Major Trauma – Children (see ABC Seriously Ill Child)

Dial 6666. Follow the trauma and paediatric triage protocols. You Can Follow The Sequence for 'Seriously Ill Child' With Modifications Below:

Protect the neck with 'Stiffneck' collar and the 'Head-hugger'

Go through the 'ABC' sequence

Mini-neurological assessment; AVPU, pupils, posture

Logroll – examine C-Spine and remove spinal board

Get an accurate history of the accident

Request x-ray cervical spine, chest, pelvis

Keep reassessing 'ABC'

Do a secondary survey - Head

(Neck)
Chest
Abdomen
Pelvis
Limbs
Reflexes

- **Normal Saline or blood administration in 20ml/kg pushes**
- **Do not catheterise bladder unless unconscious but ng tube is indicated for signs of shock.**
- **Diagnostic peritoneal lavage is not indicated - CT for children!**
- **Adequate analgesia is *essential.* Analgesia - iv aliquots of Morphine 0.1mg/kg diluted up to total volume of 10mls with water. Titrate against effect.**
- **A rectal examination is rarely indicated and should only be performed by an experienced surgeon.**
- **Calculating weight: use the formula "weight (in kgs) = (age + 4) x 2"**

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Sometimes it is more practical to allow disturbed young children to sit on a parent's knee with somebody immobilising the spine from behind.

Non Accidental Injury

ALL THESE SITUATIONS REQUIRE URGENT CONSULTATION WITH A SENIOR DOCTOR IN SENIOR EMERGENCY DEPARTMENT/PAEDIATRICS.

Emergency Department SHOs are not expected to diagnose NAI or to confront parents but they are expected to be alert to the possibility and to report any suspicions to a doctor experienced in dealing with such cases.

If you suspect NAI, speak to a senior member of the Emergency Department staff or contact the Paediatric Registrar immediately. Make a meticulous record of the history and physical findings and tell the parents that you feel that you need a second opinion on their child.

Reasons for suspecting NAI* include -

- Abnormal patterns of injury, e.g. slap marks, cigarette burns, bite marks
- History inconsistent with type of injury e.g. # long bones in an infant unable to walk
- Unexplained injuries e.g. old bruises
- Delay in presentation
- Child brought to the Emergency Department by someone other than parent
- Abnormal behaviour in child e.g. withdrawn, poor rapport with parent
- Signs of physical neglect
- Frequent attendances

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*Don't forget that there is often an innocent explanation for suspicious situations and diseases (e.g. bleeding disorders) can mimic NAI.

METICULOUS NOTE KEEPING IS MANDATORY – DO NOT WRITE NAI/?NAI IN THE NOTES. PLEASE RECORD YOUR CONCERNS

***eg " I need an experienced opinion to confirm that the history given is consistent with the physical findings"* etc**

Reasons for suspecting Sexual Abuse include -

- Disclosure by child or other member of family
- Underage pregnancy
- Genital injury
- Sexually transmitted disease
- Precocious sexual behaviour
- Deliberate self harm/behaviour problems

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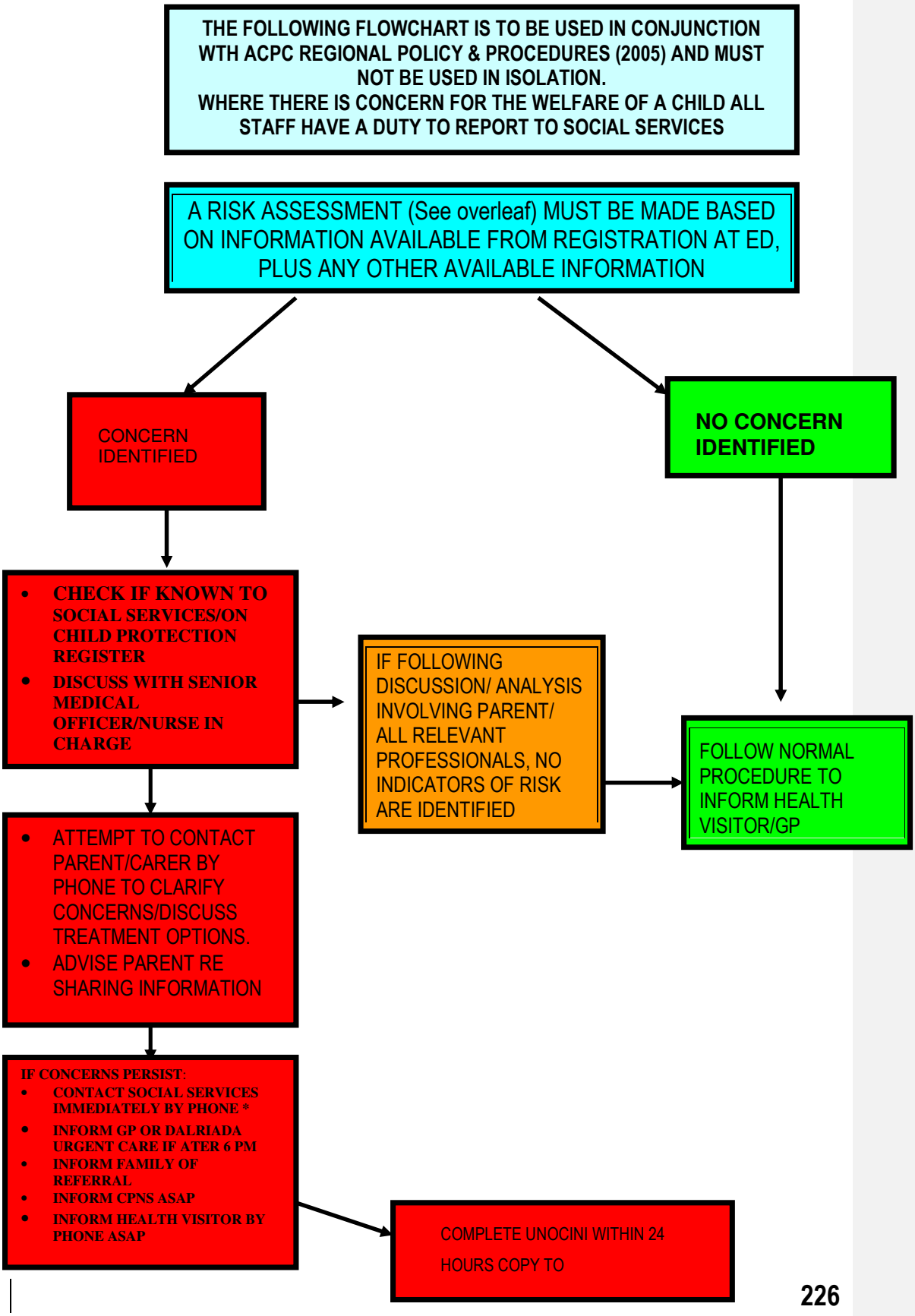
GUIDELINE for EMERGENCY DEPARTMENT (ED) STAFF WHEN A CHILD LEAVES WITHOUT BEING ASSESSED/TREATED



The Limping Child

Always take this symptom seriously. All children require careful examination including comparison of the various joints, systemic temperature, ENT, Chest & abdomen, x-ray (usually ap and frogs legs hips if >8yrs old), white cell count and ESR/CRP. Any discharges should be asked to return within 24 hours if no improvement.

Don't miss:-
septic arthritis (any age group but may not be obvious in babies)
unsuspected hip fracture (don't forget NAI)
Perthe's disease (Primary school age – x-ray abnormality)
Slipped upper femoral epiphysis (Secondary school age – x-ray abnormality and restricted internal rotation) Needs AP and Frogs legs view. REFER URGENTLY
Fractured distal femur / ankle/ tibia/toes!: compare both legs for swelling from hip to toe & ask parents to look too

The commonest cause is a sprain or an "irritable hip" related to a viral illness but all pyrexic children with a limp, a raised CRP and hip muscle spasm must be scanned at Antrim and/or referred to RBHSC urgently. All limping children should come back to the Emergency Department *next day if not improving.*

Joint effusion +/- sepsis

- Limp
- Fever
- Raised WCC or CRP
- Hip muscle spasm

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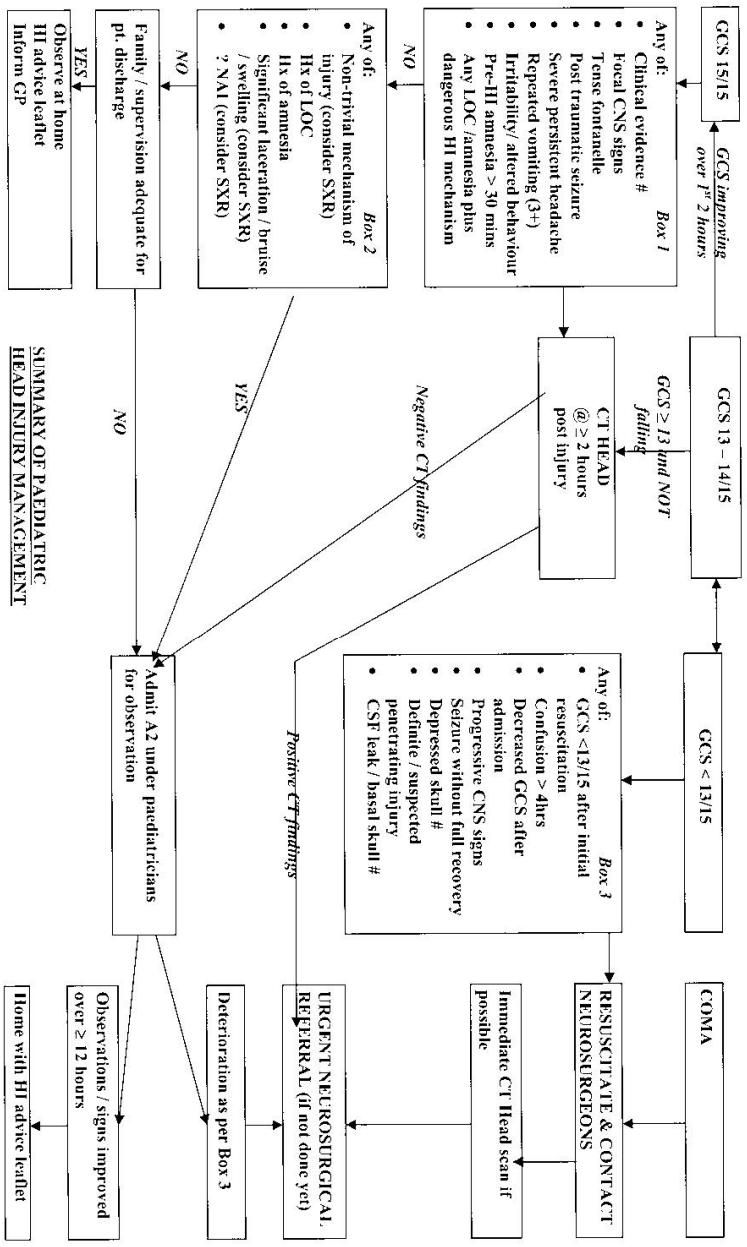
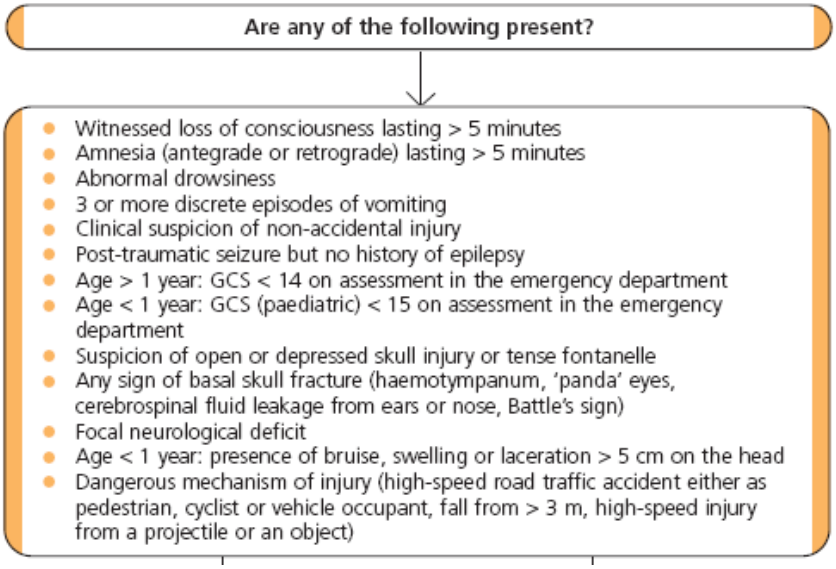
A common mistake is to miss a tibial or ankle/foot fracture in a toddler. Examine the whole limb and x-ray as required. Tibial fractures in toddlers may be invisible for 10 days – SLPOP and review at the clinic on day 10 if you find localised tibial tenderness in a limping child.


GCS 15/15
GCS improving over 1st 2 hours
Any of:
Box 1
Clinical evidence #
Focal CNS signs
Tense fontanelle
Post traumatic seizure
Severe persistent headache
Repeated vomiting (3+)
Irritability/ altered behaviour
Pre-HI amnesia > 30 mins
Any LOC /amnesia plus dangerous HI mechanism
NO
Any of:
Box 2
Non-trivial mechanism of injury (consider SXR)
Hx of LOC
Hx of amnesia
Significant laceration / bruise / swelling (consider SXR)
? NAI (consider SXR)
NO
Family / supervision adequate for pt. discharge
YES
Observe at home
HI advice leaflet
Inform GP
GCS 13 – 14/15
GCS ≥ 13 and NOT falling
CT HEAD @ ≥ 2 hours post injury
Negative CT findings
YES
NO
Admit A2 under paediatricians for observation
Positive CT findings
GCS < 13/15
Any of:
Box 3
GCS <13/15 after initial resuscitation
Confusion > 4hrs
Decreased GCS after admission
Progressive CNS signs
Seizure without full recovery
Depressed skull #
Definite / suspected penetrating injury
CSF leak / basal skull #
COMA
RESUSCITATE & CONTACT NEUROSURGEONS
Immediate CT Head scan if possible
URGENT NEUROSURGICAL REFERRAL (if not done yet)
Deterioration as per Box 3
Observations / signs improved over ≥ 12 hours
Home with HI advice leaflet
SUMMARY OF PAEDIATRIC HEAD INJURY MANAGEMENT

At present there is discussion around head injuries and the adoption of the NICE guidelines in relation to head injuries in UNDER 16s. To date the local protocols will be used, however the following signs, symptoms, kinematics and history should be considered.
If any of the below are present then such cases should be discussed with a middle-grade or consultant.



In some cases the child will require sedation of some description prior to CT scan. These patients must be discussed with the consultant.

Paediatric bony injuries tend to be different from adults due to the weakness of a childs bone (the ligaments are far stronger than bone) and the presence of growth plates.
The epiphyseal plates means 2 things:
1. x-rays are harder to look at (especially elbows)
2.fractures tend to occur around these areas.

<u>Elbow injuries.</u>
These are very common in children.

- **child with a sore elbow following a fall**
- **x-ray looks normal but cannot straighten out**

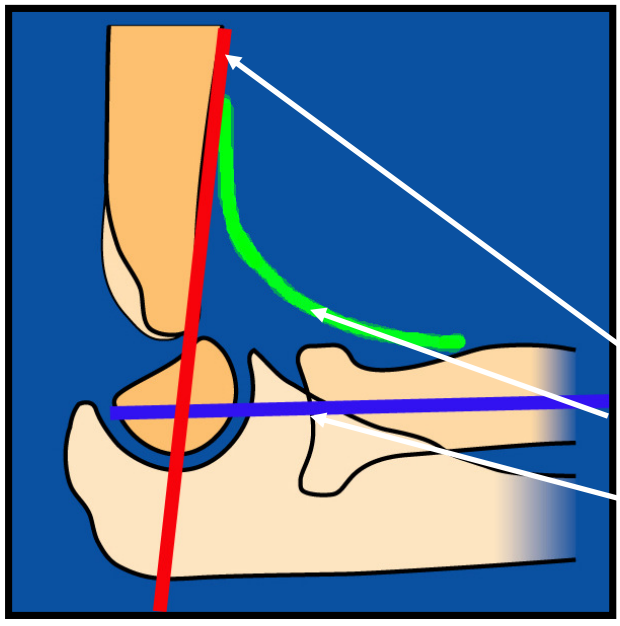
- **IT'S BROKE**

Familiarise yourself with a normal lateral x-ray of the elbow.

- **Anterior humeral line: important for supracondylar fractures**
  - **drawn tangential to the anterior humeral cortex on a true lateral view,**
  - **normally passes through the middle or posterior third of the ossified capitellum.**
  - **Note this line is not helpful when the capitellum is small (child < 2 years)**

- **Radiocapitellar line:**
  - **drawn bisecting the radial shaft, normally passes through the capitellum on all views;**
  - **if it does not, suspect radial head or complete elbow joint dislocation**

- **Fat pads: there are 2 anterior looks like the coronoid line**
  - **Fat pad displacement is a response to distention of the joint capsule**



Normal elbow demonstrating radiographic lines:

anterior humeral line,

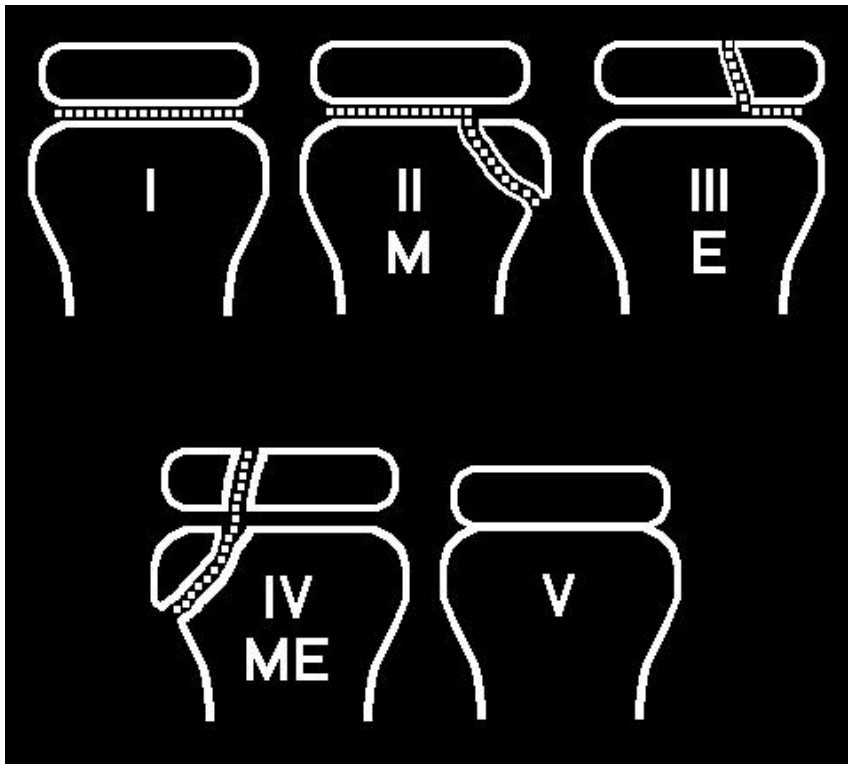
coronoid line,

radiocapitellar line.

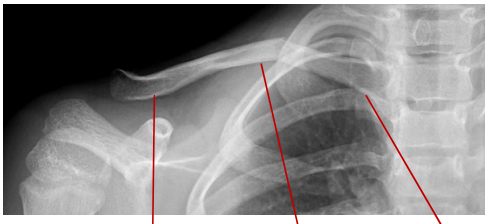
Salter Harris Fractures
These ar very common fractures in children.
They tend to be missed in the fingers and metacarpals and around ankles.

Type II are the most common.
In children with sore fingers localise the pain and request an x-ray of the specific part.
Missed fractures occur because x-rays of hands are taken as opposed to an x-ray of the painful finger or metacarpal.

Salter Harris classification



AAH ED Paediatric Clavicle Fracture Management



Clavicle Fracture

Tenting of skin?
Open fracture?
Neurovascular injury?
Medial third of clavicle (potential high impact / underlying thoracic injury – may require CT)
Pathological fracture?

Discussion with senior ED doctor in hours, or on-call orthopaedics team at time of seeing patient

Age ≤ 1yr? Or ≥ 14yrs?

Clavicle Advice Leaflet
Discharge in sling
Refer Fracture Clinic 3/52

Fracture of lateral third

Clavicle Advice Leaflet
Discharge in sling
Refer to fracture clinic 3/52

Fracture of middle third

Greenstick or bone fragments still touching i.e. not off-ended

Clavicle Advice Leaflet a
Discharge in sling
No routine follow up

Displaced

Clavicle Advice Leaflet
Discharge in sling and refer fracture clinic 3/52

Zip Entrapment in Children (ZEP)

Little boys and big boys occasionally zip up too quickly and manage to entrap their foreskins within the zip. Discuss with the child and explain to the parents what is happening.

If a child is very distressed consider immediate ENTONOX OR oral sedation.

15% entrap by the teeth of the zip.

Management*: Cut the zip at its base and it will open releasing the foreskin.*

85% entrap by the zip fastener itself.

Management: *Use topical anaesthetic gel. Try to gently remove zip. If obviously badly trapped may need a GA. Give oramorph for the pain (not with midazolam!).*

Alternatively, oral midazolam then a local anaesthetic injection into the entrapment site or penile block. Then remove the zip.