MILD HEAD INJURY: NEUROSURGICAL INPATIENT PAIN MANAGEMENT - CHW

PRACTICE GUIDELINE ©

DOCUMENT SUMMARY/KEY POINTS

For the purposes of this document, mild head injury is defined as an acute blunt head trauma (with or without loss of consciousness or amnesia) that does not depress the victim's Glasgow Coma Score (GCS) below 14.

- This document applies only to children admitted **under the care of the neurosurgical team in an inpatient area,** who have sustained an isolated mild head injury.
- This document **does not** apply to children with significant pre-existing illnesses, major and/or open head injuries, multiple injuries nor children receiving post-operative care.
- Close observation of neurological state and vital signs is **mandatory**
- 1st-line analgesic is oral paracetamol (for dosing see Table 1)
- 2nd-line is Oxycodone, administered **only** after consultation with neurosurgical team (for dosing see Table 2). Always prescribe an exact dose, not a dose range.
- Children **must** have continuous pulse oximetry for at least 3 hours after any oxycodone dose.
- Oxycodone or other opioids should only be used if the patient has been stable for at least 2 hours and GCS is ≥ 14.
- Do not use other sedatives if opioids are used.

Related Guidelines

NSW Health Clinical Practice Guideline

- Acute management of children with head injuries – the first 24 hours: http://webapps.schn.health.nsw.gov.au/epolicy/policy/3581

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CHANGE SUMMARY

- Mandatory review – no changes.

READ ACKNOWLEDGEMENT

- Clinical staff (Nursing and Medical) caring for patients with a mild head injury should read and acknowledge this document.

TABLE OF CONTENTS

Pain management for children with a mild head injury

General points

- Mild Head injury is defined as acute blunt head trauma (with or without loss of consciousness or amnesia) that does not depress the victim's Glasgow Coma Score (GCS) below 14.
- This guideline is applicable to a child admitted under the care of the neurosurgical team following acute isolated blunt head trauma with or without a defined history of loss of consciousness or amnesia.
- It **does not cover** children with major and/or open head injuries, multiple injuries nor children receiving post-operative care. In addition to this, it does not cover children with significant pre-existing illnesses due to the implications of, and variable nature of response to, opiate administration.
- Analgesia in children with significant head injuries remains an integral part of the overall neurosurgical management.
- Close observation of the neurological state and level of sedation are mandatory. Vital signs (respiratory rate, and heart rate), coma score and pain scores must be documented regularly at intervals dependent on the clinical status of the child – minimum fourth hourly.

Special precautions

- Paracetamol should be used in the first instance.
- Paracetamol should not be administered to children for more than 48 hours regularly without medical review (refer to section 4.1.2 of the CHW Pain Management Practice Guidelines).
- Oral opioids (typically oxycodone) can be prescribed **only** after consultation occurs with senior neurosurgical staff i.e. the neurosurgical registrar or consultant.
- Opioids should only be used if the patient's neurological state has been stable for at least two hours and they achieve a GCS of ≥ 14.
- In order to minimise risk the following principles should be observed:
    - multiple sedative drugs should not be prescribed
    - the drug formulation must be clearly articulated when alternatives exist,
    - analgesic drugs should be prescribed as a single appropriate dose, **not** a dose range.

Analgesia

Analgesia in the head injured child aims to afford a level of comfort that allows age-appropriate feeding and toileting. Residual discomfort should be responsive to parent/ carer consoling.

1. Paracetamol

Paracetamol is the drug of first choice where no contra-indications exist (e.g. allergy, known liver disease). Paracetamol may be prescribed on a regular dosing schedule, rather than on a PRN basis, for up to 48 hours.

Table 1: Paracetamol dosing guideline

PARACETAMOL								
	Oral			Rectal				
Age group	Loading Dose (mg/kg)	Maintenance Dose (mg/kg)	Dosing interval (h)	Loading Dose (mg/kg)	Maintenance Dose (mg/kg)	Dosing interval (h)	Maximum Daily dose mg/kg/d	Duration at maximum dose (h)
0-6 mo	20-30	15-20	8	30	20	8	60	48
>6mo	20-30	15	4-6	40	20	6	90	48

NB: A loading dose is appropriate and valuable where **no** paracetamol has been administered in the preceding 12 hours. Check all previous paracetamol administrations before prescribing a loading dose.

NB: In order to minimise risk there should only be one current paracetamol order. If paracetamol is prescribed as a regular dose, any paracetamol order on the PRN chart should be ceased for this period in order to reduce the risk of inadvertent multiple dosing.

Paracetamol should not be administered to children for *more than* 48 hours without seeking medical review.

Dosage guidelines are based on lean body weight (LBW). For obese children, this is less than their measured weight. Prescriptions should specify the maximum daily dose. Doses should be expressed in milligrams.

2. Oxycodone

If paracetamol is ineffective a dose of oral oxycodone can be administered in consultation with a senior member of the neurosurgical team, i.e. the neurosurgical registrar or consultant.

- Oxycodone is a potent opioid. Its side effects include sedation and respiratory depression. Children receiving oxycodone must have their neurological status and vital signs closely monitored, and pain scores need to be documented a minimum of 4th hourly on the clinical observation chart (M34). These children should also have continuous pulse oximetry in place, for a period of at least three hours following administration of the dose.
- Oxycodone **should not** be prescribed for head-injured children under 6 months of age.

Table 2: Oxycodone dosing guideline

OXYCODONE			
Dose	Dosing interval	Maximum	Formulations available
0.1mg/kg	4 hourly PRN	5mg	Oxynorm syrup 1mg/mL Oxycodone tablets 5mg

Precautions

Prior to prescription of an opioid for a child with a head injury ensure:

1. The decision to prescribe an opioid is made in consultation with a senior member of the neurosurgical team – the neurosurgical registrar or consultant
2. Glasgow Coma score has been stable and ≥ 14 for at least 2 hours
3. The child is not irritable in a purposeless fashion
4. There is no un-explained parental/ carer anxiety i.e. the parents or caregiver cannot account for the child's distress with something that is familiar to them such as hunger or fatigue.
5. Continuous pulse oximetry is in place for at least three (3) hours following dosage
6. If there is any doubt around the appropriateness of administering the prescribed opioid, consultation should occur with the neurosurgical medical officer
7. Due to the rise in plasma levels of oxycodone after repeated doses, in instances where children receive multiple doses of oxycodone i.e. ≥ 3 doses or it is anticipated that further doses will be required, continuous pulse oximetry is to remain in place until at least 3 hours following the last dose.

Observation Protocol

- All children admitted with head injuries must have a baseline blood pressure attended, and their neurological state (coma score), temperature and pulse recorded hourly until medically reviewed. See Coma record chart (M33A).
- Children who have received oxycodone must have continuous pulse oximetry in place for at least 3 hours following dosage, and have their pain scores documented a minimum of 4th hourly on the base of clinical observation chart (M34). The reverse side of this chart provides a guideline to the assessment of pain severity.

References

1. Robert F. Reder, Benjamin Oshlack, Jahanara B. Miotto, David D. Benziger, Robert F. Kaiko. 1996, 'Steady-state bioavailability of controlled-release oxycodone in normal subjects', *Clinical Therapeutics,* vol.18, no.1, pp. 95-105