

Guidance document for emergency management of paediatric fracture requiring manipulation at CUH

Objective:

To minimise physical and psychological trauma during emergency fracture manipulation through the safe administration of procedural sedation by appropriately trained staff.

The Orthopaedic and Emergency Medical teams seek to provide a safe, patient centric, efficient service within available resources.

Guiding principles:

- 1. Safety:** Paediatric procedural sedation is associated with risk. The provision of sedation must be undertaken by staff who have received training in paediatric procedural sedation. The procedure is to be done in an appropriately monitored setting having performed a risk assessment of the child including airway, fasting status, explanation to family etc. In the Emergency Department, Emergency Medicine (EM) staff will be trained and permitted to deliver sedative / dissociative medications e.g. pentrox, nitrous oxide, ketamine. Should other non-anaesthetic trainees wish to avail of this training and become credentialed contact rory.obrien1@hse.ie.
- 2. Patient-centered:** Staff will use appropriate analgesic strategies and only perform painful procedures when the child is sedated to a level deemed suitable by EM medical staff.
 - Intranasal fentanyl alone is not a sedative, it can be used as an analgesic.
 - Pentrox (methoxyflurane) is licenced for use in Ireland for analgesia in 18 year olds and over; it is not licensed for procedures; Galen, the company who sell pentrox in Ireland provide a training workshop which is required in advance of becoming an administrator of pentrox.
 - High concentration nitrous oxide may be suitable for simple reductions such as angulated greenstick fractures of the forearm in carefully selected patients.
 - Intravenous or intramuscular ketamine provides analgesia and sedation for complex reductions and more painful procedures but requires the availability of a resuscitation space for safe administration.
- 3. Timeliness and Equity:** Limb threatening injuries requiring manipulation will be prioritised in the ED and facilitated by the EM staff when deemed safe by the most senior EM doctor on duty in collaboration with the CNM2 shift leader in ED, taking into consideration other emergencies and prioritising resource availability to need. Situational factors, the availability of an appropriate space with the required monitoring, resuscitation room activity affect the availability of staff and space to perform paediatric sedation. If no appropriate location or staff available in the ED, and no prospect of staff and space becoming available – the child may require transfer to theatre for a manipulation under general anaesthetic as a safer alternative than delaying a time critical manipulation. The orthopaedic and Emergency medicine consultant should be alerted in these instances.
- 4. Effectiveness/Efficiency:** Sedations should not be undertaken in the ED for children who will ultimately require operative fixation in the absence of any neurovascular compromise. These patients should be placed in a backslab splint for comfort while awaiting the operating theatre.

The Emergency and Orthopaedic Departments fully support the British Orthopaedic Association Standard for the early management of the paediatric forearm fracture.



British
Orthopaedic
Association



The Royal College of
Emergency Medicine

BOA STANDARD

Early Management of the Paediatric Forearm Fracture

May 2021

Background and justification

The most common site of fractures in children is the forearm. Casting is the gold standard of care for most fractures as children have a capacity to remodel following fracture union, permitting the bones to heal with a greater degree of angulation or displacement than could be accepted in an adult without long-term consequences. The wrist is more tolerant of angulation and displacement than the forearm shaft. For the majority of forearm fractures that exceed remodelling potential, early closed reduction by manipulation, avoiding the need for admission and general anaesthesia is the treatment of choice.

Inclusions:

Skeletally immature patients seen in Emergency Departments following an angulated (but not off-ended) forearm fracture.

Exclusions:

Fractures that following interdisciplinary discussion require management in the operating theatre due to either patient or injury related factors.

Standards for Practice

1. All units managing children's forearm fractures should have protocols to enable early, definitive manipulation and casting without necessitating admission. This protocol should specifically address processes around procedural analgesia and sedation as well as the timely response to manipulation.
2. A documented assessment of the limb, performed on presentation, should include the status of the radial pulse, digital capillary refill time and the individual function of the radial, median and ulnar nerves.
3. At the time of initial assessment, effective analgesia should be administered. Pain scores should be recorded frequently, to ensure that pain relief is maintained throughout.
4. Orthogonal X-rays should be available to allow proper diagnosis and planning.
5. The child, if competent, carers and clinicians must agree with the intervention. Formal consent should be documented according to local protocols.
6. Manipulation of children's fractures should occur in a location suitable to ensure safe practice with monitoring and appropriate facilities to afford effective treatment and casting, managing complications of and recovery from medication.

7. Manipulation of a child's forearm fracture should be performed by competent orthopaedic practitioners, as defined by local protocols.
8. Manipulation of a child's forearm fracture should be followed by orthogonal X-rays.
9. Before discharge a recorded assessment of the neurovascular status of the limb should be repeated as described in standard two.
10. Oral analgesia to take home and dedicated information leaflets, that include red flag symptoms and contact details, should be provided. Prior to discharge, a fracture clinic appointment should be made to occur within 7 days of injury.
11. A documented review of the case and images by a consultant orthopaedic surgeon should occur within 48 hours of injury.
12. Regular multi-disciplinary audit against the above standards should be undertaken, which should include monitoring of the rate of admission for further procedures on the limb.