

Trust Guideline for the Management of Sedation in Painless Imaging Procedures in Children

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A clinical guideline recommended

For use in:	Children's Day Ward (CDW), Children's Assessment Unit (CAU), Buxton Ward, Radiology.
By:	Paediatric nurses and doctors
For:	Paediatric patients
Division responsible for document:	Women and Children's Division
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Compliance links: <i>(is there any NICE related to guidance)</i>	Sedation for Diagnostic and therapeutic procedures in children and young people- National Institute for Health and Clinical Excellence (NICE); Dec 2010
If Yes - does the strategy/policy deviate from the recommendations of NICE? If so why?	No

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Version and Document Control:

Version Number	Date of Update	Change Description	Author
3		<p>Fasting guidelines changed (as per Trustdocs Id: 16058).</p> <p>Bodyweight 15kg and less added as a requirement for Chloral Sedation.</p> <p>Replaced Appendix 1.</p>	<p>Dr Nicola Conquest</p> <p>Dr Bina Mukhtyar</p>

This is a Controlled Document

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Quick reference guideline/s

Preparation

- Doctor to decide whether sedation is necessary when procedure is requested.
- Give information describing procedure, sedation and requirements e.g. fasting prior to sedation. Please Note: Magnetic resonance imaging (MRI) information sheet with sedation or without sedation [Trustdocs Id: 14746](#) or with general anaesthetic (GA) is sent by the MRI department prior to the procedure along with the appointment letter and MRI Safety Questionnaire [Trustdocs Id: 5246](#)
- **Advise to stop solids and formula milk for 6 hours, breast milk for 4 hours and clear fluids 1 hour ([Trustdocs id: 16058](#)) before sedation.**
- Play Specialist referral for all children with a mental and chronological age of 4 -10 years (older if indicated) via referral form or a copy of scan request.
- Book a bed on Children's Day Ward (CDW) if sedation thought to be necessary.

On admission

- All children needing sedation to be assessed by nurse pre-procedure to determine fitness confirm sedation is necessary and the child is adequately fasted. Senior House Officer (SHO) referral if concerns.
- Complete assessment form. Doctor / Nurse to obtain written consent on the trust

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consent form and doctor to prescribe sedation.

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Sedation

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Play Specialist

Refer any child aged 4 -10 years and older children who may benefit from preparation to Play Specialist at the time of booking. A child friendly environment is required.

Non-pharmacologic techniques should be used for painless procedures whenever possible - e.g. distraction techniques (breathing exercises, bubble blowing, guided imagery). Parents should be encouraged to be involved where possible.

b) If sedation required, book procedure and CDW

A quiet area should be available on the day unit to encourage sleep. **Advise to stop solids and formula milk for 6 hours, breast milk for 4 hours and clear fluids 1 hour ([Trustdocs Id:16058](#)) before sedation** The child should be admitted 2 hours prior to the procedure, assessed by the nurse and venous access obtained. For painless imaging procedures lasting less than 60 minutes, children from 4 months to 4 years of age and body weight of 15 kg or less, may be sedated using Chloral Hydrate. Consent for sedation must be obtained on the Trust consent form and admission sheet completed (Appendix 1). Parents should be informed about the potential side effects of sedation (gastric irritation, nausea, vomiting, respiratory depression, confusion, headache, incoordination, hypersensitivity reactions) and the possibility of sedation failure.

Pulse oximetry should be attached as soon as the child permits. Continuous pulse oximetry and observations (pulse rate and resp. rate, recorded every 30 minutes) should be continued from the time of administration of sedation until discharge criteria are met. Transfer to the relevant department should be short and smooth. Nurse sedation practitioner should accompany the child at all times. Resuscitation equipment (bag and mask) should be available at all times.

It is a consultant decision to sedate a child who is suspected to have raised intracranial pressure.

This guideline is for well children requiring outpatient MRI scans. If an inpatient MRI scan is needed, caution needs to be used in prescribing and administering sedation to unwell children- particularly in children needing oxygen, respiratory support or have an altered consciousness level. This should always be a Consultant decision, and, the dose of sedation will need to be significantly reduced after discussion with the Consultant in charge.

Sedative medication

Chloral hydrate 100mg/Kg, 30 minutes before the procedure is the drug of choice and seems to work best among the various oral sedation agents tried so far. It belongs to the non-benzodiazepine hypnotics and sedatives family and is an anxiolytic and hypnotic. One study reported a 1% failure rate (out of 205 patients) where children were

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insufficiently immobilised to allow the scan to be finished when oral chloral hydrate was used (i). No adverse events occurred relating to the airway or breathing. Other oral sedative agents such as Midazolam and Quinalbarbitone have been tried in the past with less successful results. If oral route not available, rectal Chloral hydrate can be used,

Chloral hydrate usually works within 15-30 minutes and wears off in 60-120 minutes. It works better on an empty stomach. It is a sedative, not an analgesic. As procedures can be delayed, the relevant departments must inform the Children's Day Ward staff 30 minutes before the procedure, so the medication can be administered on time.

During MRI scans

Head should be positioned in extension within the coil for a clear airway. Specialised MRI compatible continuous pulse oximetry monitoring equipment should be used. Child should be under continuous observation with the nurse present.

General Anaesthetic

To be considered for all interventional procedures, painless procedures lasting longer than 60 minutes and after failure with oral sedation.

Recovery and Discharge criteria

After the procedure, the patient may be discharged if the following criteria are met:

- Airway patent and stable unsupported, Oxygen saturation >95% breathing air.
- Easily rousable.
- Haemodynamically stable.
- Able to tolerate drink / food with no nausea or vomiting.

Rationale for the recommendations

Many techniques in diagnostic radiology such as MRI, CT and Nuclear medicine scans and other tests such as EEG require the child to be absolutely still for acquisition of images. These may take from a few minutes (modern CT) up to an hour (Nuclear medicine or MRI). Once venous access has been established, these examinations are painless. Once the child is positioned for the procedure, he/she need not be disturbed further. Many of these painless procedures may be accomplished without pharmacological intervention if there are child-friendly facilities, good preparation procedures for child and family, a cooperative child and modern imaging equipment. In very young children however, these procedures may not be possible without the use of adequate sedation or occasionally a general anaesthetic.

Objective of Guideline

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To standardise the way in which sedation is provided for painless procedures such as radiology while ensuring that they are performed in a safe environment.

Clinical Audit Standards derived from guideline

Manage children for imaging according to the guideline. Children requiring sedation should have documentation on observation sheets if sedated. Observation sheets to be audited for documentation and successful sedation. A sedation failure rate of less than 5% is to be taken as the audit standard.

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Summary of development and consultation process undertaken before registration and dissemination

Presented in Paediatric guideline meeting and reviewed by all consultant Paediatricians, Radiologists, Radiographers, Nursing and Play Specialist staff. Any comments incorporated after due consideration and discussion. Final content agreed and submitted to the Clinical Guidelines Assessment Panel.

Distribution list / dissemination method

Buxton ward, Children's Day Ward, Children's Assessment Unit, Paediatrics, Radiology and NNUH Trust intranet

References:

Management of Pre-operative Food, Drink and Oral Medications in Paediatric Patients Prior to Surgery [Trustdocs Id: 16058](#)

Sedation for Diagnostic and therapeutic procedures in children and young people- National Institute for Health and Clinical Excellence (NICE); Dec 2010

Source documents:

British National Formulary for Children, BNFC (2021) <https://bnfc.nice.org.uk/>

Having an MRI Scan under Oral Sedation (Children) - Information for Parents and Carers [Trustdocs Id: 14746](#)

MRI Safety Questionnaire [Trustdocs Id: 5246](#)

National Institute for Health and Clinical Excellence (NICE), (2010) Sedation for Diagnostic and therapeutic procedures in children and young people

Olson DM, Sheehan MG, Thompson W et al. (2001) Sedation of children for electroencephalograms. *Pediatrics vol 108 No.1, pp 163-165*

Safe sedation of children undergoing Diagnostic and Therapeutic procedures (2004) *Scottish Intercollegiate Guideline Network (SIGN) guidelines*

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Medication and Assessment Chart

Appendix 1

Record all dates as dd/mm/yyyy and times in 24 hour clock

Procedure			
Reason / problem			
Brief history with any recent illnesses / concerns			
Past Medical History			
Regular medications			
Known allergies			
Weight (kg)		Temperature	
Examination Findings			
Information sheet given	<input type="checkbox"/>	Duration of fasting	
Play specialist involved	Yes <input type="checkbox"/> N/A <input type="checkbox"/>		
Doctor name		Signature	
Designation		Date	

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Sedation			
Drug		Dose	
Route and time given		Consent obtained	
Time sedated			
Observations	<ul style="list-style-type: none"> • Continuous O₂ saturations via pulse oximetry and presence of sedation practitioner during procedure. • Once sedated, respiratory rate, heart rate should be checked ½ hourly until awake and documented in Patient Care Record. • Request medical assessment if not awake in 4 hours 		
Outcome	Successful scan <input type="checkbox"/> Unsuccessful scan <input type="checkbox"/> If unsuccessful, reason: Any other comments:		
Discharge time			
Nurse name		Signature	
Designation		Date	