Manipulation of Fractures in the Paediatric ED

	Title of Guideline	Guideline for the manipulation of fractures in the Paediatric Emergency Department
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	Directorate & Speciality	Directorate: Family Health – Children Speciality: Emergency
	Date of submission of this one	December 2018
	Date when guideline to be reviewed	December 2021
	Guideline Number	2070 – Version 3
	Explicit definition of patient group to which it applies (e.g. inclusion and exclusion criteria, diagnosis)	Children and young people presenting to the Paediatric Emergency Department with closed limb fractures
	Abstract	This guideline describes the types of fracture, types of analgesia and standard operating procedure for manipulation of closed limb fractures in the Paediatric Emergency Department
	Key Words	Paediatrics. Children. Fracture. Manipulation. Entonox
	Statement of the evidence base of the guideline – has the guideline been peer reviewed by colleagues?	
1a	meta analysis of randomised controlled trials	Put a cross (X) in the highest level of evidence.
1b	At least one randomised controlled trial	
2a	at least one well-designed controlled study without randomisation	
2b	at least one other type of well-designed quasi-experimental study	
3	well –designed non-experimental descriptive studies (ie comparative / correlation and case studies)	
4	expert committee reports or opinions and / or clinical experiences of respected authorities	
5	recommended best practise based on the clinical experience of the guideline developer	x
	Consultation Process	Orthopaedic and Emergency Department Team; Staff at Nottingham Children's Hospital via the Guidelines E-mail process.
	Target audience	Medical and nursing staff working within the Emergency Department, and orthopaedic junior medical staff reviewing patients in the Paediatric Emergency Department
	This guideline has been registered with the trust. However, clinical guidelines are guidelines only. The interpretation and application of clinical guidelines will remain the responsibility of the individual clinician. If in doubt contact a senior colleague or expert. Caution is advised when using guidelines after the review date.	

Document Control

Document Amendment Record

Version	Issue Date	Author
V1	2012	
V2	2015	Kathryn Price StR Trauma and Orthopaedics Clare Dieppe Lead Consultant for Paediatric ED James Hunter Consultant Trauma and Paediatric Orthopaedic surgeon
V3	2018	Philip Dykes Lead Consultant for Paediatric ED James Hunter Consultant Trauma and Paediatric Orthopaedic surgeon

Summary of changes for new version:

- Entonox – can be given to under 5's if they are able to co-ordinate
- Analgesia and entonox commenced 10 mins before procedure
- Displaced off ended distal radius fracture reductions
- Removal of haematoma block

Statement of Compliance with Child Health Guidelines SOP
This guideline refers to activities of a specific team and consultation has taken place with relevant members of that team for this updated version. Therefore this version has not been circulated for wider review.
Maria Moran, Clinical Guideline Lead
10th January 2019

Manipulation of fractures in the Paediatric Emergency Department

The purpose of this guideline is to identify suitable fractures for manipulation under analgesia and entonox in the Paediatric ED, allowing more appropriate and timely treatment of these injuries. Analgesia is provided by a range of drugs that includes simple analgesia such as paracetamol and ibuprofen, and opiates given via the oral, intravenous or intranasal routes. Light sedation can be provided by the use of entonox.

Fractures considered appropriate for manipulation in Paediatric ED fulfil the following;

1. Simple fracture which is **angulated or partly displaced**
2. The fracture is easily **reducible with a simple reduction manoeuvre** preferably at the first attempt
3. The fracture position can be improved to avoid a general anaesthetic.

Examples - this is not an exhaustive list

a. Angulated diaphyseal fractures of forearm
b. Angulated metaphyseal fractures of wrist
c. Salter Harris 1 and 2 fractures that have not shortened (ie will thumb back)
d. Angulated humeral fractures
e. Simple ankle fractures

For example; 

*__Displaced 'off ended' distal radius fractures__

- Requires rough alignment in the those aged under 10 years of age
- Patient must be able to tolerate the procedure using IN diamorphine or fentanyl +/- Entonox
- Technique involves gentle pulling on middle and ring fingers whilst traction administered at the elbow
- Rough alignment with both fragments straightened
- Overlapping of fragments accepted – do not need to have ends opposed
- Registrar and above only
- Only one attempt allowed

NB ANYONE AGED 11 OR ABOVE WITH AN OFF-ENDED DISTAL RADIAL FRACTURE REQUIRES THEATRE FOR REDUCTION.

Fractures **NOT** to be manipulated in Paediatric ED

1. The fracture is in an acceptable alignment or will remodel without intervention
2. The manipulation **will require traction and complex reduction** manoeuvres
3. There is a complex injury which **will require operative stabilisation** regardless of manipulation
4. Open fractures that require operative debridement

Joint dislocations

Shoulder and elbow dislocations without fracture need to be reduced as soon as possible in the ED. Shoulder dislocation is less common in children than adults and may require additional sedation with for example midazolam. Elbow dislocation is more common and can normally be reduced with analgesia plus entonox alone. Check carefully that there is no radial head or neck fracture.

Procedure

1. After referral to orthopaedic team, orthopaedic registrar needs to discuss manipulation with ED Registrar / Consultant to agree suitability, and ensure that department aware.
2. Orthopaedic team to obtain consent from parents and document this clearly in the notes.
3. Procedure must take place in the Paediatric ED, in the treatment room or plaster room (or occasionally a bedspace), not in the adult plaster room
4. A Paediatric ED nurse must be present to administer entonox and ensure the child is tolerating the procedure
5. Child ideally should be 5 years or over – however, if staff feel that a younger child can co-ordinate the use of Entonox then this is acceptable
6. Once the orthopaedic registrar is ready to do the procedure the child must be given intranasal diamorphine if they have not had a dose within the last 2 hours. They also need 10 minutes preparation time with the nurse, familiarising themselves with Entonox and developing an appropriate level of analgesia. The procedure cannot be commenced until the nursing staff are happy with the level of analgesia.
7. If at any time the child becomes unacceptably distressed or the parents are unhappy to continue with the procedure then there

should be no further attempts at manipulation in ED. It must be remembered, however, that one successful attempt despite manageable distress is better than a failed procedure and a subsequent general anaesthetic

8. After reduction in ED, a full plaster must be applied and check X-ray performed

9. After X-ray, split plaster and check finger movements

10. Book into next available fracture clinic appointment