2.6.3.3. Monitoring requirements

2.6.3.4. Response to complications

2.6.4. The person performing, Monitoring sedation should be certified and competent enough in:

2.6.4.1. Monitoring requirements

2.6.4.2. Response to complications

2.6.4.3. Use of reversal agents.

2.6.4.4. Recovery criteria

Note: All of the aforementioned competencies are part of individual personnel file. Going forward every physician involved in procedural sedation needs to undergo re-certification every 4 years.

2.6.5. The following drugs can be ordered by physicians who have Basic Level of Procedural Sedation privileges:

2.6.5.1. Midazolam, Diazepam, Fentanyl, Chloral Hydrate and Nalbuphine, Pethidine

2.6.6. The following drugs can only be prescribed by physicians who have Advance Level of Procedural Sedation privileges:

2.6.6.1. Propofol, Ketamine and Dexmedetomidine

2.6.7. Procedural Sedation performed by Anesthetists will be monitored following (Guidelines for Non- Operating Room Anesthesia)

3. **Responsibility:**

3.1. This policy applies to all health care personnel involved in Procedural Sedation.

4. **Terms and Definitions:**

4.1. **Procedural Sedation**: is defined as "the technique of administering sedatives or dissociative agents with or without analgesics to induce an altered state of consciousness that allows the patient to tolerate painful or unpleasant procedures while preserving cardiorespiratory function.

4.2. **Analgesia** - Relief of pain without intentionally producing a sedated state. Altered mental status may occur as a secondary effect of medications administered for analgesia.

4.3. **Minimal Sedation** - The patient responds normally to verbal commands. Cognitive function and coordination may be impaired, but ventilatory and cardiovascular functions are unaffected.

4.4. **Moderate Sedation and Analgesia** - The patient responds purposefully to verbal commands alone or when accompanied by light touch. Protective airway reflexes and adequate ventilation are maintained without intervention. Cardiovascular function remains stable.

4.5. **Deep Sedation and Analgesia** - The patient cannot be easily aroused but responds purposefully to noxious stimulation. Assistance may be needed to ensure the airway is protected and adequate ventilation maintained. Cardiovascular function is usually stable.

4.6. **Dissociative Sedation** - Dissociative sedation is a trance-like cataleptic state in which the patient experiences profound analgesia and amnesia but retains airway protective reflexes, spontaneous respirations, and cardiopulmonary stability.

4.7. **General Anesthesia** - The patient cannot be aroused and often requires assistance to protect the airway and maintain ventilation. Cardiovascular function may be impaired.

5. **Process / Procedure:**

NOTE: The person ordering the procedural sedation must be physically present in the vicinity, and available if required, until the patient discharge/sign out from sedation.

Moreover, the person administering, and monitoring sedation should be other than the one performing the procedure.

Dosages: differences between pediatric, adult, and geriatric populations (Refer Annexure 7.1)

5.1. Informed consent:

5.1.1. Physician will obtain an informed consent for procedures that are to be done under sedation. Encircle the clause of sedation for the procedure. (See Annexure 7.2).

5.2. The assigned staff will ensure:

5.2.1. Immediate availability and use of specialized medical equipment.

5.2.2. Nursing staff will be responsible to check facilities like oxygen, suction, pulse oximeter, cardiac monitor, and equipment like crash cart and or any other equipment based on the identified need are accessible and are in working condition. Physician will be responsible for drug selection, dosage, and interval.

5.2.3. Emergency equipment as well as ACLS/PALS certified individual should be immediately available while the procedure is in progress.

5.3. Assessment and Reassessment of Patient:

5.3.1. Pre-sedation assessment and reassessment must be done by assigned staff and the physician for all patients undergoing procedural sedation. In case anesthetist is involved, (Guidelines for Non-Operating Room Anesthesia)

5.3.2. A pre-sedation assessment is valid for 4 weeks provided there is no change in patient's status. It should include:

5.3.2.1. A concise medical history and examination

5.3.2.2. Review of systems, vital signs, airway, and cardiopulmonary reserve

5.3.2.3. For children in whom Mallampati classification cannot be done, assessment of Head, Neck, mouth opening, and neck movement should be assessed to ascertain potential airway problems. If an abnormal finding is detected, then review by anesthetist will be warranted.

5.3.2.4. Drug history (Including allergies if any)

5.3.2.5. Advise on the NPO period prior to the procedure.

5.3.2.6. Laboratory testing (See Annexure 7.3)

5.3.2.7. Plan and choice of sedation.

5.3.2.8. Post procedure analgesia

5.3.2.9. Patient's NPO status and vital parameters should be verified before the procedure. (Refer Annexure 7.4)

5.4. Anesthetists may be involved at the discretion of the attending physician for patients with:

5.4.1. Unstable ASA III (Annexure 7.5)

5.4.2. ASA IV and/or above (Annexure 7.5)

5.4.3. Mallampati grading III and above (Annexure 7.6)

5.5. The location of the procedure will be decided by the physician giving the sedation such as designated procedure rooms*, bedsides* or in Operating Room.(Refer to annexure 7.12)

5.6. Vital signs will be recorded before, during and after administration of sedation.

5.7. Following vital signs will be monitored throughout the procedure and documented in sedation Monitoring form every 15 minutes and as required.

5.7.1. Pulse Rate (Continuous Monitoring)

5.7.2. Respiratory Rate

5.7.3. Oxygen Saturation (Continuous Monitoring)

5.7.4. Blood Pressure

5.7.5. *Pain Score*

5.7.6. All drugs administered for sedation shall have the dose and the time of administration recorded.

5.7.7. SAS Score (Intra procedure Monitoring) (See Annexure 7.7)

5.7.8. Modified Aldrete score (MAS) (Post procedure monitoring) (See Annexure 7.8)

5.7.9. ECG (selected patients only).

5.7.10. EtCO2 is preferable.

5.7.11. The person monitoring the patient will notify the physician if the Respiratory rate is below 8 / minute, SpO2 is less than 90% or 4% less than the base line.

Note: Post-procedure: -The vitals will be monitored every 15 minutes until the patient achieves a MAS of ≥ 8 or baseline *and meet the discharge criteria or equivalent. A physician must sign off the patient from sedation based on discharge criteria.*

5.8. Transfer/Discharge of Patients from Procedural Sedation:

5.8.1. The patient may be transferred to the recovery area when able to maintain airway with intact reflexes (Swallow, Cough, Gag)

5.8.2. Responsive to verbal and tactile stimuli as appropriate

5.8.3. Vital signs stable with satisfactory SpO2.

5.8.4. If a patient will be transferred, following will be monitored in ward.

5.8.4.1. Tolerated meal.

5.8.4.2. Passed Urine

5.8.4.3. The staff will accompany the patient during transfer based on the requirement.

5.8.4.4. Patient SPO2 monitoring during transfer is preferred.

5.8.4.5. A nurse of sedation unit and a physician of the sedation unit shall sign off the patient after satisfactory assessment before transferring the patient to other/original facility.

5.8.5. If a patient will be discharged from the sedation unit directly to home, following criteria must be ensured:

5.8.6. Adult:

5.8.6.1. MAS Score above 8 or baseline.

5.8.6.2. Level of consciousness (awake, alert, appropriately conversant or baseline)

5.8.6.3. Return to usual pattern of mobility or as appropriate per procedure.

5.8.6.4. BP within baseline range. There is no evidence of severe hyper-or hypotension.

5.8.6.5. Pulse rate (60-100/min) and rhythm regular or baseline

5.8.6.6. Respiratory Rate: 12-20/min or baseline

5.8.6.7. Ability to swallow secretion or baseline.

5.8.6.8. Urine Passed or Foley's in place

5.8.6.9. Dressings, tubes and drains intact with amount of drainage appropriate for procedure.

5.8.7. Pediatric:

5.8.7.1. MAS Score above 8 or baseline.

5.8.7.2. Level of consciousness (awake, alert, appropriately conversant or baseline) as per the age

5.8.7.3. Return to usual pattern of mobility or as appropriate age per procedure.

5.8.7.4. Monitor signs for early warning as given in annexure 7.9.

5.9. The patient shall be fit for discharge after meeting the afore mentioned discharge criteria.

5.10. If any criteria are not met, the decision to discharge the patient will at the discretion of the physician.

5.11. Following the use of antidote, the patient should be observed for 2 hours to ensure that the sedation or the cardiopulmonary depression does not recur once the effect of the antidote dissipates.

5.12. *Patients expected to be discharged home will always be discharged under the care of a responsible physician.*

Note: Sedation services provide*d* under anesthesia will not require documentation in sedation monitoring form. The Post Anesthesia Recovery (PAR) Form will be used.

6. **Reference(s):**

1. Joint Commission International Standard for Hospital, 7th Edition.
2. LexiComp's Drug Information Handbook, 15th Edition
3. NHMSFP - College of Physicians and Surgeons of British Columbia Version 1.1: 2013-09
4. The New England Journal of Medicine, 370;15, April 10, 2014
5. Pediatric Procedural Sedation, Medscape CME 2008

7. **Annexures:**

7.1. Suggested Regimens for Sedation

7.2. Informed Consent for Procedure

7.3. Laboratory Testing

7.4. NPO Guidelines

7.5. ASA Classification

7.6. Mallampati Grading

7.7. Sedation Agitation Scale (SAS)

7.8. Modified Aldrete Score (MAS)

7.9. Pediatrics Early Warning Signs

7.10. Sedation Assessment and Monitoring Form (Adult)

7.11. Sedation Assessment and Monitoring Form (Pediatric)

7.12. Locations where procedural sedation are administered.

Annexures 7.1

Suggested Regimens for Sedation

1. The agents listed below are available in the hospital. The Sedation Policy and Procedure recommends that these agents or combinations be used, and that intravenous titration be used whenever possible to the desired endpoint.
2. It is important to know that adverse sedation events are frequently associated with drug overdoses and drug interactions when 3 or more drugs are used.
3. If you have an inadequate sedative response, please consult the Anesthesia department. In general, agents should be used for their primary effects as listed below (e.g., sedation, analgesia, anxiolysis, etc.), combining agents to achieve the desired endpoints (e.g., using Midazolam for anxiolysis/sedation and Fentanyl for analgesia).
4. One should always consider onset and duration of action before repeating the dose, as it may lead to inadvertent accumulation and toxicity.

		Administration Caution	Onset	Duration	General Comments
Benzodiazepines					
Midazolam	**Pediatric** *PO 0.25 - 0.5 mg/kg. Not to exceed 20 mg.* *<5years: IV/IM 0.05 - 0.1 mg/kg 6 mg IV Max.* ***Children :6 to 12 years*** *0.025 to 0.05 mg/kg IV. Total dose depends on patient response Usual max dose 10mg IV.* ***12 years to 16 years*** *Initial, 1 to 2.5 mg Total dose depends on patient response, type, and duration of procedure. Usual max dose 10mg IV* **Adult** PO 3.75-7.5 mg IV 0.5-2 mg slow IV over 2 minutes. May repeat after 2-3 minutes. IM 0.07-0.08 mg/kg 30-60 minute before procedure Usual dose (IV/IM): not more than 5 mg. *Additional doses may be given slowly in increments of 25% of the dose used to first reach sedative endpoint.* **Elderly** *Initial dose should be reduced to 0.5 mg for patients > 60 years of age or patients who are debilitated or chronically ill; additional doses of <1.25 mg may be given in these patients (max 2.5 mg)*	•Calculate dose with Ideal Body Weight (IBW) *see formula at the end.* •Infuse as slow IV over 2-3 minutes at a conc. 1-5 mg/ml. •May dilute with NS or D5W	PO 30-45 min IV 1-5 min	30 min- 2 hr.	• Benzodiazepines do not produce analgesia. • The maintenance dose should be 25% of the dose required to reach sedation. • Reduce the dose by 30% if a concomitant narcotic or CNS depressant is given. Reduce it to 50% if age is > 65 years. • Personnel and equipment for respiratory resuscitation should be immediately available. • Extreme Caution: Children < 6 months of age • Monitor respiratory and cardiovascular status. • Contraindicated in narrow angle glaucoma
Diazepam	Pediatric PO 0.2 - 0.3 mg/kg. Max 5 - 10 mg. IV 0.04 - 0.3 mg/kg. Max 5 mg. Adult PO 2-10 mg IV 2-10 mg (repeat dose not earlier than 3 hrs. Elderly *PO 2-5 mg* *IV 1.25-5 mg*	• Children: Do not exceed 1-2 mg/min slow IV Push • Adults: 5 mg/min slow IV Push • Max conc 5 mg/ml. • Avoid in severe/ acute liver disease. • Reduce dose by 50% in cirrhosis	PO 45-60 min IV 5 min	6-8 hrs.	
	Caution for Diazepam: 1. Intramuscular injections are painful and often ineffective. Intravenous injections usually result in pain on injection and may cause phlebitis. When used intravenously, the following procedures should be undertaken to reduce the possibility of venous thrombosis, phlebitis, local irritation, swelling, and, rarely, vascular impairment: the solution should be injected? slowly, taking at least 1 minute for each 5 mg (1 ml) given; do not use small veins, such as those on the dorsum of the hand or wrist; extreme care should be taken to avoid intra-arterial administration or extravasation. 2. Do not give diazepam beyond the appearance of ptosis or inability to respond to verbal command.				

Lorazepam	Pediatric PO 0.02 - 0.05 mg/kg. Max 2 mg. Adult PO 0.5 - 2 mg. Max 4 mg.	---	PO 30-60 min	6-8 hrs.	
Benzodiazepine Reversal (Antidote for Benzodiazepines)					
Flumazenil	Pediatric	Initial: IV 0.01 mg/kg over 15 seconds (Max 0.2 mg) Repeat dose (max. 4 doses): 0.005 - 0.01 mg/kg (max 0.2 mg) repeat at 1-minute interval. Max. cumulative dose: 1 mg or 0.05 mg/kg (whichever is lower)			Onset: IV 1-3 min Duration: Usually < 1 hr.
	Adults	Initial: IV 0.2 mg over 15 seconds Repeat dose: 0.2 mg at 1-minute interval. Max. cumulative dose: 1 mg per dose and not more than 3 mg in one hour			
Opiate Agonists					
Fentanyl	Pediatric IV:1-2 mcg/kg/dose. May repeat at 30 minutes. Adult IV: 0.5-1 mcg/kg. May repeat at 3 minutes PRN. Titrate to effect recommended 150-200mcg.	Give over 2-3minutes. Max Conc 5mcg/ml	0.5-1min	30-60 minutes	• Decrease dose by 25-50% in moderate to severe renal & hepatic dysfunction, respectively. • When used concomitantly with other opioids or CNS depressants. Monitor for respiratory depression, especially during initiation of nalbuphine or following a dose increase.
Nalbuphine	Pediatric Dose not established. Adult IV: Induction: 0.1 to 0.3 mg/kg over 10 to 15 minutes; OR 10 mg IV/IM/SC every 3 to 6 hours as needed is appropriate for a 70 kg patient; adjust dose to achieve adequate response with minimal adverse effects. MAX single dose in opioid-nontolerant patients, 20 mg/dose. Geriatric: Initiate at the low end of the dosage range; titrate slowly.	IM, SC: Administer undiluted. IV: Administer undiluted over at least 2 to 3 minutes; induction doses should be administered over 10 to 15 minutes (Nursing 2016)	SC, IM: <15min IV: 2-3min	3 to 6 hours	
Narcotic Reversal (Antidote for Opioids)					
Naloxone	Pediatric	IV/SC/IM/ET: Birth to 5 years (< 20 kg): 0.1 mg/kg every 2-3 minutes as needed. > 5 yrs. or > 20 kg: 0.01 mg/kg every 2-3 minutes as needed			Onset: IV 2 min IM, SC, ET 2-5 min Duration: 20-60 min
	Adult	IV/SC/IM/ET: 0.4 -2 mg q 2-3 minutes as needed (max 10 mg)			
Sedative/Hypnotics					
Choral Hydrate	Adult and Elderly	Adult/Elderly 500 mg to 1g 30 minutes before surgery (maximum 2g)	Onset Within 30 minutes	Duration Single dose 2-4 hours	Precautions A) history of gastritis, esophagitis, or gastric or duodenal ulcers B) mentally depressed patients or those with suicidal tendencies

					C) severe cardiac disease Administration caution Contraindicated in patients with Creatinine clearance <50ml/min
	General Comments: • Chloral hydrate should not be considered a first-line agent in children older than 48 months because of decreased efficacy as compared with younger children. • Chloral hydrate has the potential for re-sedation and may produce residual effects up to 24 hours after administration. • Chloral hydrate should not be used in children with neurodevelopmental disorders due to an increased incidence of adverse effects and decreased efficacy as compared with healthy children. • Pediatric patients receiving chloral hydrate should not be intentionally fasted because of increased procedural sedation failure rates. • Chloral hydrate may be used to provide effective procedural sedation in pediatric patients undergoing painless diagnostic studies. • No reversal agent exists for chloral hydrate.				
Deep Sedative Agents					
Propofol	Pediatric	• IV: 0.5-1mg/kg slow IV • Repeat: Every 3-5 minutes and titrate to effect			1. Injectable emulsion containing egg lecithin, glycerol, and soybean oil; frequently causes burning with injection. 2. For single use only. Unused portions must be discarded. 3. Used for induction and maintenance of anesthesia or sedation 4. Rapid acting, producing hypnosis within 40 seconds from start of injection 5. Frequently associated with hypotension. Decreases systemic vascular resistance. 6. Frequent associated with apnea and airway obstruction 7. During sedation, slow injection or variable rate infusion is preferred, recommend 3-5minute intervals between dosing increases. 8. Elimination is via hepatic conjugation and renal excretion. 9. Use 80% of recommended adult dose in elderly or debilitated patients. 10. Patients should "awaken" within 10 - 15 minutes 11. No reversal agent exists. 12. Concomitant administration of benzodiazepine and narcotics will increase risk of apnea, airway obstruction and cardiovascular instability.
	Adult	• IV: 0.5-1mg/kg slow IV • Repeat: Every 3-5 minutes and titrate to effect			
	Geriatric	• Use 80% of adult dose. Do not use rapid boluses.			
Ketamine	Pediatric	• IV: 1-1.5mg/kg • Repeat: 0.5mg/kg every 10 minutes			1. Dissociative anesthetic. 2. Can be given IM or SLOW IV. 3. Contraindications: hypersensitivity, hypertension, increased intracranial pressure (ICP), thyrotoxicosis, congestive heart failure, psychosis, porphyria, and uremia. 4. Caution: gastro esophageal reflux disease, liver dysfunction, neuromuscular disease, tramadol use, increased intraocular pressure (IOP). 5. Adverse effects: increased ICP & IOP, laryngospasm, hyper salivation, hyper and hypotension, bradycardia and
	Adult	• IV: 0.5-1mg/kg • Repeat: 0.2-0.5mg/kg and titrate to effect			

			tachycardia, respiratory depression, nausea/vomiting, nystagmus, hallucinations, emergence reactions. 6. Onset of action with IV route is 30 sec and duration are 5-10 minutes. With IM route, onset is 3-4 minutes with duration of 12-25 minutes. 7. No reversal agent. 8. Consider midazolam for emergence reactions.
Dexmedetomidine	*Adult*	• *IV: Loading infusion of 1 mcg/kg (or 0.5 mcg/kg for less invasive procedures [e.g., ophthalmic]) over 10 minutes, followed by a maintenance infusion of 0.6 mcg/kg/hour, titrate to desired effect; usual range: 0.2 to 1 mcg/kg/hour*	*1. Administer using a controlled infusion device; do not co-administer in the same IV catheter with blood or plasma products.* *2. Use of dexmedetomidine beyond 24 hours has been associated with tolerance and tachyphylaxis and a dose-related increase in adverse reactions.* *3. When dexmedetomidine is infused for more than 6 hours, patients should be informed to report nervousness, agitation, and headaches that may occur for up to 48 hours.* *4. Dilute 2 mL (200 mcg) of dexmedetomidine with 48 mL of NS (50 mL total) to achieve required concentration of 4 mcg/mL prior to administration; shake gently to mix.* *5. Administration of a loading dose may increase the risk of hemodynamic compromise.* *6. Titrate drip in increments of 0.1 mcg/kg/hr. not more frequently than every 30 minutes.* *7. Taper dose gradually before discontinuing in prolong use.* 8. *60 to 120 minutes is the dose dependency.*
	Pediatric	• *IV: Limited data available:* *Loading dose: Infants, Children, and Adolescents: IV: 0.5 to 2 mcg/kg/dose over 10 minutes; may be repeated if sedation is not adequate.* *Maintenance dose: Infants, Children, and Adolescents: Continuous IV infusion: 0.5 to 1 mcg/kg/hour (Ahmed 2014; Berkenbosch 2005; Koroglu 2006; Mason 2013; Siddappa 2011)*	
	Geriatric	• *IV: Refer to adult dosing: Initial: Loading infusion of 0.5 mcg/kg over 10 minutes; Maintenance infusion: Dosage reduction should be considered.*	

Micromedex Healthcare series Volume 163

LexiComp's Drug Information Handbook, 15th Edition

Calculation of Ideal Body Weight (IBW):

Adults (18 years and older) (IBW in kg):

IBW (male) : 50 + (2.3 x height in inches over 5 feet)

IBW (female) : 45.5 + (2.3 x height in inches over 5 feet)

Children (IBW in kg); height is in cm)

a. 1-18 years $IBW = \frac{(height^2 \times 1.65)}{1000}$

Annexure 7.3

Laboratory Testing**:**

1) Hb/HCT for all patients
2) Any other Testing can be individualized relating to medical condition.

Annexure 7.4

NPO Guidelines:

Population	Solids and Non-Clear Liquids[+]	Clear Liquid*
Adults	6-8 hr.	2-3 hr.
Children older than 36 months	6-8 hr.	2-3 hr.
Children aged 6-36 months	6 hr.	2-3 hr.
Children younger than 6 months	4-6 hr.	2 hr.

[+]This includes - milk, formula, breast milk.
*This includes -water, non-pulpy juice, Rooh afza and carbonated beverages.

Annexure 7.5

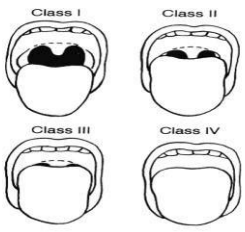
ASA CLASSIFICATION

Class I A normally healthy individual
Class II A patient with mild systemic disease
Class IV A patient with systemic disease that is a constant threat to life.
Class V A moribund patient who is not expected to survive 24 hours with or without operation.
Suffix E is added in case of emergency.

Annexure 7.6

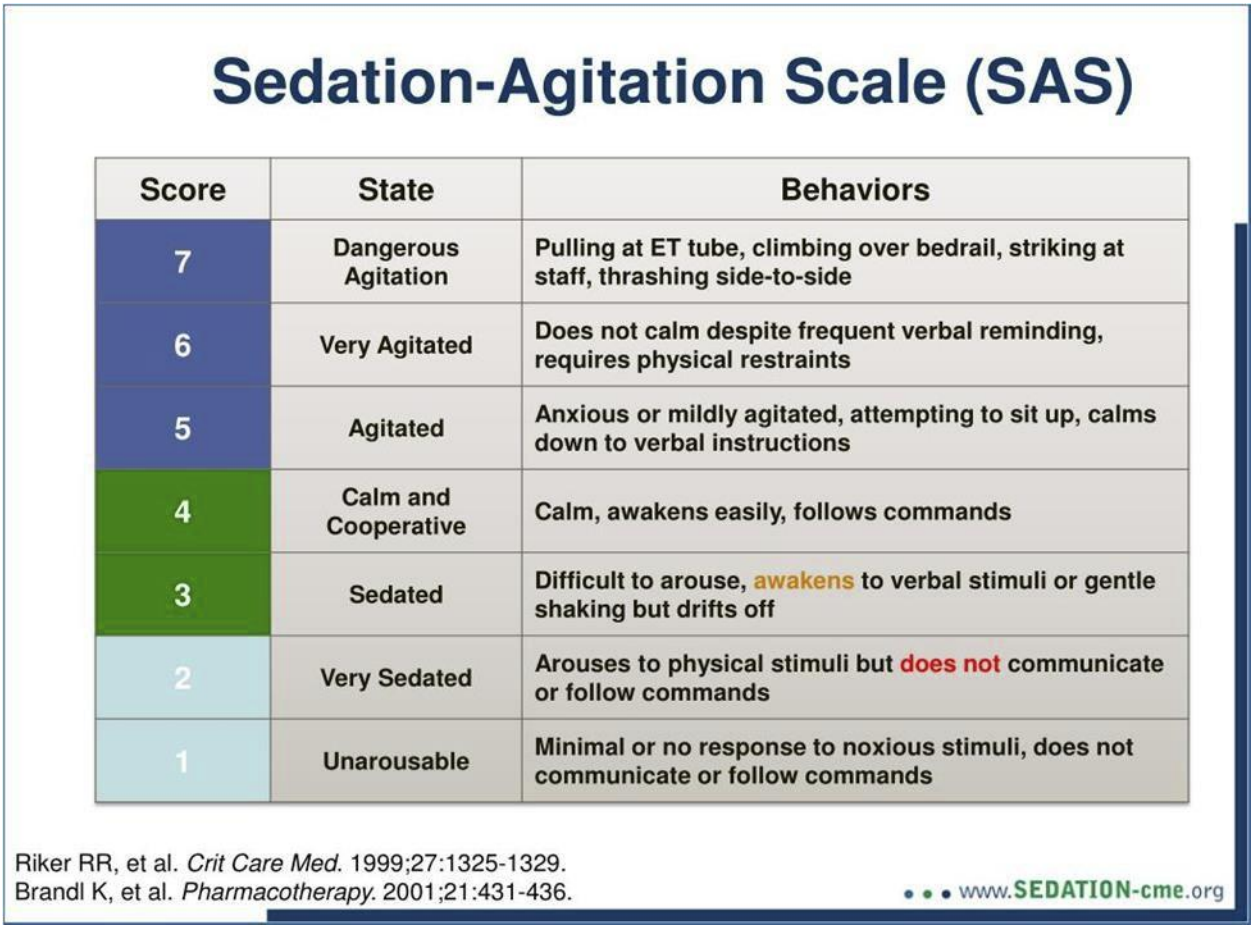
Mallampati Grading:

Grade I: Soft palate, fauces, uvula & pillars are visualized.
Grade II: Soft palate, fauces & uvula are visualized.
Grade III: Soft palate & base of uvula are visualized.
Grade IV: Soft palate is not visualized.



NOTE: To assess Mallampati score, the patient should preferably be seated with mouth widely opened, tongue protruded and ask to say Aah!

Annexure 7.7



Sedation-Agitation Scale (SAS)

Score	State	Behaviors
7	Dangerous Agitation	Pulling at ET tube, climbing over bedrail, striking at staff, thrashing side-to-side
6	Very Agitated	Does not calm despite frequent verbal reminding, requires physical restraints
5	Agitated	Anxious or mildly agitated, attempting to sit up, calms down to verbal instructions
4	Calm and Cooperative	Calm, awakens easily, follows commands
3	Sedated	Difficult to arouse, awakens to verbal stimuli or gentle shaking but drifts off
2	Very Sedated	Arouses to physical stimuli but does not communicate or follow commands
1	Unarousable	Minimal or no response to noxious stimuli, does not communicate or follow commands

Riker RR, et al. *Crit Care Med.* 1999;27:1325-1329.
Brandl K, et al. *Pharmacotherapy.* 2001;21:431-436.

www.SEDATION-cme.org

Annexure 7.8

Modified Aldrete Score**:**

MODIFIED ALDERATE SCALE (MAS) SCORES							
1.	Air way	2	Maintaining good airway	4	Awareness	2	Fully Awake
		1	Need airway maintained (Nasal, Oral)			1	Arousable
		0	Intubated			0	Not responding
2.	Ventilation	2	Able to deep breath &cough	5	Movement	2	Moves purposefully
		1	Dyspnea or limited breathing			1	Moves involuntarily
		0	On ventilator			0	Not Moving
3.	Color	2	Pink				
		1	Pale				
		0	Cyanotic				

Annexure 7.9

SCORING FOR PEDIATRIC EARLY WARNING SIGNS				
	0	1	2	3
Behavior / Neurological	Playing / Appropriate / Alert	Sleeping Responds to voice	Irritable Responds to pain	Lethargic/confused Unresponsive
Cardiovascular	Pink or capillary refill within 1-2 seconds	Pale or capillary refill within 3 seconds	Grey or capillary refill 4 seconds. Tachycardia of 20 above normal rate.	Grey and mottled or capillary refill 5 seconds or above. Tachycardia of 30 above normal rate or bradycardia.
Respiratory	Within normal parameters, no recession or tracheal tug. SpO2 above 92% on room air.	>10 above normal parameters, using accessory muscles, 30% FiO2 or (4+ liters/min) if on high flow face mask.	>20 above normal parameters, recessions, tracheal tug, >40% FiO2 or (6 liters/ min) if on high flow face mask.	5 below normal parameters with sternal recessions, tracheal tug or grunting, 50% FiO2 or (8 liters / min) if high flow face mask.

Total PEWS Score	Action
1	Continue routine observation
2	Inform in-charge nurse or team leader in ward
	Increase frequency of observations
	If team leader consider ir appropriate, contact RRT team and agree and document plan in notes
3	RRT team to be informed
	Document agreed management plan in nursing and medical notes.
	If consistently scoring 3, nursing staff to request senior resident review at 4 hours or sooner if clinically indicated.
4 or more	Inform in-charge nurse or team leader in ward
	RRT team to attend urgently

VITAL SIGNS KEYS			
Age	**Respiratory rate / minute**	**Heart rate / minute**	**Systolic BP mm/Hg**
Infant (<1 year)	30-40	110-160	70-90
Toddler (1-2 years)	25-35	100-150	75-95
Preschool (2-4 years)	25-30	95-140	85-100
School (5-12 years)	20-25	80-120	90-110
Adolescent (12-16 years)	15-20	60-100	100-120

In addition following criterial will be observed in patients

- *Acute Respiratory Distress*
- *New Cardiac Arrhythmia*
- *Acute Changes in the Level of Consciousness*
- *Seizures*
- *Acute Decrease in Urine Output*
- *Staff or Parents Concerned/Worried*

Annexure 7.12

List of Procedural Sedation administration and monitoring areas.

Department	Units
Department of Medicine	CCU, Cath lab, Cardiopulmonary adult, Neurophysiology, ICU, ACU, Endoscopy, C2, P1, P2, P3.
Department of Surgery	CICU, B1, C1, D1
Department of Peads	PWO, PCICU, PICU, DO, BO, Peads Cardiopulmonary.
Department of Oncology	BO, Daycare oncology, D2, BMT
Department of Psychiatric	CO
Department of Emergency	ED
Department of Anaesthesiology	SDC OR, Main OR
Princes Zehra Pavilion (PZP)	E1, E2, E3, E4
Clinical Imaging	Radiology
Outpatient clinics	Peads Clinic, Lithotripsy
Department of ophthalmology and visual sciences	Eye clinic

Document Change Record:

Review #	Review Date (dd-mm-yyyy)	Description of Change	Identification of Change
04	1-Mar-15	The merging of two policies (MDP-S001B & MD-002) has been done, Measure changes in wordings and sentences sequence and structures has been done. Requirement as per JCIA 5th edition is added. Drug regimen has been modified Italic	Italic
05	26-Jul-18	The Merging Pediatric Procedural Sedation Policy (Document No 12) in Hospital Policy (this Document). Point # added 2.1, 6.3.2.3 Points Modified 2.51, 2.6.1, 2.6.4, 2.6.5, 2.6.6, 2.6.7, Note has been added after point # 6.11 Annexure 8.1 modified. Annexure 8.9 added	Italic
06	10-Mar-21	Language Modified 2.5 Medication added. 2.6. added clauses under this section, 2.6.2 has been modified and 2.6.3, 2.6.4 and note has been added. 5. Note has been added 5.2.3 and 5.4 modified. 5.7.5, 5.7.6, 5.7.7 added and note at the end of 5.7 has been reworded and criteria has been added. 5.8.4, 5.8.5, 5.8.6,5.8.7, 5.9, 5.10 has been added. Annexure added. 7.1 (medication added) 7.2, 7.7, 7.9, 7.10, 7.11	Italic
07	10-Sep-2022	5.12 has been modified, Annexures 7.1 Revision of midazolam doses Annexure 7.12 Updated areas as per transition of service line into department.	Italic

08	July 2023	Structural change Removed SL-C	No Change