

## Oral midazolam with nitrous oxide for paediatric Botulinum toxin injections

<b>Sites where Local Procedure applies</b>	JHCH including Ambulatory Care
<b>This Local Procedure applies to:</b>	
<b>Adults</b>	No
<b>Children up to 16 years</b>	Yes (children over 2 years of age)
<b>Neonates – less than 29 days</b>	No
<b>Target audience</b>	Clinicians working in JHCH administering oral midazolam and nitrous oxide for the administration of Botulinum toxin injections.

[Hyperlink to Procedure](#)

<b>Keywords</b>	Paediatric, Botulinum Toxin, injection, children, JHCH, HNEkidsRehab, midazolam, nitrous oxide, pain, analgesia
<b>Document registration number</b>	JHCH 15.4
<b>Replaces existing document?</b>	No
<b>Related Legislation, Australian Standard, NSW Ministry of Health Policy Directive or Guideline, National Safety and Quality Health Service Standard (NSQHSS) and/or other, HNE Health Document, Professional Guideline, Code of Practice or Ethics:</b>	<ul style="list-style-type: none"> <li>• See page 14</li> </ul>
<b>Prerequisites (if required)</b>	<p>Nursing staff administering nitrous oxide with oral midazolam in the botulinum toxin clinic are required to have completed</p> <ul style="list-style-type: none"> <li>• Theoretical and practical components of Nitrous Oxide training with competence assessed by qualified assessor (or recognition of prior learning).</li> <li>• Competency in Advanced Paediatric Life Support</li> <li>• Completion of DETECT Junior and Resus4Kids training</li> </ul>
<b>Local Procedure note</b>	This document reflects what is currently regarded as safe and appropriate practice. The procedure/s <b>requires mandatory compliance</b> . If staff's assessment is that the procedure/s should not apply in a particular clinical situation they must seek advice from their unit manager/delegate and document the variance in the patient's health record.
<b>Position responsible for the Local Procedure and authorised by</b>	Pat Marks General Manager/Director of Nursing CYPFS
<b>Contact person</b>	<p>Sharon Fenwick CNC HNEkidsRehab          Mobile: 0467711997 SD: 66945  <a href="mailto:sharon.fenwick@hnehealth.nsw.gov.au">sharon.fenwick@hnehealth.nsw.gov.au</a></p>
<b>Date authorised</b>	29 <sup>th</sup> June 2018
<b>This document contains advice on therapeutics</b>	Yes, Approval gained from Local Quality Use of Medicines Committee on May 2018.
<b>Issue date</b>	June 2018
<b>Review date</b>	June 2021

**Please Note:**

Over time some links in this document may cease working. Where this occurs please source the Document in the PPG Directory at: <http://ppg.hne.health.nsw.gov.au/>

**RISK STATEMENT**

This guideline has been developed to facilitate the safe and concurrent delivery of oral midazolam and inhaled nitrous oxide within the paediatric ambulatory care department at the JHCH.

It does not replace the need for application of clinical judgement in respect to each individual patient.

This document is required to manage the following risks:

1. Maintenance of patient airway, safety and welfare during procedure.
2. Equipment failure.
3. Moderate patient’s experience of physical pain and discomfort during the procedure
4. Control the patient’s anxiety and minimize psychological trauma associated with repeated procedures
5. Control behavior and movement to allow safe delivery of Botulinum toxin injections

**RISK CATEGORY:** *Clinical Care & Patient Safety*

**RISK MITIGATION STRATEGIES**

<b>1</b>	Staff within the botulinum toxin injection clinic delivering inhaled nitrous oxide with concurrent oral midazolam will practice safe and effective procedural processes; having attained the mandatory credentials required to attend individual risk stratification and patient selection, and manage any adverse events that may occur.
<b>2</b>	Staff within the botulinum toxin injection clinic will complete compulsory equipment checks, ensure necessary gas supply, and confirm availability of essential emergency airway equipment, prior to commencing procedure.
<b>3</b>	Staff within the botulinum toxin injection clinic will reduce the experience of pain, anxiety, and distress experienced by the child at each episode of care by implementing approved pharmacological strategies as outlined in local procedural guidelines.
<b>4</b>	Staff in the botulinum toxin clinic will adopt the use of adjunct, non - pharmacological approaches including child life therapy, music therapy, and other technologies, to compliment approved pharmacological measures to minimize procedural related pain, distress and anxiety at each episode of care.
<b>5.</b>	Staff within the botulinum toxin injection clinic will reduce the potential for needle stick and/or manual handling injury by implementing approved safe manual handling practices, supported holding techniques, and the safe disposal of sharps.

**ABBREVIATIONS & GLOSSARY**

<b>Abbreviation/Word</b>	<b>Definition</b>
DMR	Digital Medical Record
JHCH	John Hunter Children’s Hospital
Bont-A	Botulinum Toxin
Botox®	Brand name- Botulinum Toxin
PACD	Paediatric Ambulatory Care Department
PPE	Personal Protective Equipment
AHA	Allied Health Assistant
SPOC	Standard Paediatric Observation Chart
CERS	Clinical emergency response system
Nitrous nurse	Administers the nitrous oxide to the patient
UMMS	University of Michigan Sedation Scale
IISM	Incident Information System Management

**TABLE OF CONTENTS**

Guideline.....5

Patient selection.....5

Staff responsibilities within the Botulinum Toxin Clinic.....6

Oral Midazolam administration requirements.....7

Post Midazolam Monitoring requirements.....8

Inhaled Nitrous oxide administration..... 8

Monitoring requirements for concurrent use of oral midazolam and inhaled nitrous oxide..... 9

Discharge criteria.....10

University of Michigan Sedation Score (UMMS).....10

Implementation plan.....13

Acknowledgments.....18

References.....19

**Guideline**

The following guideline is for the use of the HNEkidsRehab Service within the Botulinum Toxin injection clinic and applies to children with Cerebral Palsy or focal spasticity from acquired injury or disease. Botulinum toxin injection treatment requires multiple injections to various body parts, repeated at 4 to 6 monthly intervals based on current best practice evidence.

Children who require oral midazolam in addition to inhaled nitrous oxide will be allocated appointment times within the Botulinum toxin clinic that facilitate adherence to mandatory monitoring requirements.

**ALERT**

To be eligible patients must be:

- Age 2-18 years
- Weight > 10kg
- Fulfills criteria for nitrous oxide administration as per Nitrous Oxide Procedural sedation in paediatrics JHH\_JHCH\_0126

**PATIENT SELECTION:**

Informed consent	It is obligatory to ensure that the patient/ carer has received appropriate information to provide informed consent and that patient identification, correct procedure and correct site processes are completed as per procedural level, prior to commencing the procedure. Refer PD2017_032
Fasting requirements	2 hours- inhaled nitrous oxide 4 hours- inhaled nitrous oxide + oral midazolam
Location of procedure	Treatment room must be equipped with oxygen and suction and emergency airway equipment with immediate access to resuscitation trolley.
Staff requirements	Co- administration of opioids or benzodiazepines within the preceding 4hrs of inhaled nitrous oxide requires current APLS, RESUS4KIDS, & Nitrous oxide administration credentials.

**ALERT**

If administering nitrous oxide for the purpose of **analgesia** during a clinical procedure the procedure level will be determined by the procedure itself. Consent will be in accordance with the procedure level i.e. level 1 procedures verbal consent, level 2 & 3 written consent.

If administering nitrous oxide for the purpose of **sedation** – this is a Level 3 procedure and requires written consent for the sedation and the procedure.

When administering nitrous oxide **with** an opioid or benzodiazepine – this is a level 3 procedure and requires written consent for the sedation and the procedure - PD2017\_032.

**STAFF RESPONSIBILITIES WITHIN THE BOTULINUM TOXIN INJECTION CLINIC:**

It is mandatory for staff to follow relevant: “Five moments of hand hygiene”, infection control, moving safely/safe manual handling, and documentation practices in the botulinum toxin injection clinic. The use of, **H**and hygiene, **A**cknowledge, **I**ntroduce, **D**uration, **E**xplanation, **T**hank you or closing comment (HAIDET) is supported.

- The paediatric rehabilitation consultant and the nitrous oxide nurse collectively hold the responsibility for appropriate patient selection for procedure.
- The paediatric rehabilitation consultant is responsible for the prescription of nitrous oxide and oral midazolam using the appropriate medication charting medium, i.e. MedChart, or the National Inpatient Paediatric Medication Chart.
- Site marking and/or the application of topical local anaesthetic is attended as per policy LHD 2017\_032 in the assessment phase of clinic.
- Baseline observations are documented on age appropriate standard paediatric observation chart (SPOC), prior to medication administration.
- The administration of oral midazolam will be attended by the nitrous nurse and a nurse from paediatric ambulatory care department (PACD) as per NSW Health Policy Directive 2013\_043.
- Once oral midazolam has been administered, the patient will remain accompanied by a parent / carer in the waiting room of the paediatric outpatient department; in line of sight of staff member with RESUS4Kids training.
- Any deterioration requires immediate clinical intervention / management and escalation via the clinical emergency response system (CERS).
- Only medical/nursing staff with appropriate credentials may administer inhaled nitrous oxide with the concomitant use of oral midazolam as specified in policy JHH\_JHCH\_ 0126
- The nitrous oxide nurse retains the responsibility to monitor the patient’s airway patency, cardio respiratory status, level of sedation, pain and distress, for the duration of the procedure, as per policy JHH\_JHCH\_ 0126.

- A nominated HNEkidsRehab allied health staff member will assist with positioning the child during the procedure, as per HNELHD Clinical Guideline 15\_39.
- The nitrous oxide nurse will recover the patient in the procedure room until discharge criteria has been fulfilled in consensus with the consultant, and parent/carer. As per policy JHH\_JHCH\_0126.
- The paediatric rehabilitation consultant is responsible for the safe disposal of patient specific equipment including sharps, as per NSW Health Policy Directive 2007\_052.
- The allied health assistant is responsible for the removal of linen, cleaning of bed and reapplication of fresh linen in preparation for next patient in accordance with local infection control processes, as per NSW Health Policy Directive PD2007\_036.
- The allied health assistants are responsible for probe disinfection between patients as per reusable medical equipment, Local Procedure JHH\_JHCH-0118.
- The nitrous oxide nurse retains the responsibility for the appropriate disposal of nitrous circuit and mask, and the cleaning of monitoring equipment between patients, as per NSW Health Policy Directive 2007\_052.

## **ORAL MIDAZOLAM ADMINISTRATION REQUIREMENTS**

### **ALERT**

**Always check patient specific risk assessment and existing exclusion criteria for oral midazolam use prior to administration.**

- Weight and height recorded on presentation.
- Clinical procedural level safety checklist completed.
- Identification/allergy bands applied.
- Fasting status of 4 hours confirmed.
- Informed and written consent obtained and documented as per procedural level PD2017\_032.
- Medical prescription of oral midazolam documented on the National paediatric inpatient medication chart.
- Midazolam is administered using the five R's; the right patient, the right drug, the right dose, the right route, at the right time, as aligned with procedural requirements.
- The dose is charted in milligrams, with a dose range of 0.3-0.5mg/kg to a maximum of 10mg to be administered orally if used in conjunction with Nitrous oxide.
- There is no preparation of oral midazolam, the IV solution is used.

- Midazolam is a bitter /acidic solution and is better tolerated orally when administered with a sweet solution such as sucrose to a maximum of 10mls total volume.
- A reversal agent (flumazenil) is available on emergency trolley within the vicinity of the patient.
- Flumazenil injection 0.1mg/mL in 5mL ampoule
- Dose: 5-10microgram/kg IV repeated every 60 seconds
- 40microgram/kg maximum dose (maximum total dose 1mg).
- Failure of reversal with standard flumazenil dose requires clinical response call and potential need for flumazenil infusion.

### **MONITORING REQUIREMENTS POST OUTPATIENT ADMINISTRATION OF ORAL MIDAZOLAM**

- Patients who have been administered oral midazolam will remain be accompanied by a parent/carer.
- Patients whom have been administered oral midazolam and have a UMMS sedation score  $\leq$  1, must remain within the line of sight of a staff member with resus 4 kids and DETECT JNR credentials, and have access to nursing staff.
- If sedation score is equal or  $\geq$  2, patient requires direct observation with continuous monitoring, vital signs and sedation scores, documented at 5 minutes intervals.
- Any deterioration or excessive sedation requires immediate clinical management and/or escalation via CERS. Including but not limited to: Immediate withdrawal of nitrous oxide, management of airway, breathing, circulation, IV access and consideration of reversal of sedation using flumazenil.

### **INHALED NITROUS OXIDE ADMINISTRATION REQUIREMENTS**

#### **ALERT**

**Always check patient specific risk assessment and existing exclusion criteria for inhaled nitrous oxide use prior to administration.**

- Client assessment and suitability is determined jointly by the paediatric rehabilitation consultant and the nitrous oxide nurse.
- The paediatric rehabilitation consultant prescribes the nitrous oxide on a National inpatient paediatric medication chart.
- The nitrous oxide nurse attends all prerequisite checks including the nitrous oxide delivery/scavenger system, oxygen and suction equipment, monitoring equipment, & emergency trolley.

- The nitrous oxide nurse confirms the immediate availability of first line emergency airway management equipment including paediatric oropharyngeal (guedel's) airways, and manual bag /mask ventilation equipment.
- The paediatric rehabilitation consultant and the nitrous oxide nurse simultaneously confirm consent, fasting status, and completes level 3 procedural check lists and time out processes as required.
- The nitrous oxide nurse documents baseline observations including respirations, heart rate, and peripheral oxygen saturation readings on age appropriate SPOC.
- Inhaled nitrous oxide may commence when patient has baseline saturations  $\geq 95\%$  in room air.
- Children that have vital signs outside these parameters as standard, will have variances documented on SPOC, and require clearance for the procedure by the paediatric rehabilitation consultant and the nitrous nurse prior to commencing inhaled nitrous oxide.

**MONITORING REQUIREMENTS DURING INHALED NITROUS OXIDE ADMINISTRATION WITH ORAL MIDAZOLAM USE**

**ALERT**

**The combination of opioids or benzodiazepines with nitrous oxide can produce much deeper levels of sedation than nitrous oxide alone and may potentiate vomiting, with a risk of aspiration as well as respiratory compromise**

- Pulse oximetry with audible alarm for heart rate and oxygen saturations to remain in situ for the duration of the procedure.
- Sedation levels will be monitored and recorded throughout the procedure and documented on the SPOC chart.
- At any time throughout the procedure, should the patient shows signs of deterioration, nitrous should be ceased immediately, oxygen at 10 L/min or greater should be delivered, and emergency management implemented as required.
- Distress scores will be monitored during the procedure and documented in the clinical notes.
- If distress levels are scored at 3 or above, and shows no signs of decreasing with the addition of inhaled nitrous oxide; consider halting the procedure.
- If procedure is halted due to distress, discuss and plan available options to manage procedural related distress.
- Observations documented on the SPOC at five minutely intervals throughout the procedure and continue until patient deemed safe for discharge.

- Patients are recovered in an area where oxygen, suction and emergency airway equipment are available.
- Patient deterioration requires immediate clinical management / intervention and CERS.
- Document all outcomes in medical records.

### UMMS

0 = Awake and alert

1 = Minimal sedation child responds normally to verbal commands with no change to cardiovascular or airway function.

2 = Moderate sedation; responds purposely to verbal prompts or light touch maintains airway and cardiovascular function without intervention.

3 = Deep sedation; responds to noxious stimuli, may require airway support to maintain effective ventilation.

4 = General anaesthesia; the patient cannot be roused, requires airway support including positive pressure ventilation, may require cardiovascular support.

### DISTRESS SCORE

0 = Nil distress evident

1 = Child anxious/ distressed but settles

2 = Child shows signs of mild to moderate distress

3 = Child significantly distressed throughout procedure

## **POST PROCEDURAL MONITORING AND DISCHARGE CRITERIA FOR NITROUS OXIDE AND CONCURRENT ORAL MIDAZOLAM**

- 3 minutes of oxygen delivered post inhaled nitrous oxide.
- Patient observations have returned to pre-procedure baseline.
- Level of sedation is  $\leq 1$  and the patient is responsive to client appropriate stimuli.
- Able to sit, stand, or use mobility aids as usual.
- Post midazolam/ nitrous oxide care has been discussed with parent/carer.
- Readiness for discharge is determined by the consensus of the nitrous oxide nurse, paediatric rehabilitation consultant, and the parent/ caregiver.
- Documentation including procedure and patient outcomes are recorded in the patient's medical records.

### **IN THE EVENT OF SLOW RECOVERY**

1. Children will be placed in left lateral position or an alternative position that supports airway maintenance and reduces aspiration risk.
2. Will remain under direct clinical care of the nitrous oxide nurse and consultant until discharge criteria has been achieved, or CERS initiated.
3. Mandatory escalation via CERS will be implemented for patients that show signs of deterioration.
4. The nitrous oxide nurse and the consultant will maintain the child's airway utilising necessary emergency airway equipment until help arrives.
5. All adverse events require an IIMS notification to be lodged.

#### **ALERT**

**If the patient deteriorates during the procedure, the nitrous oxide nurse will instruct a staff member to press the nurse assist button and ask for a Clinical Emergency Response (CERS). The nitrous oxide nurse and the consultant will remain with the child and utilise emergency airway equipment based on clinical requirement until assistance arrives.**

## **BOTULINUM TOXIN INJECTION PROCESS**

1. All clinic staff to attend 5 moments of hand hygiene and ensure the use of personal protective equipment at pertinent times throughout the appointment.
2. Patient and parent/ carer enter the procedure room.
3. Identification, prescription, procedural consent, time out processes and checklists are completed according to procedural level.
4. The patient moves to bed with assistance from parent/care giver, allied health assistant and/or lifting equipment as necessary.
5. Individual procedural plans are implemented as required.
6. Procedural checklists and timeouts are conducted according to procedural level.
7. The nitrous oxide nurse applies continuous monitoring to patient and records observations on age appropriate SPOC chart.
8. Inhaled nitrous oxide may be initiated when the child has a peripheral oxygen saturation reading of  $\geq 95\%$  room air.
9. The nitrous oxide nurse will commence and titrate nitrous oxide, and inform the paediatric rehabilitation consultant, and allied health assistant when nitrous oxide efficacy is reached and procedure can commence.
10. The allied health assistant along with the parent/carer will aid in the positioning of the patient for removal of tapes. The paediatric rehabilitation consultant will advise all staff that injections are commencing.
11. The nitrous oxide nurse will deliver nitrous oxide with dose titrated from 50% to 70%, based on the patient's requirements for the duration the procedure.

12. Continuous pulse and oxygen saturation monitoring remains insitu throughout, with documentation of readings and sedation scores at 5 minutely intervals, until discharge criteria attained.
  
13. The paediatric rehabilitation consultant will advise the nitrous oxide nurse when injections are concluded and confirm the safe disposal of sharps.
  
14. The nitrous oxide nurse will then cease the delivery of inhaled nitrous oxide and commence 100% oxygen to the patient for a period of 3 minutes.
  
15. The nitrous oxide nurse will recover the patient in the room and continue observations until discharge criteria fulfilled.

## **IMPLEMENTATION PLAN**

1. Implementation of this guideline will be facilitated by discussion at HNEKidsRehab Operational meeting and other relevant team meetings.
2. The provision of both opportunistic and targeted education across the JHCH incorporating the paediatric wards and the paediatric ambulatory care department.
3. Inclusion of Guideline within HNEKidsRehab service specific orientation package
4. Inclusion on the Policy, procedure and guideline page on HNEAHS intranet
5. Staff will be required to read the guideline and sign the policy acknowledgement sheet.

## **MONITORING COMPLIANCE**

Staff attending the botulinum toxin clinic will demonstrate competency with the procedural aspects of this clinic by completing (as role requires) the following mandatory education and audit requirements:

- Advanced Paediatric Life Support
- Nitrous oxide procedural sedation in children theoretical and workshop components; and be deemed proficient in nitrous oxide delivery by qualified assessor
- Medication Administration
- Patient identification/ time -out procedures, and as procedure requires level 1, 2, & 3 pre/post procedure checklists.
- DETECT Junior
- RESUS 4 Kids
- Paediatric Clinical Emergency Response System (CERS).
- Infection prevention and control practices
- Hand hygiene
- Documentation
- Proficiency in the Incident Information System Management (IFSM)

## REFERENCES:

- HNE LHD Policy Compliance Procedure PD2013\_043: PCP 13 Accountable Drugs – Handling and Recording  
[http://intranet.hne.health.nsw.gov.au/\\_data/assets/pdf\\_file/0007/83743/PD2013\\_043\\_PCP\\_13\\_Accountable\\_Drugs.pdf](http://intranet.hne.health.nsw.gov.au/_data/assets/pdf_file/0007/83743/PD2013_043_PCP_13_Accountable_Drugs.pdf)
- HNE Health Policy Compliance Procedure PD2009\_060: PCP1 Clinical handover  
[http://intranet.hne.health.nsw.gov.au/\\_data/assets/pdf\\_file/0011/118496/PD2009\\_060\\_PCP\\_2\\_Clinical\\_Handover\\_-\\_Communication\\_and\\_Handover\\_of\\_Clinical\\_Care\\_v2.pdf](http://intranet.hne.health.nsw.gov.au/_data/assets/pdf_file/0011/118496/PD2009_060_PCP_2_Clinical_Handover_-_Communication_and_Handover_of_Clinical_Care_v2.pdf)
- NSW Health Policy Directive PD2009\_060 - Clinical Handover - Standard Key Principles  
[http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2009\\_060.pdf](http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2009_060.pdf)
- NSW Health Policy Directive PD2010\_034 Children and Adolescents-Guidelines for Care in Acute Care settings  
[http://www.health.nsw.gov.au/policies/PD2010\\_34.pdf](http://www.health.nsw.gov.au/policies/PD2010_34.pdf)
- Local procedure JHH\_JHCH JHH\_JHCH\_0118: Cleaning and reprocessing ultrasound probes using Torchon  
[http://intranet.hne.health.nsw.gov.au/\\_data/assets/pdf\\_file/0007/170818/JHH\\_JHCH\\_0118\\_US\\_probes\\_Trophon.pdf](http://intranet.hne.health.nsw.gov.au/_data/assets/pdf_file/0007/170818/JHH_JHCH_0118_US_probes_Trophon.pdf)
- NSW Health Policy Directive PD2014\_036 Clinical Procedure Safety  
[http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2017\\_032.pdf](http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2017_032.pdf)
- NSW Health Policy Directive PD2005\_406 Consent to Medical Treatment  
[http://www1.health.nsw.gov.au/PDS/pages/doc.aspx?dn=PD2005\\_406](http://www1.health.nsw.gov.au/PDS/pages/doc.aspx?dn=PD2005_406)
- NSW Health Policy Directive PD2012\_069 Health Care Records – Documentation and Management
- Local procedure JHH\_JHCH\_BH -0213 Handling and Disposal of Sharps in Operating Suites  
[http://www1.health.nsw.gov.au/PDS/pages/doc.aspx?dn=PD2012\\_069http://intranet.hne.health.nsw.gov.au/\\_data/assets/pdf\\_file/0010/116875/JHH\\_JHCH\\_BH\\_0213\\_Sharps\\_handling.pdf](http://www1.health.nsw.gov.au/PDS/pages/doc.aspx?dn=PD2012_069http://intranet.hne.health.nsw.gov.au/_data/assets/pdf_file/0010/116875/JHH_JHCH_BH_0213_Sharps_handling.pdf)
- NSW Health Clinical Guideline GL 2016\_009 Infants and Children: Management of Acute and Procedural Pain in the Emergency Department  
[http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/GL2016\\_009.pdf](http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/GL2016_009.pdf)
- NSW Health Policy Directive PD2007\_036 Infection Control Policy  
[http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2017\\_013.pdf](http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2017_013.pdf)
- NSW Health Policy Directive 2013\_043 Medication Handling in NSW Public Health Facilities  
[http://www1.health.nsw.gov.au/PDS/pages/doc.aspx?dn=PD2013\\_043](http://www1.health.nsw.gov.au/PDS/pages/doc.aspx?dn=PD2013_043)
- HNELHD Clinical Guideline 15\_39 Paediatric behavior management of the agitated/ aggressive patient  
[http://intranet.hne.health.nsw.gov.au/\\_data/assets/pdf\\_file/0005/142682/HNELHD\\_CG\\_15\\_39\\_Paed\\_behaviour\\_Mge\\_for\\_the\\_agitated\\_aggressive\\_patient.pdf](http://intranet.hne.health.nsw.gov.au/_data/assets/pdf_file/0005/142682/HNELHD_CG_15_39_Paed_behaviour_Mge_for_the_agitated_aggressive_patient.pdf)

HNE LHD Policy Compliance Procedure 2017\_032:PCP1 Procedure Site Marking

[http://intranet.hne.health.nsw.gov.au/\\_data/assets/pdf\\_file/0014/51431/PD2017\\_032\\_PCP\\_1\\_Procedure\\_Site\\_Marking.pdf](http://intranet.hne.health.nsw.gov.au/_data/assets/pdf_file/0014/51431/PD2017_032_PCP_1_Procedure_Site_Marking.pdf)

NSW Health Policy Directive 2013\_049 Recognition and management of Patients who are clinically deteriorating

[http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2013\\_049.pdf](http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2013_049.pdf)

HNE LHD Policy Compliance Procedure PD2013\_049: PCP 1 Recognition and Management of a Patient who are Clinically Deteriorating

[http://intranet.hne.health.nsw.gov.au/\\_data/assets/pdf\\_file/0005/75911/PD2013\\_049\\_PCP1\\_Recognition\\_and\\_Management\\_of\\_Patients\\_who\\_are\\_Clinically\\_Deteriorating...pdf](http://intranet.hne.health.nsw.gov.au/_data/assets/pdf_file/0005/75911/PD2013_049_PCP1_Recognition_and_Management_of_Patients_who_are_Clinically_Deteriorating...pdf)

NSW Health Policy Directive PD 2007\_052 Sharp Injuries – Prevention in the NSW Public Health System

Work Health and Safety Act 2011 10

<https://www.legislation.nsw.gov.au/#/view/act/2011/10/whole>

<https://www.legislation.nsw.gov.au/#/view/act/2018/12/full>

Work Health and Safety Regulation 2011

<https://www.legislation.nsw.gov.au/#/view/regulation/2011/674>

American Academy of Paediatrics and the American Academy of Paediatric Dentistry Guideline for Monitoring and Management of Paediatric Patients During and After Sedation for Diagnostic and therapeutic procedures. Adopted 2006. Reaffirmed 2011.

[http://www.aapd.org/media/policies\\_guidelines/g\\_sedation.pdf](http://www.aapd.org/media/policies_guidelines/g_sedation.pdf)

Am rein R, Hetzel W, Hartmann D et al. Clinical pharmacology of flumazenil. *Eur J Anaesthesiol* 1988; 2: 65–80

<https://www.ncbi.nlm.nih.gov/pubmed/2842143>

Brennan F, Carr DB, Cousins M. Pain management: A fundamental human right. *Anesth Analg*. 2007; 105(1):205-221.

<https://www.ncbi.nlm.nih.gov/pubmed/17578977>

Cravero, J.P and Hsu, D.C. 2018 Selection of medications for paediatric procedural sedation outside the operating room

[https://www.uptodate.com/contents/selection-of-medications-for-pediatric-procedural-sedation-outside-of-the-operating-room?search=selection%20of%20medications%20for%20paediatric%20procedural%20sedation%20outside%20of%20the%20operation%20room&source=search\\_result&selectedTitle=1~150&usage\\_type=default&display\\_rank=1](https://www.uptodate.com/contents/selection-of-medications-for-pediatric-procedural-sedation-outside-of-the-operating-room?search=selection%20of%20medications%20for%20paediatric%20procedural%20sedation%20outside%20of%20the%20operation%20room&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1)

Cravero, J.P and Hsu, D.C 2018 Preparation for paediatric procedural sedation outside of the operating room

[https://www.uptodate.com/contents/preparation-for-pediatric-procedural-sedation-outside-of-the-operating-room?search=preparation%20for%20paediatric%20sedation%20outside%20of%20the%20operating%20room&source=search\\_result&selectedTitle=1~150&usage\\_type=default&display\\_rank=1](https://www.uptodate.com/contents/preparation-for-pediatric-procedural-sedation-outside-of-the-operating-room?search=preparation%20for%20paediatric%20sedation%20outside%20of%20the%20operating%20room&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1)

National Hand Hygiene Initiative and Hand Hygiene Australia

<https://www.safetyandquality.gov.au/wp-content/uploads/2012/01/HH-Flyer.pdf>

Kennedy RM, Luhmann J, Zempsky WT. Clinical implications of unmanaged needle insertion pain and distress in children. *Paediatrics* 2008; 122 ;( suppl 3) S130–133.

<https://www.ncbi.nlm.nih.gov/pubmed/18978006>

Kupietzky, A. Houpt, M.J Midazolam: a review of its use for conscious sedation of children Paediatric Dentistry: July/August 1993 - Volume 15, Number 4 237.

<http://www.aapd.org/assets/1/25/Kupietzky-15-04.pdf>

Lander JA, Weltman BJ, So SS. EMLA and amethocaine for reduction of children's pain associated with needle insertion. *Cochrane Database Systematic Review*. 2006 Jul 19 ;( 3):CD004236.

<https://www.ncbi.nlm.nih.gov/pubmed/16856039>

Scheepers LD, Montgomery CJ, Kinahan AM et al. Plasma concentration of flumazenil following intranasal administration in children. *Can J Anaesth* 2000; 47: 120–124

<https://www.ncbi.nlm.nih.gov/pubmed/10674504>

Sheta, S. A., & AlSarheed, M. (2009). Oral Midazolam Premedication for Children Undergoing General Anaesthesia for Dental Care. *International Journal of Pediatrics*, 2009, 274380.

<http://doi.org/10.1155/2009/274380>

Stallard P, Williams L, Lenton S, Velleman R. Pain in cognitively impaired, no communicating children. *Arch Dis Child*. 2001; 85(6):460-462.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1718991/>

The Royal Children's Hospital Melbourne, Procedural Sedation for Ward and Ambulatory Care Areas

<https://www.rch.org.au/uploadedFiles/Main/Content/comfortkids/RCHProcedure%20PSWA.Master.10022017.pdf>

The Royal Children's Hospital Melbourne Procedural sedation learning guide for Health care Professionals This edition created by Procedural Pain Program - Comfort Kids.

March 2006 / Revi

[https://www.rch.org.au/uploadedfiles/main/content/comfortkids/procedural\\_sedation\\_teaching\\_package.pdf](https://www.rch.org.au/uploadedfiles/main/content/comfortkids/procedural_sedation_teaching_package.pdf) September 2008

The Sydney Children's Hospital Network-Procedural Sedation (Paediatric Ward, Clinic and Imaging Areas) Practice Guideline

<http://www.schn.health.nsw.gov.au/policies/pdf/2011-9017.pdf>

**ACKNOWLEDGEMENTS:**

Catherine Grahame – Nurse Manager Ambulatory Care John Hunter Children’s Hospital

Camilla Askie -Clinical Practice Improvement Coordinator, Children, Young People and Families

Heather Burnett- Rehabilitation Consultant HNEKidsRehab Service

Jade Starkey- Nurse Manager Acute Services John Hunter Children’s Hospital

Jeffrey Deane- Clinical Nurse Consultant Infection Prevention and Control- John Hunter Hospital

Karen Height – HNEkidsRehab Service Manager

Margaret Allwood- Nurse Educator

Michelle Jenkins- Pharmacist John Hunter Children’s Hospital

Patrick Farrell- Anaesthetist

Sharon Fenwick- Clinical Nurse Consultant HNEKidsRehab Service

Stephen O’Flaherty- Rehabilitation Consultant

**FEEDBACK**

Any feedback on this document should be sent to the Contact Officer listed on the front page.

**APPROVAL**

CPGAG – April 2018

JHH QUM – May 2018

JHCH CQ&PCC – June 2018

## Clinical Audit Tool –

(National Standard 1: 1.7.2 the use of agreed clinical guidelines by the clinical workforce is monitored)

**Reference:** *Electronic audit tool - National Institute for Health and Clinical Excellence (NICE):* <http://www.nice.org.uk/about/what-we-do/into-practice/audit-and-service-improvement/audit-tools>

Criterion no.	Criterion	Exceptions	Definition of terms and/or general guidance	Data source	Frequency	Position Responsible
1	Retrospective time out audits	nil	To ensure mandated identification and time out processes are being conducted according to procedural level.	Notes, DMR	6 monthly	CNC
2	Safe procedural Sedation Audit tool	nil	Audit of safe procedural practices from assessment till discharge	Observational, notes	Quarterly	CNC
3	Sedation/pain score documentation	nil	Evaluate effectiveness of procedural sedation	Notes, DMR	Per clinic	Sedation Nurse/ Child Life Therapist
4	Hand Hygiene Audit	nil	To ensure correct processes surrounding hand hygiene are observed by Clinic staff	Observational Audit	Annually	CNC