RCH Procedure

Procedural Sedation for Ward and Ambulatory Areas

Introduction

Procedural sedation is the technique of administering a sedative or dissociative agent +/- analgesia to induce a state of consciousness that allows patients to tolerate/cope with unpleasant procedures while preserving cardiorespiratory function.

Infants, children and adolescents may experience marked distress during procedures. Minimizing fear and anxiety in relation to any procedure (including a painless procedure) is the primary goal of procedural pain management. Reducing distress may also decrease future sensitization and avoidance behaviours to procedures.

Sedation is a continuum ranging from minimal sedation, through moderate sedation to deep levels of sedation, which may progress to general anaesthesia. As sedation is a continuum it is not always possible to predict how an individual will respond. **The goal of procedural sedation, in ward and ambulatory areas at RCH, is to achieve anxiolysis and conscious sedation. Procedural sedation aims to provide a margin of safety wide enough to render loss of consciousness unlikely.**

Excess sedation in patients may result in loss of protective airway reflexes and risk of adverse events including hypoventilation, apnoea, airway obstruction, aspiration and cardiovascular impairment. Accredited or competent staff delivering procedural sedation must be able to rescue patients, should the level of sedation become deeper than intended.

Key principles of procedural sedation:

- Anticipate patient's requirements; recognise risk, respond and review.
- Benefits of procedural sedation must always outweigh the risks.
- Delivery of procedural sedation must be less distressing than performing the procedure without it.
- Competent/accredited staff must administer procedural sedation, monitoring the patient continuously.
- Staff recognise the limitations of their competency/accreditation in delivering procedural sedation.
- The "Record of sedation for procedure" 'prior to sedation' criteria is met before administration.
- Consultation with the treating medical team, and/or a procedural sedation support service, is required for any proposed procedural sedation, if the patient is at risk or staff have reservations.
- Topical local anaesthesia must be considered for procedures prior to sedation.
- Additional opioid or sedation agents may have synergistic effects, producing excess sedation.
- Non-pharmacological techniques and/ or Educational Play Therapist (EPT) is an integral part of procedural sedation planning. Non-pharmacological techniques can decrease, or eliminate, the need for procedural sedation Procedural Pain Management Clinical Guideline (Nursing)

Scope

The aim of this procedure is to inform and provide a structured and standardised approach in the delivery of procedural sedation in ward and ambulatory areas. This document outlines safe practice and addresses the relationship between risk assessment, preparation and prevention of adverse events.

- Defines patient groups for whom minimal or moderate sedation presents risk or is not permitted.
- Identifies the equipment, staffing and documentation requirements.
- Specifies the safe delivery of chloral hydrate, midazolam, nitrous oxide and intranasal fentanyl.
- Addresses procedural sedation in ward and ambulatory areas. **Deep sedation** which is undertaken in the following designated areas: theatre, ED, PICU, NICU and the burns treatment room by a critical care specialist or an anaesthetist **is not addressed in this document**.

Related Policy

Procedural Pain Management Policy

Definition of terms

The University of Michigan Sedation Score – UMSS

UMSS	Response
0	Awake and alert
1	Minimally sedated: may appear tired/sleepy, responds to verbal conversation +/- sound
2	Moderately sedated: somnolent/sleeping, easily roused with tactile stimulation or verbal command
3	Deep sedation: deep sleep, rousable only with deep or physical stimulation
4	Unrousable

The Continuum of Sedation

Continuum	Minimal sedation	Moderate sedation	Deep sedation	General Anaesthesia
Goal for procedural sedation	Anxiolysis	Conscious sedation or asleep but rousable	OVERSEDATION	ANAESTHESIA
UMSS	UMSS 1	UMSS 2	UMSS 3	UMSS 4
Behavioural response	Patient does not exhibit fear or anxiety but **responds to verbal commands.** Cognitive function may be impaired.	Patient **may be sleeping** with **purposeful response to verbal command &/or light tactile stimulation.** Loss of orientation to environment and moderate impairment of gross motor function	Patient exhibits depressed consciousness or unconsciousness from which they are not easily rousable, purposeful **response to repeated or painful stimulation only**	**Unable to be aroused, even with painful stimulation.**
Airway	Unaffected Protective reflexes (cough and/or gag reflex) maintained.	No intervention Protective reflexes (cough and/or gag reflex) maintained	Intervention may be required	Intervention often required
Spontaneous ventilation	Unaffected	Adequate however may have minimal to moderate alteration	Mildly restricted and may be inadequate	Frequently inadequate
Cardiovascular function	Unaffected	Usually maintained	Usually maintained	May be impaired

Anxiolysis: the reduction of anxiety by a sedation agent during which patients respond normally to verbal commands.

Conscious sedation: the drug induced depression of consciousness during which patients may sleep but are able to respond to verbal commands or light tactile stimulation.

Sedation period: commences with the administration of sedative drugs and ends when the patient has recovered to baseline level of consciousness and observations are within normal limits for the patient.

The Record of sedation for procedure: a mandatory record completed by the sedationist. There are three distinct sections, the criterion of each must be met before proceeding.

1. **Prior to sedation:** pre-assessment and preparation period.
2. **During the sedation:** commences with the administration of a procedural sedation agent. Includes continuous line of sight, UMSS assessment and monitoring of observations (per ViCTOR Observation and continuing monitoring of the patient).
3. **End of sedation:** End criteria +/- discharge criteria are met. The patient returns to baseline level of consciousness and observations are within normal limits, for the patient.

Sedationist: the designated and dedicated staff member who is responsible for the sedated patient and delivery of the sedation agent. The sedationist will be competent or accredited dependent on the sedation agent and must complete the "Record of sedation for procedure". The sedationist is separate to the proceduralist, monitoring the patient's level of consciousness and cardiorespiratory status. The sedationist detects and appropriately manages any complications arising from the procedural sedation.

Proceduralist: the designated staff member who will perform the procedure. The proceduralist is responsible for preparing equipment and obtaining informed consent for the procedure. Where possible the proceduralist provides written information, which includes the nature and risks of the procedure. The proceduralist is separate to the sedationist and is assisted by an additional staff member.

Competent clinician: the designated staff member who has medication endorsement from their professional governing body may administer oral sedation agents for procedures, in accordance with the RCH Medication Policy.

Accredited clinician: the designated staff member (Registered Nurse or Doctor) who is accredited via an RCH specific procedural sedation credentialing process. An accredited clinician may administer the sedation agents, nitrous oxide and IV midazolam for procedures, in accordance with the RCH Medication Policy.

Procedural Sedation Leader: (PSL): an RCH staff member who is trained (via an RCH specific process) to accredit other RCH staff in the following specific sedation techniques; nitrous oxide and IV midazolam.

Line of sight: the sedated patient has visual clinical observation 'line of sight' for the sedation period.

Baseline: the pre sedation level of consciousness and observations.

Procedural pain: short-lived pain associated with medical (diagnostic) investigations and treatments.

Non-pharmacological techniques: the use of distraction or cognitive behavioural therapies within a developmental context that provides preparation and engages the child to adopt positive coping strategies, reducing anxiety and pain experienced.

ISBAR: (Identity-Situation-Background-Assessment-Risks and Recommendations) a tool for communication (written & verbal) between members of the healthcare team.

BLS: Basic Life Support provides rescue airway, breathing and circulation per the RCH Resuscitation CPG

Prior to sedation

A **sedation huddle** is recommended to confirm the procedural sedation plan. The plan establishes that the patient, procedure, staff and equipment are appropriate. The “Record of sedation for procedure” summarises this approach and is detailed in this section.

The procedural plan must be:

- supported by the treating medical team.
- appropriate to the duration and intensity of the stimulus of the procedure
- appropriate to the patient’s risk and clinical assessment

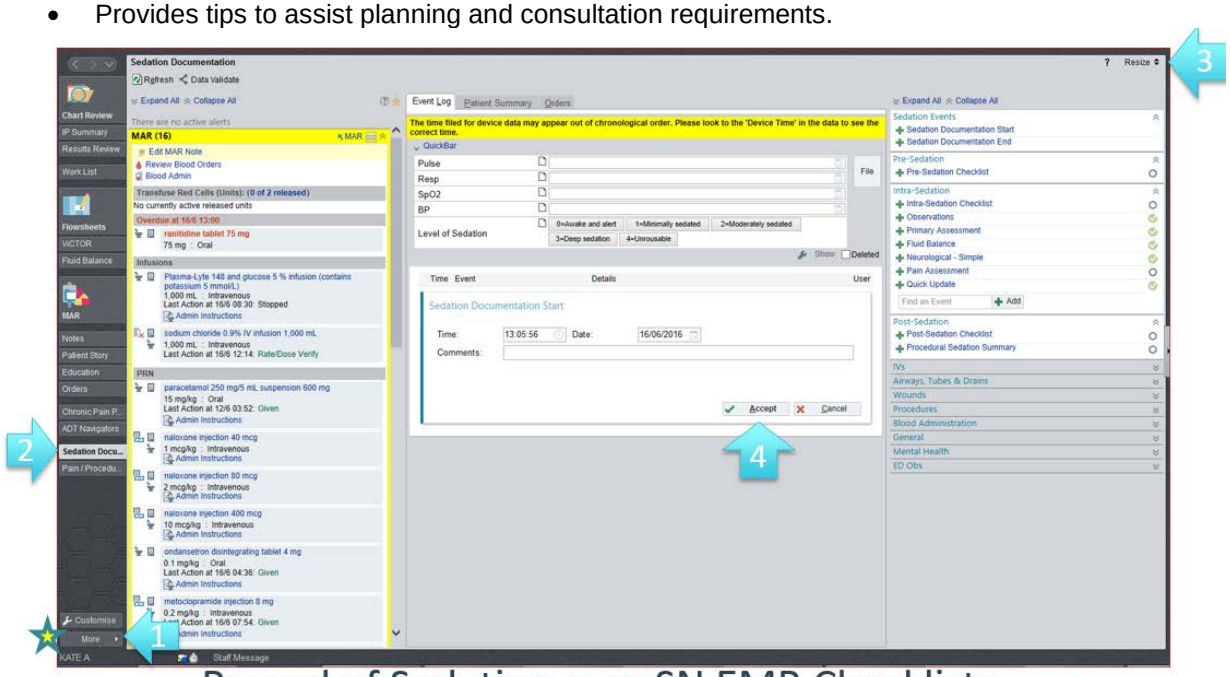
Procedural assessment

- Examples of suitable procedures
- Checklist & tips to assist planning.

Procedural assessment	
Examples of suitable procedures	
Diagnostic Imaging; MRI/CT/Ultrasound/Nuclear medicine scan	
Cardiology ECHO	
Venipuncture, intravenous cannulation, PICC line insertion	
Lumbar puncture	
Insertion of IDC NGT NJT	
Injection of Botox or Joint	
Port access	
Removal of chest drain/wound drain	
Dressing changes/Burns or wound debridement/Abscess management	
Orthopaedic frames pin site care/plaster care	
Nerve conduction test	
EEG electrode application & removal	
Foreign body removal	
Skin biopsy and laser	
Procedural checklist & primary considerations	
Duration	<45 minutes
Non-invasive (not painful to the patient)	Nonpharmacological techniques
Painful to patient	Analgesia+/-Topical LA
Distressful to patient (not reduced by non-pharm techniques)	Anxiolysis+/- Amnesia
Diagnostic Imaging (motion control required)	Procedural sedation for immobility
Equipment	
Staffing	
Procedural preparation	
Perform invasive painful procedures only when necessary	
Choose the least painful method for the patient and consider topical local anaesthesia	
Plan procedural sedation events and prepare the patient prior	
Prepare required equipment prior and out of sight of the patient	
Use the procedural support plan where available & refer to EPT / Comfort Kids Program	
Use appropriate procedural language Communicating Procedures to families CPG	
Always use non pharmacological techniques Procedural Pain Management CPG	

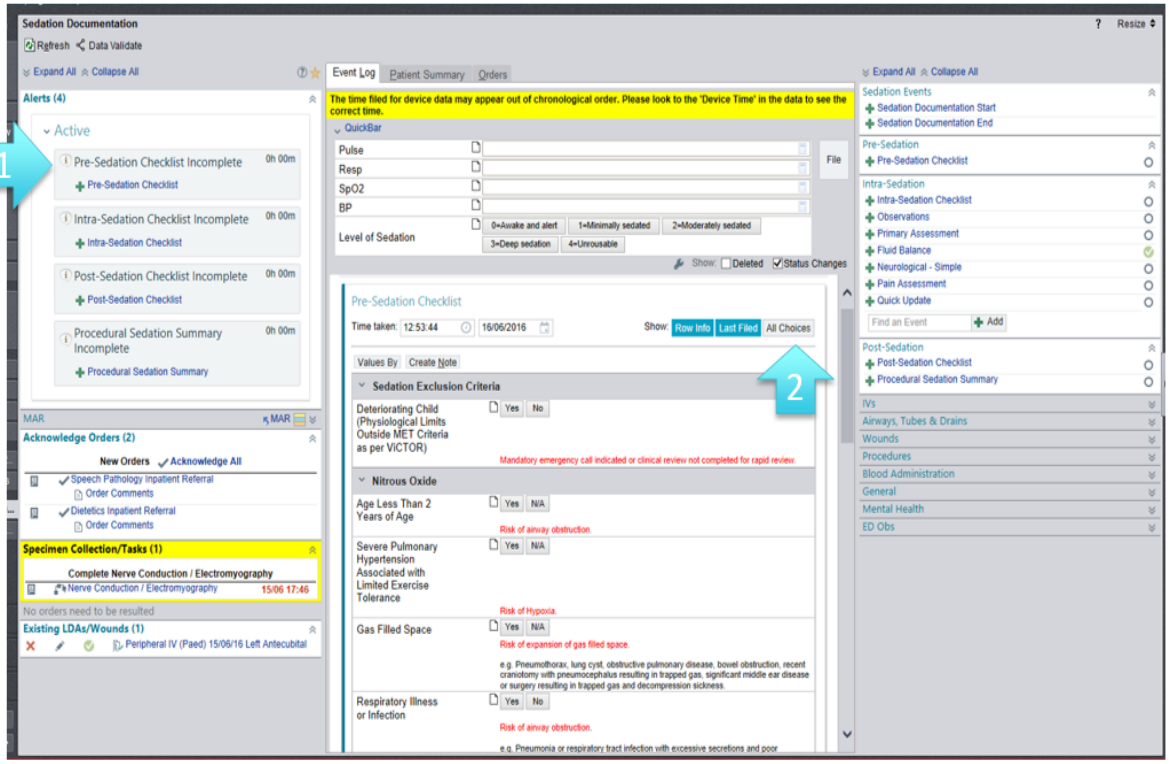
EMR Procedural Sedation Narrator

- Mandatory Checklists and capture sedation administration and effectiveness
- Pre-sedation checklist must be done PRIOR to determine “safe to sedate”.
- Provides tips to assist planning and consultation requirements.



Record of Sedation now SN EMR Checklists

Locate in More – click ★ to add to side bar - Open & Resize
Accept Sedation Documentation Start
Don’t file END until summary complete
Start & End Bookend the Sedation Narrator



Checklists appear in Left panel of SN as Active Alerts
Mandatory to complete Pre-Sedation Checklist prior
Show Row Info, Last filed & All choices for PSWA Procedure tips for:
Exclusion Criteria, Risk Assessment, Consultation
Fasting, Staffing, Equipment, Consent & Preparation of Child

Consultation

Risk assessment

A child with a risk factor may still undergo procedural sedation provided they are assessed as having adequate reserve to tolerate that sedation. This may require consultation with the appropriate treating medical team to confirm whether the patient has adequate reserve.

Plan

If staff have any reservations about the procedural sedation plan, consultation is sought using the **ISBAR** communication tool. Initially consult the treating medical team, if further support is required contact:

Procedural sedation support services			
Service	**Comfort Kids Program**	**Children Pain Management Service**	**In charge anaesthetist**
Staff	CNC	CNC, Pain medicine fellow or Anaesthetist	Anaesthetist
Contact	55772 or pager 7932 55776 or pager 7933	pager 5773	52000 Ascom
Hours	**M-F Business hours**	**Available 24/7**	**Available 24/7**
Consultation	Procedural sedation	Analgesic consultation A/H Procedural sedation	Referral to GA A/H Procedural sedation

Exclusion criteria

- Exclusion is identified.

Exclusion Criteria Absolute contraindication for procedural sedation
All Agents
Deteriorating child (physiological limits meet MET criteria as per ViCTOR)
Mandatory emergency call indicated, or clinical review not completed for rapid review
Nitrous oxide
Age ≤ 2 years of age Risk of airway obstruction
Severe pulmonary hypertension associated with limited exercise tolerance Risk of hypoxia
Gas filled space Risk of expansion of gas filled space
e.g. Pneumothorax, lung cyst, obstructive pulmonary disease, bowel obstruction, recent craniotomy with pneumocephalus resulting in trapped gas, significant middle ear disease or surgery resulting in trapped gas and decompression sickness.
Respiratory illness or infection. Risk of airway obstruction
e.g. Pneumonia or respiratory tract infection with excessive secretions and poor respiratory reserve e.g. Severe asthma (wheeze present)
IV sedation – Midazolam only
Age ≤ 6 months (corrected age) Risk of airway obstruction/apnoea
e.g. ex premature infant, neonate or any Infant with a significant co-morbidity
Ketamine and Propofol
Administration for procedures restricted to critical care medical staff
Oral sedation
Liver Failure / Hepatic Encephalopathy Risk of excess sedation
Chloral hydrate must not be administered for these patients

Risk assessment

- Risk assessment is undertaken to identify the significance of conditions, disease groups or agents that may result in an adverse event such as loss of airway, hypotension, drug interaction, prolonged sedation or agitation.
- Seek consultation using the **ISBAR** communication tool.

Risk assessment for all agents Relative contraindications for procedural sedation - seek consultation
Age < 4 months (corrected age) oral and intranasal agents Risk of airway obstruction / apnoea
Ex premature infant, neonate or any infant with a significant co-morbidity
Prior Adverse Event (AE) to a sedation or anaesthetic agent Risk of AE
Determine the reaction and the severity
Concurrent opioids or sedative agents Risk of excess sedation
Additional opioid or sedation agents may have synergistic effect producing excess sedation. Sedation may be an effect of medications such as clonidine, anticonvulsants, and antihistamines. The patient's baseline analgesia is not withheld to facilitate the procedural sedation - ASSESS. • If the UMSS baseline is 0 the patient is considered low risk for an additional agent • If the UMSS baseline is 1 the patient is considered moderate risk, consider consultation • If the UMSS baseline is 2-4 the patient must not receive an additional agent, seek consultation
Airway or Respiratory conditions Risk of hypoventilation/obstruction /laryngospasm/aspiration
Head, neck or chest pathology (e.g. burns, tumour, trauma, infection or surgery) Reactive airways (e.g. respiratory tract infection, poorly controlled asthma, prematurity) Apnoea (e.g. Obstructive Sleep Apnoea) Significant snoring and drooling Significant work of breathing, tachypnoea or bradypnoea Musculoskeletal and neurological disorders (e.g. weak, restrictive, aspiration, chronic lung disease)
Significant or severe Cardiovascular disease Risk of inadequate reserve/ Decompensation
Poor myocardial function e.g. dilated cardiomyopathy Significant pulmonary hypertension Marked hypovolemia. Marked cyanosis or significant limitation of physical activity
Deteriorating child (physiological limits meet Rapid Review **criteria as per ViCTOR)**
Clinical review indicated but not completed. Modified observation parameters on ViCTOR e.g. acute systemic infection (sepsis)
Abnormal conscious state/risk of raised ICP Risk of excess sedation & increasing ICP
e.g. head injury, meningitis, space occupying lesion
Significant risk of delayed gastric emptying or vomiting or excess secretion Risk of aspiration
e.g. bowel obstruction, gastro-oesophageal reflux
Significant weight concern Risk - Dosing calculation/ airway obstruction
Obesity Failure to thrive, cachectic
Significant fasting concern
Patient condition or treatment complicated by fasting (e.g. hypoglycaemia)
Liver or Renal disease/ dysfunction Risk - excess sedation
Midazolam: consider dosage reduction in severe renal impairment; use cautiously in hepatic impairment **Chloral Hydrate:** consider reduced dose in mild liver or renal dysfunction. Check Lab results and discuss dosing with treating team. Chloral hydrate must not be used for patients with Liver failure/ Hepatic Encephalopathy
Co-morbidity Risk - Dosing calculation
Assess if co-morbidities will impact procedural sedation plan. e.g. adrenal insufficiency, hypothyroidism, hyperthyroidism, diabetes insipidus, endocrinopathies, mitchondrial disease, inborn errors of metabolism
Pregnancy Risk harm to foetus
Consider possibility of pregnancy in girls of childbearing age. If pregnant stratify risk and minimize harm
Specific to nitrous oxide
see **OHS**
e.g. pregnancy, immunosuppression and vitamin B12 deficiency and MTHFR deficiency

Pre sedation checklist

- Clinical assessment may also identify risk.
- On completion of the pre sedation checklist seek consultation for any risk factors identified

Pre sedation checklist
Baseline clinical observations Observation and Continuous Monitoring Clinical Guideline (Nursing)
Pulse Oximetry (SpO_2)
Respiratory Rate (RR)
Heart Rate (HR)
Blood Pressure (BP) Indicated for IV sedation agent, concurrent drug therapy which reduces BP and patients with a history of labile or low BP
Temperature (indicated by clinical status)
Level of Consciousness (AVPU scale)
UMSS (if > 1 not suitable for conscious sedation)
Pain score (Pain assessment and measurement Clinical Guideline (Nursing)
Weight (Use lean body weight for dosing in morbidly obese patients)
Corrected Age (Gestational age at birth and current post-conceptual age if applicable
Baseline physical assessment
Airway risk
Upper airway obstruction (e.g. loud snoring, obstructive breathing, stridor or hoarse)
Tracheostomy or upper airway surgery
Abnormal jaw, palate, tongue, neck (e.g. craniofacial abnormalities, obesity, short neck, reduced neck mobility, enlarged tonsils & trisomy 21 patients)
Respiratory risk
Apnoea
Nasal congestion or nasal/oral secretions and/or productive cough
Increased work of breathing (e.g. use of accessory muscles)
Added breath sounds on auscultation (wheeze/crackles)
Baseline general health
Healthy
Unwell- stable
Unwell- unstable (unsuitable for procedural sedation)
Baseline focused history
History of difficult airway
History of issues with analgesia, sedation or anaesthesia (complications/airway problem)
Previous failure to sedate or negative experience
Allergies or adverse reaction to any medication
Current medications (opioid analgesia/medication with a sedative effect)
Behavioural problem (agitation/ hyperactive/combative)
Developmental delay or communication concern
Nausea/Vomiting/Gastro-Oesophageal Reflux
Pathology
Abnormalities (liver most significant)

Consent

Consent must be obtained prior to the procedure as per the RCH informed consent policy

- An accredited staff member must obtain informed consent for **nitrous oxide or IV midazolam**.
- A competent staff member who has an understanding of the oral or intranasal sedation agent to be given and who can explain to the patient/ parent/ carer the indications for use and possible risks involved, must obtain informed consent for the procedural sedation agent.
- It is recommended that the child or adolescent/parent/carer be provided with a fact sheet for the selected sedation agent. Health Kids Info fact sheets for procedural sedation
- Informed consent is documented on the Record for sedation for procedure.

Fasting

Fasting for conscious sedation (UMSS 1 ≤ 2) aims to decrease the incidence of nausea and vomiting. **Protection from aspiration is based on maintaining the conscious state (UMSS 1 ≤ 2),** so the patient can protect their own airway. Consider a longer fasting time for children with risk factors for **delayed gastric emptying** and with **co-administration of opioids** or medications which may have a **sedative** effect.

Minimum fasting time	
Time	2 hours solids/breast milk/formula 2 hours breast milk 1-hour clear fluids

Staffing

- Medical staff are to be present if requested or notified and available in the clinical area.
- The sedationist role is separate to the proceduralist.
- The sedationist will be BLS accredited, maintaining airway patency and adequate ventilation
- The sedationist will be competent or accredited dependent on the sedation agent administered.
- All staff present must identify their roles to the team, parent and child/adolescent.
- Staff will have "one voice" leading the procedure and avoid unnecessary procedural talk.
- The sedationist will announce when the child is ready for the procedure to commence.
- Educational Play Therapy or Comfort First staff are to be notified prior, supporting non-pharmacological management.

Minimum staff requirement		
Agent	Oral, Buccal or Intranasal	Inhaled or IV
Staff	Two staff members Sedationist **Competent** Proceduralist	Two staff members Sedationist **Accredited** Proceduralist

Competent clinician

Competency is required for the administration of chloral hydrate (oral), midazolam (oral and intranasal) and fentanyl (intranasal)
The standard required for a **competent clinician:**

- Adhere strictly to this RCH Procedure.
- Observe and interpret the patient's level of sedation and vital signs.
- Maintain airway patency and adequate ventilation.
- Understand the pharmacology of the sedation agent: action, indications, dose, adverse effects and the appropriate antagonist.

Accredited clinician

Accreditation is required for the administration of inhaled nitrous oxide and Intravenous midazolam. Accreditation and Procedural Sedation Leader (PSL) process at RCH is outlined in The Comfort Kids Program "for health professionals"

The standard required for an **accredited clinician**:

- Adhere to the requirements of a competent clinician (as above)
- Adhere to the principles of the RCH procedural sedation learning guides and accreditation tools.
- Ensure yearly re-accreditation as per the Nursing Board of Victoria statement on competency and self-reflective practice.
- Attend education updates provided by the Comfort Kids Program

Equipment

Procedural sedation must only occur in a designated clinical area that has the equipment listed below. This equipment must be identified as appropriate for the child or adolescent and must be functioning prior to the procedure.

Equipment checklist	Resuscitation checklist
Oxygen outlet	Resuscitation trolley located in the clinical area
Face mask and tubing	Identify location of emergency alarm
Pulse oximetry	Identify location of reversal agent
Suction unit, Yankauer & Y-suction catheters	Identify appropriate size airway
Blood pressure cuff	Identify appropriate size air cushion mask
Bed or trolley	Identify appropriate size self-inflating bag

Environment

Preparing the environment aims to minimise procedural anxiety, promote a calm setting and optimise the effect of the sedation agent.

- The patient must be resting on an appropriate bed or trolley within line of sight.
- Reduce stimulus including bright lighting, minimise noise and avoid procedural talk.
- Prepare required equipment prior to the sedation and out of sight of the patient.
- Minimal procedural talk unless the child has indicated they would prefer to interact during the procedure.

Preparation of child and family

To manage pain, anxiety and distress staff are to allow children and adolescents to express their views, and to be heard and taken seriously. (Charter on the Rights of Children and Young People in healthcare Services in Australia)

Children usually cope better with the parent/carer present. For adolescents, discuss if a parent's presence is preferred. Optimising the parent's role reduces the child's anxiety during the procedure. Staff are to be sensitive to parents who are not able to provide this support. Non-pharmacological techniques must be planned and employed during procedures to complement sedation. Procedural Pain Management Guidelines

For procedural sedation consider:

- Timing of preparation
- Utilise Education Play Therapy or Comfort First staff
- Mask preparation is advised prior to the delivery of nitrous oxide.
- Encourage rest or activities which relax the patient while the sedation agent takes effect.
- If the parent/carer is to be present clarify what their role will be
- Clarify staff roles to child or adolescent and parent/carer and indicate who will lead.
- Post sedation care is to be discussed with parents, including safety and injury prevention.

Patient Identification

Prior to the procedural sedation Patient Identification (per the RCH policy) must be conducted and documented on the “Record of sedation for procedure”.

During sedation

- Procedural sedation requires that the sedationist and staff present, must be able to rescue the patient should the **level of sedation become deeper than intended (UMSS > 2)**

- The sedationist delivering the procedural sedation agent is required to have a working knowledge of the following: dose range, action, interactions, adverse effects and reversal agent.

- Patients must not receive the procedural sedation agent prior to arrival at RCH.

- Procedural sedation agents must be administered in a designated clinical area with the required equipment and staff present

- If the patient is remote from the sedationist (e.g. in the MRI suite) visual and audio contact is essential

Continuous line of sight, monitoring and observation of the patient.

The patient must remain in the line of sight of the sedationist from the time of administration to the end of the procedural sedation event, this is defined as the sedation period.

- Continuous pulse oximetry is required once the sedation agent is administered.
- Minimum monitoring required UMSS, HR, RR, SpO_2
- BP as indicated for any IV sedation agents or opioids, minimum every 5 minutes.
- The patient must be positioned to maintain an open airway.
- Continuous observation of airway patency and chest rise and fall.

Documentation

- If sedation score > 1 record observations every 5 minutes
- Procedural sedation agents are prescribed on the medication chart.
- It is mandatory to complete the “Record of sedation for procedure” for all procedural sedation events.
- Observations to be recorded on the ViCTOR chart appropriate to the patient’s age.

Excess sedation and escalation of care

Additional opioid or sedation agents may have synergistic effect producing excess sedation.
Sedation may be an effect of medications such as clonidine, anticonvulsants, and antihistamines.
The patient’s baseline analgesia is not withheld to facilitate the procedural sedation - ASSESS.

- If the UMSS baseline is 0 the patient is considered low risk for an additional agent
- If the UMSS baseline is 1 the patient is considered moderate risk, consider consultation
- If the UMSS baseline is 2-4 the patient must not receive an additional agent, seek consultation

The sedationist will be BLS accredited, position patient to maintain airway patency, provide adequate ventilation and have the skills and knowledge to:

- manage respiratory depression.
- manage loss of consciousness.
- manage loss of airway.
- activate the escalation of care for the clinical area they are in and call a MET http://www.rch.org.au/policy/policies/Medical_Emergency_Response_Procedure/

Failure to sedate

- Failure to achieve desired level of sedation to complete the procedure.
- History of a failed sedation or desired level of sedation was not achieved.
- Non urgent procedures are to be abandoned if patient’s anxiety or distress is escalating.
- Identify cause and follow support plan below, seek consultation using the ISBAR communication tool

Failure to sedate – factors			
Patient	**Drug**	**Procedural**	**Staff**
Overstimulation	Adverse effect	Lack of preparation	Sedationist
Environment noise Procedural talk Bright lighting Unsuitable audio/visual Staff interruption Excess staff Movement of patient Lack of leader/one voice Lack of calm preparation Time of day	**N_20** Poorly sedated 10% No analgesia 10% Vomiting 6-10% **Midazolam** Paradoxical agitation Delirium **Chloral hydrate** Hyperactivity1-2%	Preparation of equipment in front of patients increases anxiety. Lack of procedural preparation results in delays and prolonged procedures	Technique, knowledge and skill proficiency is required to avoid ineffective titration of N_20 or IV midazolam Sedationist must plan commencement of procedure in relation to sedation onset and peak.
Failed administration	Timing	Procedural pain	Inadequate staffing
Refusal Spit out Vomit	Too early/too late	Procedure painful or distressing. Inadequate analgesia or local anaesthesia	Adequate staffing is required for delivery of sedation and to perform the procedure
Fear of procedure	Dosing	Length of procedure	Proceduralist
Developmental stage Non acceptance of mask Past negative experience Parental separation Lack of patient preparation	Peak sedation ineffective due to inadequate dose	Duration of procedure exceeds sedation period. Restlessness due to prolonged procedure	Technique and skill proficiency is required to avoid an extended procedure.
Support plan			
Rest Recover Reassess			
Additional sedation agent consultation			
Outpatient reschedule consultation			
Referral for GA consultation			
Seek consultation using the ISBAR communication tool			

Procedural sedation agents

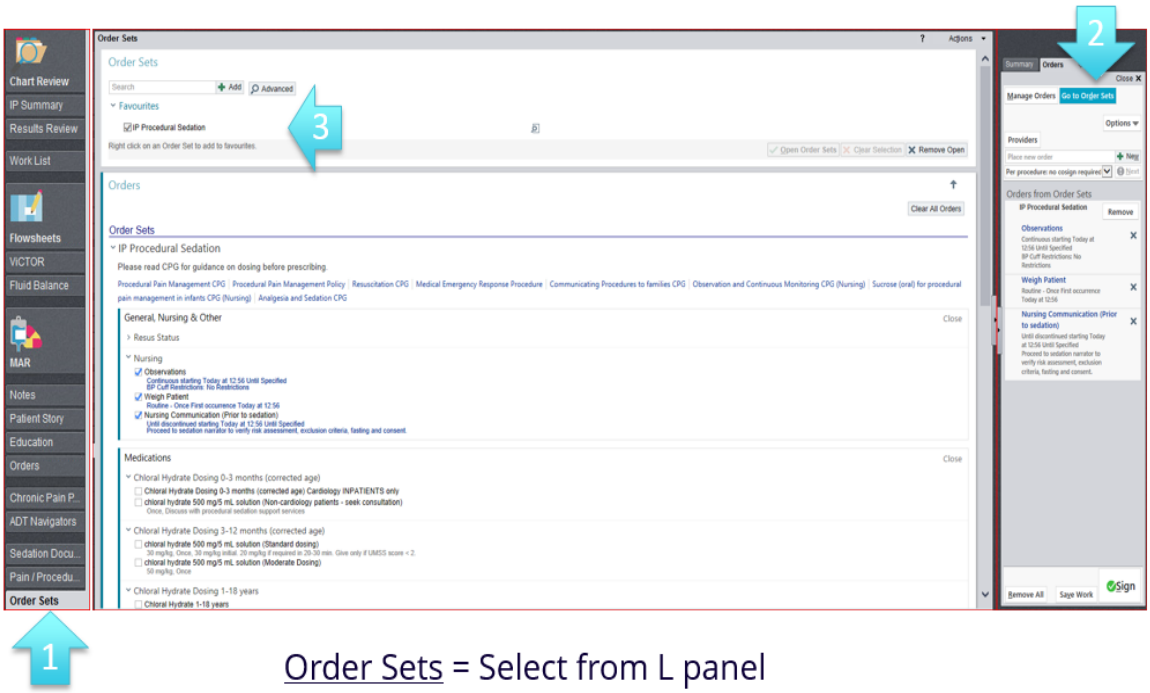
- Nonpharmacological preparation and interventions precede pharmacology.
- Procedural sedation must be less distressing than performing the procedure without it.
- Use appropriate adjunct agents such as topical local anaesthesia cream - Angel
- Tailor procedural sedation to the patient's developmental stage and procedural characteristics
- Select sedation agent-based issues identified during planning.
- Appropriate antagonists available: flumazenil for benzodiazepines and naloxone for opioids

Selecting a sedation agent

- Identify desired clinical effect (anxiolysis, analgesia, amnesia, motion control)
- Access required (e.g. IV)
- Onset time
- Duration of effect vs procedure time
- Adverse effect profile
- Contraindications
- Dose requirement

EMR IP Procedural Sedation Order Set

- Go to Orders 1 (L side bar navigators) Go to 2 - Order Sets (R Panel)
- Type Sedation (Into centre screen) and select 3 - The **IP Procedural Sedation Order Set**
- Open and Select Agent +/- LA topical anaesthetic cream +/- sucrose +/- Educational Play Therapy



Order Sets = Select from L panel
Go to order sets = Select from R panel
Search order sets = IP Procedural Sedation
Favourites = R click to add
Open Order sets = centre panel
Select Medication & Sign

Oral **Chloral hydrate**

Sedative and Hypnotic No analgesic effect
Chloral hydrate has an **unpleasant taste.** Administer in a **sweet solution.**
If opioid or sedation agent administered within 2 hours, assess UMSS & undertake consultation

Indications

Chloral hydrate is more effective in < 2 years or 15kg.
The desired effect is to reduce movement of the patient during a procedure.
Chloral hydrate is most successful if used for painless procedures (e.g. ECHO, CT & MRI)

Contraindications

UMSS > 1 undertake consultation
Significant liver disease/failure with Impaired liver function, chloral hydrate must not be used consultation
Any adverse effect as listed below

Adverse effects

Excessive sedation (UMSS score > 2)
Respiratory depression, airway obstruction
Nausea, vomiting, gastric irritation
Hyperactivity occurs in 1-2% of patients.
Hangover, disorientation, delirium, ataxia, headaches, nightmares and hallucinations

Onset of action	**Duration of effect**
Within 20- 30 minutes	60-120 minutes
Give 45-60 minutes prior to procedure	Effects can last 4-8 hours

Dose

Chloral hydrate is more effective in < 2 years or 15kg.
Consider reduced dose in mild hepatic or renal failure (contraindicated in significant liver disease as above)
If recommended dosing proves ineffective refer to Failure to sedate

Standard Oral dosing *Single or divided dosing is based on assessment of patient & procedure

0-3 months (corrected age)	**3-12 months** (corrected age)	**1-18 years**
Seek consultation	**50mg/kg** (single or divided dose*)	**50-75mg/kg** (single or divided dose*)
Cardiology inpatients ONLY (for removal of wires & drains) Recommend **30mg/kg initial** 20mg/kg if required in 20-30min. +/- analgesia per CPMS Seek consultation if UMSS ≥ 2 and/ or patient receiving concurrent sedative or opioid (e.g. Clonidine or morphine)	Recommend **30mg/kg initial** 20mg/kg if required in 20-30min.	Recommend **50mg/kg initial** 25-50 mg/kg if required in 20-30 min. Maximum dose of 100mg/kg can be used (not exceeding 2g) Risk deep sedation

Oral dosing for Medical Imaging Department & Cardiology outpatients ONLY
Recommend < 4 months attempt feed & wrap if appropriate for the procedure

Infants > 3 months (Corrected age)	**Competency and recommendations** (Medical Imaging Department (MID)
> 3 months Recommend 50-70mg/kg** (single or divided dose) Dosing is based on assessment of patient and procedure	MID requires completion of a mandatory chloral hydrate competency. MID recommendations for procedural assessment: • MRI 50-70mg/kg** • CT 50mg/kg • Nuclear Medicine 50mg/kg

Monitoring

HR, RR, SpO_2, UMMS monitored continuously

Midazolam Overview

Indications

Anxiolytic/Sedative/Amnesic/ Antiepileptic No analgesic effect

Contraindications

UMSS > 1 undertake consultation
Any adverse effect as listed below

Adverse effects

Excessive sedation (UMSS score > 2)
Respiratory depression/apnoea
Airway obstruction
Hypotension, especially in patients with impaired cardiovascular stability
Delirium/paradoxical agitation
Impaired coordination/balance (falls risk)

Practice Points

Consider dosage reduction in severe renal impairment; use cautiously in hepatic impairment consultation
Midazolam injection solution (5 mg/mL ampoules) is used for oral, intranasal and IV administration.
Midazolam tastes bitter and acidic. Administer in a sweet solution.
Oral administration efficacy may be variable (influenced by first-pass metabolism & duration of fasting)
Intranasal midazolam is used less often as it causes nasal irritation and a burning sensation.
Midazolam may cause hiccups

Reversal Agent	Flumazenil

Indication Benzodiazepine induced over-sedation.
Flumazenil dose 5mcg/kg IV every 60 seconds to maximum total of 40mcg/kg
Considerations Re-sedation may occur. May increase the risk of seizures in predisposed patients.
Location Resuscitation trolley in ward and ambulatory areas + MET team

Oral & Buccal **Midazolam**

Anxiolytic/Sedative/Amnesic No analgesic effect
Tastes bitter and acidic. Administer with sweet solution.
If opioid or sedation agent administered within 2 hours assess UMSS & undertake consultation

Onset of action	**Duration of effect**
Maximum effect within 15-20 minutes Give 15 minutes before procedure	Up to 2 hours Absorption is rapid but erratic

Oral midazolam dose Use 5mg/mL midazolam for injection

>4 month (corrected age) **0.3- 0.5mg/kg** per dose to maximum of 15mg, with higher doses approved through consultation with Comfort Kids, Anaesthetics and senior members of the treating team.

Oral administration efficacy may be variable (influenced by first-pass metabolism & duration of fasting)
If recommended dosing proves ineffective refer to Failure to sedate

Buccal midazolam dose Use 5mg/mL midazolam for injection

>4month (corrected age) **0.3 - 0.5mg/kg** per dose to maximum of 10mg

If recommended dosing proves ineffective refer to Failure to sedate

The principle is to have the drug absorbed by the buccal route-only.
Ideally the dose is divided (given bilaterally)
Patient compliance will determine bilateral or unilateral buccal delivery.
Administer dose buccally via the space between cheek and gum

Monitoring

HR, RR, SpO_2, and UMMS score

Intranasal **Midazolam**

Anxiolytic/Sedative/Amnesic No analgesic effect

Not preferred route due to nasal irritation and burning.

If opioid or sedation agent administered within 2 hours, assess UMSS & undertake consultation

Onset of action	**Duration of effect**
Maximum effect within 10 minutes (Absorption is rapid) Give 15-20 minutes before procedure	Up to 2 hours

Intranasal midazolam dose Use 5mg/mL midazolam for injection

>4 month (corrected age) **0.2- 0.4 mg/kg** up to maximum 10mg (Repeat in 5–15 minutes if required)

Delivery

This route must ONLY be used if rapid effect required, as the burning sensation increases distress.

Use a Mucosal Atomization Device (MAD) to administer

Delivery via Mucosal Atomiser Device (MAD300)

Draw up appropriate dose for weight (see above) plus 0.1ml extra to the first dose (to account for the dead space in the device)

Attach Mucosal Atomiser Device (MAD300) on to the end of the syringe.

Sit the child at approximately 45 degrees or with head to one side.

The MAD is directed at 45 degrees to spray the turbinates, rather than along the nasal floor.

If directed horizontally the dose runs into pharynx & is swallowed (reducing bioavailability and efficacy)

Insert the device loosely into the nostril and press the plunger quickly.

Doses are to be divided between nostrils.

Note: Do NOT draw up 0.1ml extra for second dose when re-using the delivery device (MAD)

Intranasal Fentanyl CPG

Intranasal Midazolam fact sheet

Monitoring

HR, RR, SpO_2, and UMMS score

Intravenous **Midazolam**

Anxiolytic/Sedative/Amnesic No analgesic effect

IV Midazolam may only be administered by an accredited **staff member**

If opioid or sedation agent administered within 2 hours, assess UMSS & undertake consultation

Onset of action	Duration of effect
1-5 minutes Peak effect 3-5 minutes **Give 5-10 minutes before a procedure.** Incremental boluses to achieve 'anxiolytic effect'	Effect may last 30-60 minutes

IV Midazolam Dose		
> 6 months < 12 months (corrected age)	**≥ 12 months or ≤ 50kg**	**> 50kg**
0.1mg/kg of midazolam dilute to 10mLs of 0.9% normal saline	0.1mg/kg of midazolam dilute to 10mLs of 0.9% normal saline	5mg of midazolam dilute to 10mLs of 0.9% normal saline
Bolus: Give 1mL and repeat bolus at intervals of no less than 5 minutes to achieve or maintain anxiolysis	Bolus: Give 1–2mLs and repeat bolus at intervals of no less than 3 minutes to achieve or maintain anxiolysis	Bolus: Give 1–2mLs and repeat bolus at intervals of no less than 3 minutes to achieve or maintain anxiolysis
Do not exceed total dose of 0.15mg/kg in 15mLs of 0.9% normal saline	Do not exceed total dose of 0.15mg/kg in 15mLs of 0.9% normal saline	Do not exceed total dose of 7.5mg in 15mLs of 0.9% normal saline

Delivery

Rapid administration of IV midazolam increases the risk of cardiorespiratory depression.
When used for sedation/anxiolysis/amnesia for a procedure, dosage must be individualized and titrated. Midazolam should always be titrated slowly dose over at least 2 minutes and allow the additional time as per the intervals above to fully evaluate effect.
Individual response will vary with age, physical status and concomitant medications

Monitoring

HR, RR, SpO_2, and UMMS score monitored continuously.
Blood pressure monitored minimum 5 minutely

Intranasal **Fentanyl**

Analgesic opioid

If opioid or sedation agent administered within 2 hours, assess UMSS & undertake consultation

Indications	**Contraindications**
Age > 6 months (corrected age) Minor painful procedures of short duration Limited IV access Potent & rapid onset of analgesia required. Single procedural analgesic agent Adjunct to N_20 (undertake risk assessment)	< 6months (corrected age) UMSS ≥2 Bilateral occluded nasal passage Epistaxis
Onset of action	**Duration of effect**
Rapid onset of effect (2-5 minutes)	30-60 minutes
Initial Dose	**Second dose** (if UMSS <2 may administer after 10 minutes)
1.5 micrograms/kg	0.75 - 1.5 micrograms/kg

Dosing schedule per the Intranasal Fentanyl CPG with the addition of >6months (7kg) infant dosing

- Use 100micrograms/2ml strength fentanyl solution for intravenous use.
- Volumes have been rounded to the nearest 0.05mL

Weight estimate(kg)	**Initial dose (1.5micrograms/kg)**	**Volume Initial dose (mL)**	**Top-up dose (0.75 - 1.5 micrograms/kg)**	**Volume Top up dose (mL)**
7	10 mcg	0.2 mL	5mcg (limited)	0.1mL
10	15 mcg	0.3 mL	7.5 - 15 mcg	0.15 - 0.3 mL
12	18 mcg	0.35 mL	9 - 18 mcg	0.2 - 0.35 mL
14	20 mcg	0.4 mL	10 - 20 mcg	0.2 - 0.4 mL
16	24 mcg	0.5 mL	12 - 24 mcg	0.25 - 0.5 mL
18	27 mcg	0.55 mL	13.5 - 27 mcg	0.25 - 0.55 mL
20 - 24	30 mcg	0.6 mL	15 - 30 mcg	0.3 - 0.6 mL
25 - 29	37.5 mcg	0.75 mL	18.75 - 37.5 mcg	0.35 - 0.75 mL
30 - 34	45 mcg	0.9 mL	22.5 – 45 mcg	0.45 - 0.9 mL
35 - 39	52.5 mcg	1.05 mL	26.5 - 52.5 mcg	0.5 - 1.05 mL
40 - 44	60 mcg	1.2 mL	30 - 60 mcg	0.6 - 1.2 mL
45 - 49	67.5 mcg	1.35 mL	33.7- 67.5 mcg	0.65 - 1.35 mL
> 50	75 mcg	1.5 mL	37.5 - 75 mcg	0.75 - 1.5 mL

Intranasal **Fentanyl** (Continued)

Delivery via Mucosal Atomiser Device (MAD300) per the Intranasal Fentanyl CPG

Draw up appropriate dose for weight (see above table) plus 0.1ml extra to the first dose (to account for the dead space in the device)
Attach Mucosal Atomiser Device (MAD300) on to the end of the syringe.
Sit the child at approximately 45 degrees or with head to one side.
The MAD is directed at 45 degrees to spray the turbinates, rather than along the nasal floor.
If directed horizontally the dose runs into pharynx & is swallowed (reducing bioavailability and efficacy)
Insert the device loosely into the nostril and press the plunger quickly.
Dose is to be divided between nostrils.
Note: Do NOT draw up 0.1ml extra for second dose when re-using the delivery device (MAD)

Intranasal Fentanyl CPG
Intranasal Midazolam fact sheet

Adverse effects

Respiratory depression
Hypotension
Nausea and vomiting- increased risk of vomiting when combined with N_20.
Chest wall rigidity (only reported with large IV doses)
Pruritus

Monitoring

HR, RR, SpO_2, UMMS monitored continuously

Reversal agent Naloxone

Naloxone bolus 0.1mg/kg IM or IV, maximum 2mg

Inhaled **Nitrous Oxide** N_20

Conscious sedation/Anxiolytic/Amnesic/Analgesic
Nitrous oxide may only be administered by an accredited **staff member**
If opioid or sedation agent administered within 2 hours, assess UMSS & undertake consultation

Onset of action	Duration of effect
Onset 30-60 seconds **Peak 2-5 minutes** Patient must breathe an effective concentration before commencing the procedure	Offset 2-5 minutes. 100% Oxygen is to be given on ceasing N_20 for 5 minutes to avoid diffusion hypoxia. **Psychometric recovery in 20 minutes** (falls risk prior)

Exclusion criteria

Age ≤ 2 years of age - Risk of airway obstruction
Severe pulmonary hypertension associated with limited exercise tolerance - Risk of exacerbation.
Gas filled space - Risk of expansion - e.g. Pneumothorax, lung cyst, obstructive pulmonary disease, bowel obstruction, recent craniotomy with pneumocephalus resulting in trapped gas, significant middle ear disease or surgery resulting in trapped gas and decompression sickness.
Respiratory illness or infection - Risk of airway obstruction e.g. Pneumonia or respiratory tract infection with excessive secretions and poor respiratory reserve. Severe asthma (wheeze present)

Additional criteria PICU & DMU

Nitrous Oxide in PICU
Day Medical Unit Procedural Sedation with inhaled Nitrous Oxide

Dose

Nitrous oxide (N_20) 30-70%. The dose is titrated to the desired effect, maintaining a UMSS ≤ 2.

- N_20 must always be blended with Oxygen (30-90 %) via the designated delivery system at RCH.
- The maximum percentage of N_20 which can be delivered is 70%, with a minimum O_2 30%
- Additional opioid or sedation agents may have synergistic effect producing excess sedation.

Assess before commencing N_20:

- If UMSS ≤ 1 N_20 must be titrated to maintain UMSS ≤ 2
- If UMSS is ≥ 2 do not administer N_20 seek consultation

Use of Midazolam / Opioids with N_20
If the patient is extremely anxious (despite non-pharmacological techniques and preparation), consider a rapid titration approach or midazolam (oral or buccal- see table for dosing) prior.
If the patient is considered to require additional analgesia, consider timing the procedure with the patient's baseline analgesia or consider intranasal fentanyl.

Delivery

Nitrous oxide is delivered via the Porter MXR Nitrous Oxide delivery system
Check nitrous oxide equipment and fail-safe mechanisms prior.
Gas scavenging must be set up and on
Maximum 45 minutes for procedural sedation Risk (side effects) > Benefit (see practice points)

Side effects	Adverse effects
Dizziness	Expansion of closed gas-filled space
Lightheaded	Respiratory depression/apnoea
Headache	Loss of airway reflexes (pulmonary aspiration risk)
Euphoria	Diffusion hypoxia (see practice points)
Memory loss	Laryngospasm
Mild Nausea	Excessive sedation (UMSS > 2)
Vomiting	Hallucination- Scary or Nightmare
Auditory – amplification of noise	Loss of consciousness
Visual disturbance	Folate metabolism and vitamin B12 suppression

Monitoring

HR, RR, SpO_2, and UMMS score monitored continuously

Practice Points

• **Vomiting occurs in 6-10% receiving 50% N_20.** This **increases** up to 25% with **co-administration** of an **opioid.** Vomiting may also increase with higher concentration and longer administration time. If patient has a history of nausea & vomiting, consider anti-emetic prior & slower titration of N_20.
• If the patient is extremely anxious (despite non-pharmacological techniques and preparation), consider commencing N_20 at 50%, increase at a greater rate. Once the patient is calm, titrate and maintain UMSS ≤ 2.
• **50-70% patients achieve mild to moderate sedation with N_20 as a single agent**. A few patients may reach

moderate to deep sedation at 70%. Close monitoring of UMSS is essential throughout.
• 10% of children may be poorly sedated & for 10% analgesia is not effective or may have psychological resistance Failure to sedate)
• Diffusion Hypoxia may occur when the $N_20/0_2$ mix is suddenly stopped. When nitrous oxide is discontinued, nitrous oxide diffuses out of the blood into the alveoli in large volumes. If the patient is allowed to breathe air at this time, the combination of nitrous oxide and nitrogen in the alveoli reduces the alveolar PO_2. This causes diffusion hypoxia and is avoided by administering 100% oxygen for 3-5 minutes post procedure. If the patient's mask is off for more than 30 seconds or after discontinuing nitrous oxide, 100% oxygen must be administered.

OHS

Nitrous Oxide

Brief and periodic exposure to nitrous oxide is safe providing the gas scavenging system is functional and circuit intact. There is no conclusive evidence for reproductive, genetic, haematological or neurological toxicity from nitrous oxide exposure.

Prolonged nitrous oxide can suppress liver enzymes involved with Vitamin B12 and folate metabolism. Repeated exposure > three times a week may result in prolonged inhibition of this system. Altered B12 synthesis can lead to bone marrow suppression and neurological complications.

While bone marrow suppression, liver, CNS, and testicular dysfunction, decreased fertility and increased spontaneous fetal loss, and peripheral neuropathy **may occur** with repeated and chronic exposure, **no adverse effects have been found when scavenging is used.**

Patients

Patients who are at greater risk include those with:

- Pre-existing B12 deficiency
- Folate deficiency
- Immunosuppression
- Methylene tetrahydrofolate reductase (MTHFR) deficiency
- Concurrent underlying critical/serious illness (severe sepsis or extensive tissue damage)

If repeated nitrous oxide is anticipated in these patients, folinic acid supplementation are to be started at the same time as the nitrous oxide. Neuronal degeneration (peripheral sensory and motor impairment) is usually only seen with abuse of nitrous oxide.

Gas Scavenging

To administer nitrous oxide at RCH, a functional scavenging system must be attached and operating throughout the sedation period. The sedationist must ensure that the mask fits the child's face and that a seal is maintained during administration of nitrous oxide, to reduce occupational exposure.

Healthcare team

Staff who provide nitrous oxide > three times a week are recommended to have Vitamin B and folate levels monitored.

Pregnancy

Exposure to nitrous oxide is be avoided during pregnancy.
Current medical opinion suggests that brief exposure:

- early in pregnancy is very low risk.
- in second and third trimester is extremely low risk

End of sedation

End criteria

The sedation period is considered over when the patient meets the following criteria:

- Return to baseline sedation score and vital signs are within normal limits for the patient.
- Is easily rousable and can demonstrate an adequate cough.

- Can talk if developmentally appropriate.

Recovery

If the child does not meet the “end of sedation” criteria continue to reassess and monitor the child in the “recovery” lateral position. Keep nil orally, support airway and spontaneous ventilation.
Transport

- Nursing staff may transport the sedated patient only if the UMSS score is ≤2.
- If UMSS > 2 medical transfer is required

Transport of the sedated patient
The patient is accompanied by an accredited or competent clinician
The patient is placed in the recovery” lateral” position
Continuous monitoring of SpO_2 and HR
Observation of respiratory effort and airway patency
UMSS ≤ 2 Minimum requirement for patient transfer
Oxygen
Face mask
Pulse oximetry
Suction unit/Yankauer and Y-suction catheters
UMSS > 2 Additional requirements
Medical staff
Blood Pressure monitoring
Appropriate size airway/self-inflating bag/air cushion mask/anaesthetic bag
Emergency equipment as prepared by Medical staff

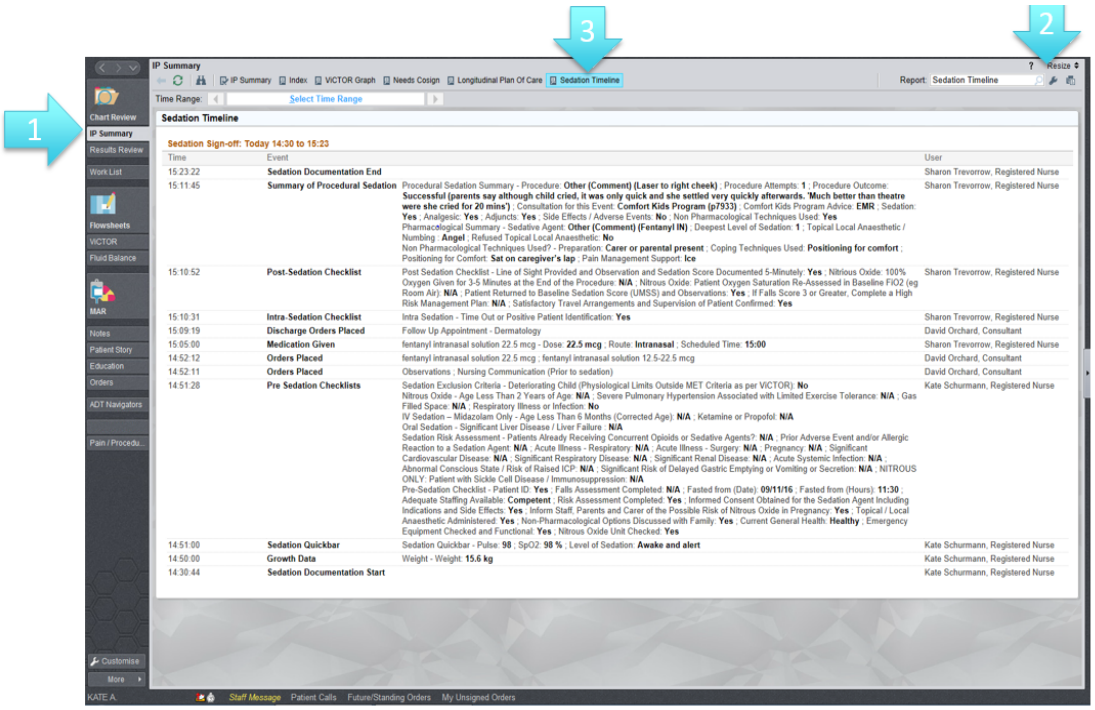
Discharge to home

- Patients discharged to home must meet the following criteria.

Discharge criteria
The patient returns to baseline level of consciousness and observations are within normal limits for the patient
IV cannula removed
Pain controlled
Nausea +/- vomiting controlled
Demonstrates adequate cough and tolerates fluids +/- diet
Discharge is indicated by the medical team
Motor function returned to baseline. Patient can sit up unaided or walk (as developmentally appropriate)
A responsible adult is present to accompany the patient (all ages)
Post sedation fact sheet provided Sedation for procedures 4: Care at home
Complete the “Record of sedation for procedure” summary of sedation episode

Documentation/ EMR Sedation Timeline

- The Sedation Timeline provides a summary of the Sedation Narrator.
- This information can be used to plan future sedation events.

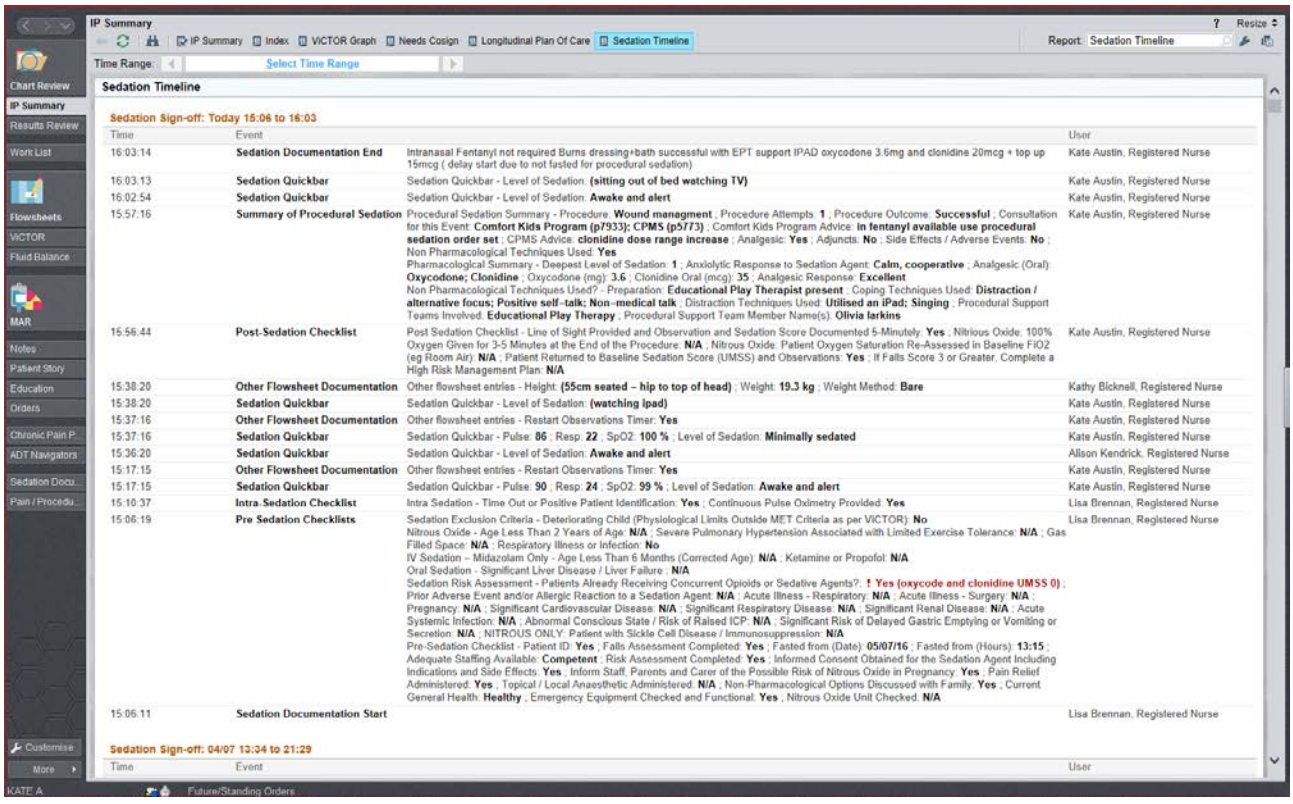


Sedation Timeline allows review of previous sedation events

Go to IP Summary Left panel

If in outpatients this is linked to the encounter (last visit)

Add to Sedation Timeline to your IP Summary toolbar using Resize Right top right



Summary of procedural sedation episode	
Pharmacological agent & adjuncts	
Procedure	Specify
Procedure(s)	List
Procedural attempts	number
Procedural outcome	successful / not = specify
Sedation agent (can be more than one)	Y/N
Midazolam IV / oral	mg
Chloral hydrate	mg
Nitrous oxide	%
Analgesic response to Nitrous oxide	Y = poor / moderate / excellent N = specify
Deepest level of sedation	UMSS 1-4
Anxiolytic response to sedation agent	Select one response
Asleep	
Calm, cooperative	
Anxious, reassurable	
Anxious, not reassurable	
Crying, resisting, verbal refusal	
Analgesic Oral (can be more than one)	Y/N
Paracetamol	mg
Ibuprofen	mg
Oxycodone	mg
Tramadol	mg
Clonidine	mcg
Analgesic response	Y = poor / moderate / excellent N = specify
Analgesic IV (can be more than one)	Y/N
Paracetamol	mg
Tramadol	mg
Clonidine	mcg
Fentanyl infusion	mcg/kg/hr
Fentanyl bolus	mcg/kg
Fentanyl PCA	mcg/kg
Morphine infusion	mcg/kg/hr
Morphine bolus	mcg/kg
Morphine PCA	mcg/kg
Ketamine infusion	mcg/kg/hr
Ketamine bolus	mcg/kg
Analgesic response	Y = poor / moderate / excellent N = specify
Topical local anaesthetic / Numbing	Y/N
Angel	Y/N
Emla	Y/N
Other (Lignocaine (route / %), ALA, eye drops)	Y/N (Y = specify)
Refused (Specify)	Y/N (Y = specify e.g. allergic)
Coolsense	Y/N
Effective	Y/N = (N= specify)
Adjuncts	Y/N
Sucrose	Y/N (Y = mL)
Face Mask flavoured	Y/N
Other	Y/N (Y= specify)
Consultation for this event	Y/N
Comfort Kids Program Phone 55772 if no answer page 7932 Or phone 55776 and if no answer page 7933	(Y = issue/ advice)
Children Pain Management Service (p5773)	(Y = issue/ advice)

Anaesthetist in Charge (52000)	(Y = issue/ advice)
Other (treating medical team)	(Y = issue/ advice)
Side effects/Adverse events	**Y/N (Y = specify)**
CNS	Y/N
Prolonged sedation/recovery time	
Excessive sedation UMSS >2 (ward/ambulatory)	
Failure to sedate	
LOC (Loss of Consciousness)	
Agitation unrelated to pain (Hyperactivity /Delirium /Paradoxical agitation)	
Hallucination- Scary or Nightmare	
Other	
Airway / Respiratory	Y/N
Airway obstruction	
Respiratory distress	
Desaturation (< 92 %)	Y= (%)
Apnoea - hypoventilation	
Aspiration	
Other	
CVS	Y/N
Hypotension	
Bradycardia	
Tachycardia	
Arrhythmia	
Other	
GIT	Y/N
Nausea	
Vomiting	
Allergy	Y/N
Rash	
Anaphylaxis	
Injury	Y/N
Fall	
Other	
Escalation of care	Y/N
Reversal agent	Y= flumazenil or naloxone + dose mcg/kg
Airway manoeuvre or airway adjunct	
Bag Mask Ventilation	
MET	
Intubation	
Transfer to higher level of care	

Summary of procedural sedation episode	
Nonpharmacological techniques	
Preparation	Y/N
Carer or parental presence/ role	Y/N Y = specify
Educational Play Therapist/Comfort First present	Y/N
Medical play / Medical education prior	Y/N Y = specify
Child actively participates	Y/N Y = specify
Coping techniques	Y/N
Positioning for comfort	Y/N Y = specify
Distraction / Alternative focus	Y/N Y = specify
Calm Breathing & Relaxation techniques	Y/N Y = specify
Dummy / Swaddle	Y/N
Non-medical talk	Y/N
Positive self-talk	Y/N
Guided Imagery	Y/N
Music therapy / Singing	Y/N
Hypnosis	Y/N
Devices	Y/N
Buzzy Bee	Y/N
Other	Y/N Y = specify
Procedural Support team involvement	**Name / ascom pager / reason /plan**
Educational Play Therapy	Y = specify
Comfort First	Y = specify
Palliative Care	Y = specify
Psychology	Y = specify
Other	Y = specify

Companion Documents

Health Kids Info fact sheets for procedural sedation

Reduce children's discomfort during tests and procedures fact sheet
Sedation (Chloral Hydrate) for procedures fact sheet
Midazolam for procedures fact sheet
Intranasal Midazolam fact sheet
Sedation - Nitrous oxide fact sheet
Sedation (Nitrous Oxide) for Dental Procedures fact sheet
Sedation for procedures 1: About sedation
Sedation for procedures 2: Sedation medicine
Sedation for procedures 3: Helping your child
Sedation for procedures 4: Care at home

Staff accreditation and learning packages.

Comfort Kids Website for health professionals

Links

RCH links

Comfort Kids Website
Procedural Pain Management Policy
Procedural Pain Management Clinical Guideline (Nursing)
Communicating Procedures to families Clinical Practice Guideline
Observation and Continuous Monitoring Clinical Guideline (Nursing)
Sucrose (oral) for procedural pain management in infants Clinical Guideline (Nursing)
Analgesia and Sedation Clinical Practice Guideline
Intranasal Fentanyl CPG

References

Professional bodies / Reference

Australian and New Zealand College of Anaesthesia (http://www.anzca.edu.au/)
Ps09-2014-guidelines-on-sedation-and-or-analgesia-for-diagnostic-and-interventional-medical-dental-or-surgical-procedures.pdf

International Association for the Study of Pain (www.iasp-pain.org)

The Royal Australasian College of Physicians. Paediatrics & Child Health Guideline Statements:
Management of Procedure-related Pain in Children and Adolescents
Management of Procedure-related Pain in Neonates

The Society of Pediatric Sedation; Pediatric Sedation Research Consortium (www.pedsedation.org)
http://www.pedsedation.org/wp-content/uploads/2013/09/SPS_Primer_on_Pediatric_Sedation.pdf

American College of Emergency Physicians Clinical Policies Subcommittee on Procedural Sedation and Analgesia (Godwin SA—chair): Clinical Policy: Procedural Sedation and Analgesia in the Emergency Department. Ann Emergency medicine 2014; 63(2):247-258.

Andersson H, Zaren B, Frykholm P. Low incidence of pulmonary aspiration in children allowed intake of clear fluids until called to the operating suite. Pediatric Anesthesia. 2015; 25(8)770-777.

Babl FE, Oakley E, Puspitadewi A, Sharwood LN. Limited analgesic efficacy of nitrous oxide for painful procedures in children. Emerg Med J: EMJ. 2008; 25(11):717-2.

Babl FE, Oakley E, Seaman C, Barnett P, Sharwood LN. High-concentration nitrous oxide for procedural sedation in children: adverse events and depth of sedation. Pediatrics. 2008; 121(3):528-32.

Cote, C.J. Safety after Chloral Hydrate Sedation of Former Preterm and Term Infants for Magnetic Resonance Imaging: Are the Data Clear? Anesthesia and Analgesia, 110(3):671-673.

Cote C.J., Wilson, S. Guidelines for monitoring and management of pediatric patients during and after sedation for diagnostic and therapeutic procedures: an update (2006). Pediatrics (118): 2587-602.

Cravero, J.P et.al. Incidence and nature of adverse events during pediatric sedation/anesthesia for procedures outside the operating room: report from the Pediatric Sedation Research Consortium. Pediatrics 2006; 118 (3): 795-804.

Eichhorn V, Henzler D, Murphy MF. Standardizing care and monitoring for anesthesia or procedural sedation delivered outside the operating room. Current Opinion in Anesthesiology. 2010; 23(4):494-499.

Krauss B, Green S M, Procedural sedation and analgesia in children (2006) Lancet (367): 768-80.

Palmer, G.M. Pain Management in the Acute Care Setting: Update and Debates. Journal of Paediatrics and Child Health (2016) February, accepted

Pitetti R, Davis PJ, Redlinger R, White J, Wiener E, Calhoun KH. Effect on hospital-wide sedation practices after implementation of the 2001 JCAHO procedural sedation and analgesia guidelines. Archives of Paediatric Adolescent Medicine. 2006; 160(2):211-6

Mason, K. (2015) Pediatric Sedation Outside of the Operating Room (2nd ed.). New York: Springer

Seith RW, Theophilos T, Babl FE. Intranasal fentanyl and high-concentration inhaled nitrous oxide for procedural sedation: a prospective observational pilot study of adverse events and depth of sedation. Academic Emergency Medicine. 2012; 19(1):31-6.

Contacts

Dr Ian McKenzie (Director of Anaesthesia and Pain Management) Ian.McKenzie@rch.org.au
Ms Kate Austin (CNC Procedural Pain Management, Comfort Kids Program) Kate.Austin@rch.org.au