CT scanning of Children in the Adult Emergency Departments in Glasgow

Summary

This protocol defines how to deal with urgent CT scan requests for children who present to the adult GGC ED units (GRI\RAH\Inverclyde). It is proposed that:

1. **If the child meets the clinical criteria below, a local CT scan should be performed to assist appropriate transfer.**
2. **Clinical support to the adult Radiology on call team will be provided by the RHC Radiology on call team.**
3. **The primary report will be provided by the Adult on call team and the final scan report will be provided by the RHC Radiology team.**

Background

Usually children are transferred directly to RHC ED but a few children under 16 each year still present to one of the adult ED units following a significant injury or illness episode of such a type that an urgent CT scan would significantly alter their management. These cases usually fall into 3 groups:

1. Head injury with significant neurological compromise
2. Significant Head **and body** injury (usually RTA)
3. Rapidly deteriorating neurological state ?cause

A local CT scan will allow appropriate transfer without delay to RHC for surgical\neurosurgical intervention\monitoring.
Assessment should be made by the Senior clinical staff member attending the patient in the ED unit.
The patient should be referred to the adult on call Radiology team for imaging if the criteria below are reached.

General Anaesthesia

It is expected that the child will already be intubated for clinical reasons. If the child id not intubated the options are:

1. Scan the child without GA\sedation. This is suitable for older children who are compliant and meet the inclusion criteria below.

2. Contact the Paediatric Transfer team who may need to intubate the child for transfer anyway, thus allowing the scan to take place.

3. It is inappropriate to intubate the child for the purpose of scanning only.

Inclusion & Exclusion Criteria

Included indications are:

1. SIGN head injury criteria for immediate Head CT in children i.e.:
    a. Witnessed LOC for more than 5 minutes
    b. GCS <14 following trauma on assessment in ED
    c. High Speed RTA
    d. Focal neurological deficit
    e. Suspicion of open or depressed skull fracture or tense fontanelle.

2. Multi-site trauma with head injury reaching criteria as above and evidence of significant chest or abdo trauma.
   CT Chest and\or Abdomen will need to be scanned in this situation. Advice re protocol will be provided by the RHC Radiology team if required.

3. Non traumatic rapid deterioration in GCS where an acute neurosurgical event is felt highly likely clinically (SAH, ICH)

Excluded indications are:

1. SIGN head injury criteria for Head CT within 8 hours in children i.e:
    a. Amnesia > 5 mins
    b. Abnormal drowsiness
    c. 3 or more episodes of vomiting
    d. Suspicion of NAI
    e. Post traumatic seizure without HX of epilepsy or reflex anoxia seizure
    f. Age <1 year with GCS <15 (following senior assessment)
    g. Signs of skull base fracture
    h. Age <1 year and bruise >5cm
    i. Fall >1 metre
    j. High speed projectile injury

If the child has one of these criteria, a CT scan may be appropriate and the child should be transferred to RHC for observation & possible scan.

2. Stable Multi-site trauma but no features suggesting immediate CT needed – consider stabilisation & transfer to RHC.

3. Reduced GCS where a neurosurgically treatable cause is unlikely (meningitis, seizures, septicaemia – consider transfer to RHC.

4. Clinical cord compression (refer to RHC clinician with a view to MRI).

Pathway

1. Clinical assessment by A&E Senior & patient fulfils inclusion criteria.

2. Adult Radiology on call team contacted by A&E Clinician.

3. Neurosurgeon on call contacted by A&E Clinician.

4. Adult on call Radiology team contacts RHC on call Radiology Team if advice re scanning parameters needed.

5. Scan is performed.

6. Images primary reported by Adult Radiology service.

7. RHC Radiologist requested to review images via PACS if required.

8. Clinician informed of findings & decision re transfer made.

9. Report intended to RHC duty radiologist for sign off the next day.

Conclusions

This protocol will significantly reduce the time taken to appropriately refer children needing urgent neurosurgery. Opinion & sign up from clinical stakeholders should be obtained prior to implementation.

Andrew Watt
Deputy CD, Imaging

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