

Local Guideline & Procedure



John Hunter
Children's Hospital
CHILDREN, YOUNG PEOPLE AND FAMILIES



Health
Hunter New England
Local Health District

Document Number: JHH_JHCH_0125

Paediatric skin traction in the Emergency Department

Sites where guideline and procedure applies: John Hunter Hospital & John Hunter Children's Hospital

Target audience: JHH Emergency Department and JHCH wards

Description: Application of skin traction to children in ED

This local guideline and procedure applies to:

- | | |
|---------------------------------|-----|
| 1. Adults | No |
| 2. Children up to 16 years | No |
| 3. Neonates – less than 29 days | Yes |

Approval gained from the Children Young People and Families Network December 2017

Keywords: JHH, JHCH, JHH ED, children, orthopaedic, straight leg, lower limb

Go to [Guideline](#) or
[Procedure](#)

Replaces Existing Guideline/procedure No

Registration Number(s) and/or name and of Superseded Documents:

Relevant or related Documents, Australian Standards, Guidelines etc:

- NSW Health Policy Directive PD2017_032 [Clinical Procedure Safety](#)
- NSW Health Policy Directive PD2005_406 [Consent to Medical Treatment](#)
- NSW Health Policy Directive PD 2017_013 [Infection Prevention and Control Policy](#)
- NSW Health Policy Directive PD2012_069 [Health Care Records – Documentation and Management](#)
- NSW Health Policy Directive PD2013_007 [Child Wellbeing and Child Protection Policies and Procedures for NSW Health](#)
- NSW Health Policy Directive PD2011_015 [Care Coordination: Planning from Admission to Transfer of Care in NSW Public Hospitals](#)
- HNELHD Policy Pol 15_06 [Patient Identification](#)
- NSW Health Policy Directive PD2009_060 [Clinical Handover – standard key principles](#)
- NSW Health Policy Directive PD2014_007 [Pressure Injury Prevention and Management](#)
- HNE LHD Policy Compliance Procedure PD2014_007:PCP1 [Pressure Injuries: Prediction, Prevention and Management](#)

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/>

Prerequisites: Nil

Local guideline note : This document reflects what is currently regarded as safe and appropriate practice. The guideline section does not replace the need for the application of clinical judgment in respect to each individual patient but the procedure/s require mandatory compliance. If staff believe that the procedure/s should not apply in a particular

clinical situation they must seek advice from their unit manager/delegate or the patient's medical officer and document the variance in the patient's health record.

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Authorised by:	JHH Clinical Quality and Patient Care committee
This local guideline contains advice on therapeutics	No
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PURPOSE AND RISKS

This local clinical guideline and procedure has been developed to provide instruction to the healthcare worker and to ensure that the risks of harm to the child associated with application of traction are identified and managed.

Any unplanned event resulting in, or with the potential for, injury, damage or other loss to the child as a result of this clinical procedure must be reported through the Incident Information Management System. This would include unintended patient injury or complication from treatment that results in disability, death or prolonged hospital stay and is caused by health care management.

Open Disclosure procedures must be commenced to ensure the concerns of the patient are identified and managed in accordance with Ministry of Health Policy Directives. The Policy Directives and Guidelines for managing complaints and concerns about clinicians should be used in conjunction with other relevant NSW Health Policy Directives that govern the behavior and actions of all staff.

Risk Category: Clinical Care & Patient Safety

GLOSSARY

Acronym or Term	Definition
Traction	A pulling force on an extremity designed to achieve a desired therapeutic outcome
Skin traction	Traction that is applied via adhesive tape applied on the skin
Pulley	A device that is designed to allow rope to move freely through it in a desired direction
Traction frame	A frame that supports pulleys and rope for traction
Footplate	The square plastic spreader that sits below the bottom of the child's foot when in skin traction
Hydrocolloid	A malleable adhesive skin dressing applied with the intention of protecting the skin under the skin traction
Fracture	A complete or incomplete break in a bone resulting from force
Weight bag	A weighted bag that provides a specified amount of pull on the skin traction device
Ischaemia	Insufficient blood supply to a part of a body due to a mechanical obstruction

GUIDELINE

This Guideline does not replace the need for the application of clinical judgment in respect to each individual patient.

Indications for skin traction

- Short term therapy for patients with femoral fractures, hip dislocations and /or septic joints waiting for definitive treatment
- Post-reduction treatment for hip dislocation
- Muscle spasm prevention/reduction
- Limb pain
- Risk of joint contractures

PROCEDURE

The procedure requires mandatory compliance.

This is a Level 1 clinical procedure or a Level 3 procedure if procedural sedation or regional anaesthesia is required.
Refer to [PD2017_032](#)

Patient Preparation

It is mandatory to ensure that the parents / carers have received appropriate information to provide informed consent. Patient identification, correct procedure and correct site process must be completed prior to any procedure.

Prior to Application

- Assess the child's skin integrity and skin history, i.e., eczema, wounds
- Perform a neurovascular assessment
- Ensure all the equipment is available BEFORE the administration of secondary analgesia

Analgesia Management

- The child should be calm, relaxed and free of pain prior to the procedure
- Analgesia must be available prior to the procedure
- A femoral nerve block and opioid, may be required (see paediatric femoral fracture flowchart)

Parent Preparation

Parents should have an initial treatment plan explained to them.

It is recommended the parents stay with their child and are included in the procedure. The parent's role and ability to cope with the procedure should be ascertained before the procedure commences.

Staff Preparation

It is mandatory for staff to follow relevant: "Five moments of hand hygiene", infection control, moving safely/safe manual handling, documentation practices and to use HAIDET for patient/carer communication: **H**and Hygiene, **A**cknowledge, **I**ntroduce, **D**uration, **E**xplanation, **T**hank you or closing comment.

NOTE

Planning, co-ordination of staff and preparation of equipment is key to ensuring the patient has a positive experience.

A. PRESCRIBING TRACTION

The admitting team should give instructions for skin traction to be applied. The team should prescribe the definitive traction plan in the notes before the patient leaves the emergency department. To avoid confusion, traction should be prescribed in metric not imperial measurements.

NOTE
FOR CHILDREN GOING INTO GALLOW'S TRACTION
(CHILDREN UNDER 2 YEARS, WEIGHING < 12kg)
Place skin traction on both legs

B. REMOVAL OF THE AMBULANCE SPLINT

The ambulance splint provides immobilisation and length to the fractured limb.



Figure 1. Example of an ambulance splint.

Removal of the splint may be the most painful part of the patient's hospital experience. The quadriceps muscle group is the largest in the body. When the femur is fractured, the muscles will always try to remain at their shortest position. They will pull the bone ends into an overlapping position. This creates strong spasms and can be extremely painful for the patient. Providing traction via a splint, manually or with skin traction will prevent or reduce the spasm.

NOTE:

The splint should be removed gradually and slowly while another staff member provides an equivalent amount of pull on the limb (manual traction) to prevent muscle spasm.

The skin traction should be applied immediately after the ambulance splint is removed. A weight bag should be tied to the skin traction kit and hung at the end of the bed to replace the traction lost from the ambulance splint. The weight should be approximately 10% of the child's weight up to a maximum of 2.2kg.

C. APPLYING TRACTION

Skin traction is clinical treatment. It must be applied by competent clinical staff. A minimum of two clinicians are required for skin traction application.

It is recommended traction is applied by clinicians who have some experience with skin traction application or at least under instruction from an experienced clinician.

The procedure will take approximately 20 minutes. It should be done immediately after the nerve block is found to be effective and the ambulance splint is removed.

Equipment

- Alcohol based hand rub for staff
- Personal Protective Equipment for staff according to standard and transmission based precautions
- 1 x skin traction kit (for children over 12 kg)
- 2x skin traction kits (for children \leq 12kg)
- Adult kits should be used for children over 3 years
- Non-sterile scissors
- Tape
- 1 x water weight bag – do not use sand bags or IV bags
- Hydrocolloid (Comfeel or Duoderm thin) to place under the skin traction
- Electronic scales (baby scales)
- A jug full of tap water
- A bed with a traction frame
- Clean with neutral detergent soaked cloths, detergent wipe and/or disinfection wipe if required.



Figure 2. Equipment required for application of straight leg traction (2 x traction kits are required for children going into Gallows' traction – see flowchart Appendix 1).

1. Pre-procedure

STOP and confirm the following before commencing the procedure

- Patient identification (full name, date of birth and MRN)
- Procedure verification - procedure + site/side/level, where appropriate, matches consent/ health care record
- Allergy/adverse reaction check
- Anticipated critical events

If procedural sedation or regional anaesthesia is required refer to level 3 clinical procedure safety checks in [PD2017_032](#)

2. Potential Risk Factors

The arrows highlight areas at risk of damage from traction therapy. Constant force and pressure can damage nerves, expose tendons, cause pressure injuries over bone and restrict blood flow to the limb.

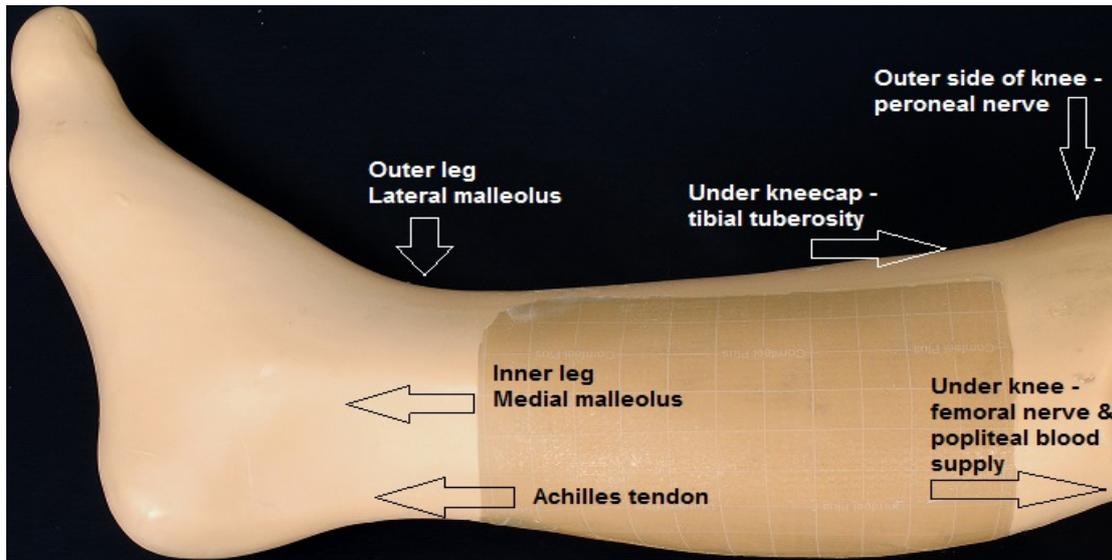


Figure 3. Arrows identify the areas that are at risk of damage from pressure and force.

3. Protective Dressings

Cut and place a hydrocolloid dressing on either side of the child's lower leg. This will protect the skin from the adhesive tape in the traction kit. Measure and cut to size before the ambulance splint is removed.

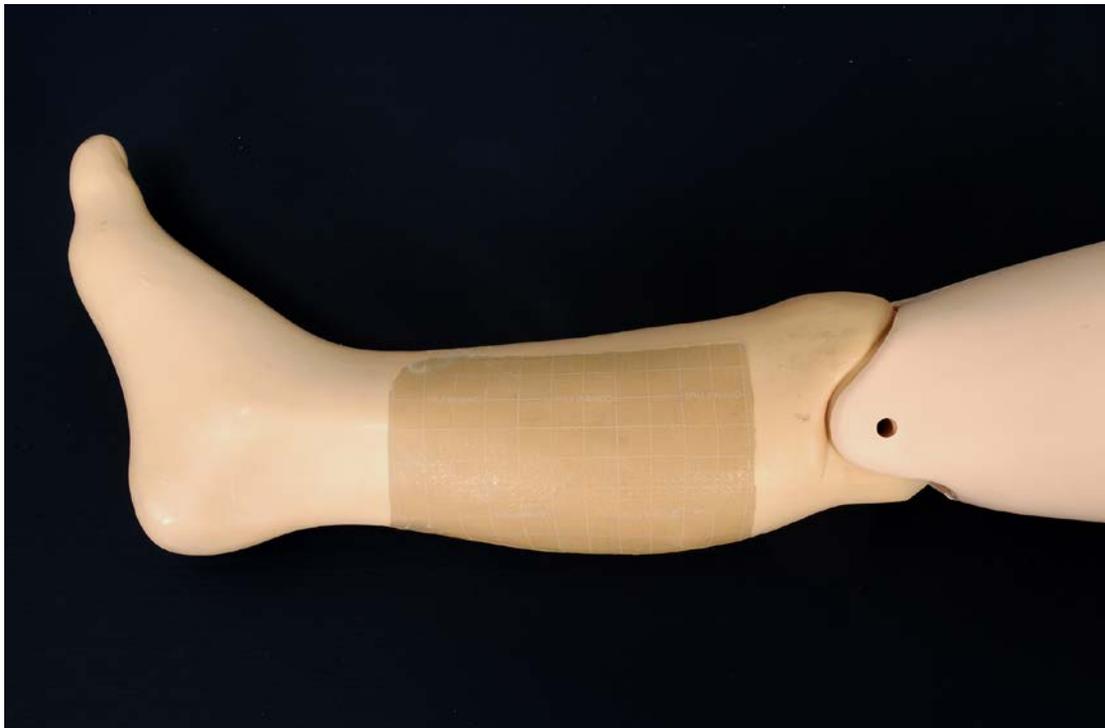


Figure 4. Hydrocolloid dressings are placed on either side of the leg to protect the skin.

4. Measuring the Traction Tape

- Measure and cut the traction tape before the ambulance splint is removed.
- Hold the traction tape up against the child's leg before you peel off the backing paper.
- Hold the foot plate away from the child's foot. Feel where the ankles are and hold the edge of each end of the foam on the ankles.
- Place the tape along the length of the leg before removing the backing paper. Cut the tape to its correct length. The tape should be 1cm below the kneecap and 1cm above the lateral and medial malleoli (ankle).
- Do not place the skin traction above the knee or below the ankle.



Figure 5. Measuring and placing the traction tape on the leg.

- Ensure there is a gap between the foot plate of the traction kit and the end of the child's foot. The child should not be able to touch the kit with their toes when their foot is extended.
- If the foot plate is placed too close to the child's foot, the child is able to manipulate the foam with their toes and can loosen and detach the skin traction.
- Avoid wrinkles in the tape.
- Wrap the bandage around the leg – avoiding the potential areas of risk. There is no evidence that one wrapping style is more effective than another, however, figure 8 is preferred.
- The bandage should be secured with tape. Do not use the metal fasteners in the skin traction kit. Do not place adhesive tape circumferentially around the child's leg.



Figure 6. Pull rope through the footplate holes with a long and short piece.

- Pull one end of the rope through the footplate so that there is a shorter piece of rope approximately 10-15 cm in length. Tie the two parts of the rope in a firm knot at the end of the footplate. This should leave you with a single, long piece of rope.

5. For Children over 12kg who will be having Hamilton-Russell Traction



Figure 7. After tying the knot, thread the single strand of rope through a pulley at the end of the bed.

Calculate the weight at between 5-10% of the child's weight. Place the water in the weight bag.



Figure 8. The rope is threaded through a pulley and the weight bag hangs at a 90° angle.



Figure 9. Ensure the bag is hanging free of the bed and the floor.

6. Counter-traction

Once the traction has been applied, and the weight has been added, the bottom/foot end of the bed must be tilted upwards to approximately 20° to produce counter-traction. Without counter-traction, the skin traction is ineffective.

NOTE

FOR CHILDREN GOING INTO GALLOW'S TRACTION (CHILDREN UNDER 2 YEARS, WEIGHING < 12kg)

1. Make sure the child has had a nerve block or equivalent appropriate analgesia
2. Place the child on the traction cot
3. Apply skin traction to both legs (same procedure as described above)
4. Do not apply the weight bags – position the child's fractured leg for comfort
5. The ward staff will place the child into Gallows' traction on the ward
6. (refer to flow chart Appendix 1)

7. After the traction is applied

Once the weight is gently placed on the leg, the child may feel some initial discomfort; however, this should be minimal and transient. If the child is still unsettled after 10 minutes, assess the child and check the traction. If no corrective intervention can be identified - request a clinical review within 30 minutes.

Provide education to child and/or parent about care of traction and any problems they need to report.

8. Post procedure

- Document procedure and procedural safety checks in patient's health care record
- Provide advice for clinical handover
- Label any specimen/images
- Order / arrange post procedure tests where clinically relevant

9. PROBLEM SOLVING

PROBLEM	WHAT IS THE GOAL FOR THE CHILD?	WHAT ARE YOU GOING TO DO ABOUT THE PROBLEM?	HOW ARE YOU GOING TO ASSESS WHETHER YOUR INTERVENTION HAS BEEN SUCCESSFUL?
Ineffective / inadequate analgesia	The child is assessed for pain using a paediatric pain assessment tool and is treated according to the paediatric pain protocol	Use a paediatric pain scoring tool to assess the child's pain and document the assessment Administer appropriate and effective analgesia Check for occult sources of pain Re-assess regularly Request clinical review within 30 minutes	The child has an appropriate and definitive pain management plan and the pain score is ≤ 3 Staff and family are able to perform care
Increased pain after traction application / re-application	The source of the pain is discovered and clinical intervention initiated	Check the weight is less than or equal to 10% of the patient's weight Check that the traction is correctly applied Check the rope is not caught in a pulley Assess pain Request a clinical review within 30 minutes	The source of the pain is discovered and clinical intervention has been successful
Traction is applied incorrectly	The traction is re-applied correctly	Refer to the guideline Request clinical review from an expert if not able to re-apply correctly	The traction is correct and effective
The traction is falling off or not adhering to the leg	The skin is free of non-adhesive substances and the traction is adhering to the skin	Ensure the skin is dry, free of oils and creams and free of shedding or flaky skin Do not put cream or powder on the leg Reduce the weight. Less than or equal to 10% of the patient's weight Increase the traction surface area by placing hydrocolloid under the skin traction	The traction is adhering to the skin and is effective

COMPLIANCE, IMPLEMENTATION AND MONITORING

The clinical areas using the protocol will be given a fact sheet and Orthopaedic CNC will liaise with relevant NUM / Educator regarding the most appropriate roll-out for the specific area. This guideline, and related guidelines, will be available on the intranet.

APPENDICES

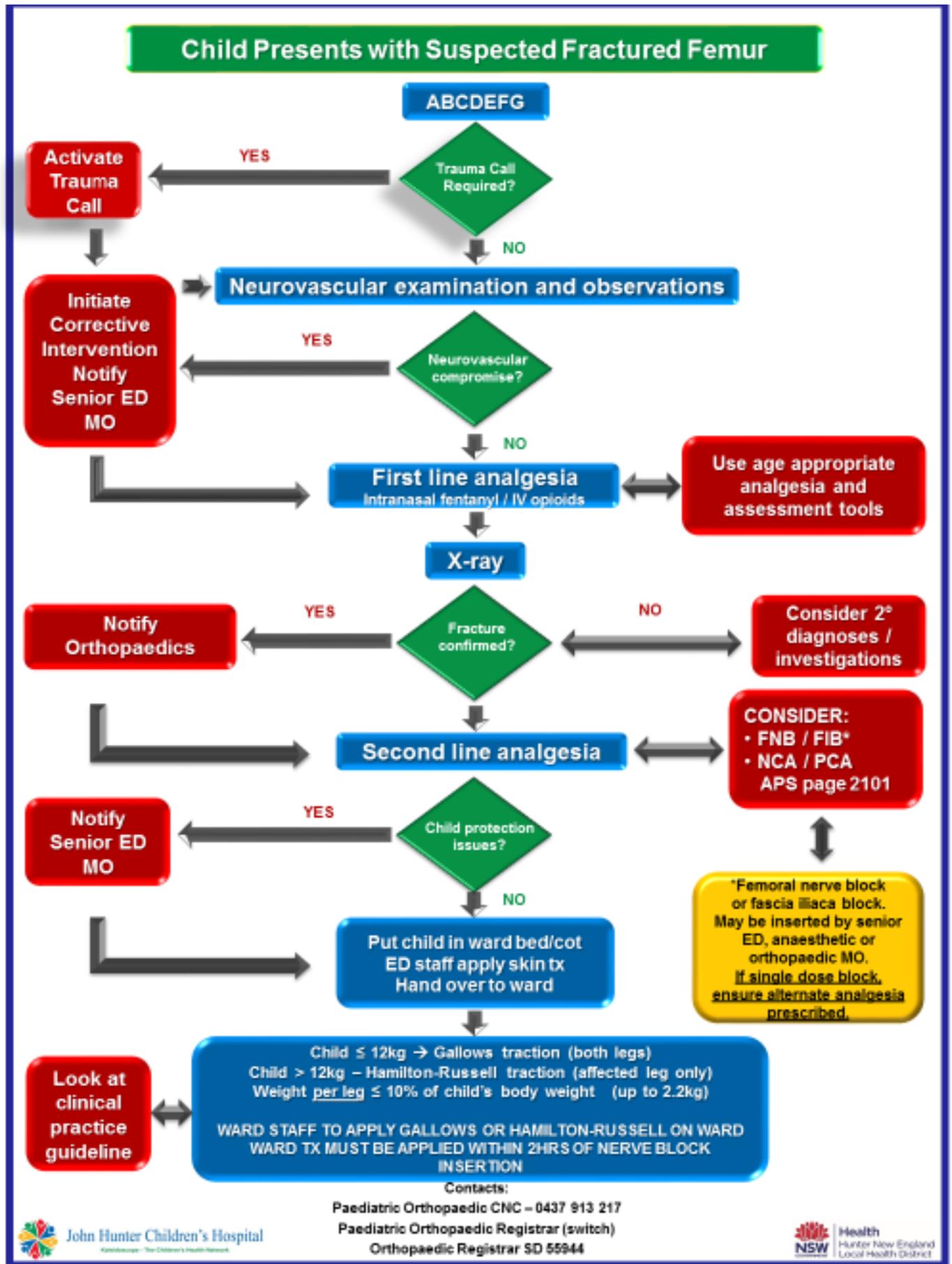
Appendix 1 - Flowchart for suspected fractured femur

Appendix 2 – Clinical audit requirements

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APPENDIX 1: FLOW CHART



APPENDIX 2: Clinical Audit requirements

Criterion no.	Criterion	Exceptions	Definition of terms and/or general guidance	Data source	Frequency	Position Responsible
1	Percentage of children in straight leg traction who have not had the therapy applied as recommended by the protocol.	None.	The aim is that all children undergoing traction therapy receive the recommended standard treatment. (Standard = 100%)	Patient health record and consumer feedback.	Constant	CNC Paediatric Orthopaedics
2	Quantity of IIMS reporting		The aim is that the percentage of IIMS will be reduced	IIMS	Constant	Clinical staff Managers
3	Competency of clinicians who are able to apply, care for and provide information to others regarding care of the child in traction	None	The aim is that all staff who apply, care for and provide information to others, have the minimum described standard of skill and knowledge.	Audit staff	12 monthly	CNC Paediatric Orthopaedics

Reference: *Electronic audit tool - National Institute for Health and Clinical Excellence (NICE): www.nice.org.uk/nicemedia/live/10996/56372/56372.xls*