Major trauma imaging guideline

NHS
South West London & Surrey
TRAUMA NETWORK

Background.

The selection of patients for trauma imaging, and the manner in which this is performed, has been subject to wide variation across the trauma network and the subject of a number of trauma network incidents. The purpose of this document is to gather relevant national and regional guidelines and best practice statements regarding trauma imaging to guide clinicians in the selection and performance of trauma imaging in order to streamline the approach to imaging across the network.

The aim is – right patient, right scan, first time, in time.

Selecting patients for trauma imaging.

NICE guideline 39 (1) states:

- Use whole-body CT (from vertex to mid-thigh) in adults (16 or over) with blunt major trauma and suspected multiple injuries.
- Be aware that a negative FAST (Focused Abdominal Sonography for Trauma) does not exclude intraperitoneal or retroperitoneal haemorrhage.
- Consider immediate CT for patients with suspected haemorrhage if they are responding to resuscitation or if their haemodynamic status is normal.
- Do not use FAST or other diagnostic imaging before immediate CT in patients with major trauma.
- Do not use FAST as a screening modality to determine the need for CT in patients with major trauma.

Additional guidance

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Those patients with injuries spanning two body regions or subjected to a significant kinetic energy should have a trauma scan which includes head, neck, chest, abdomen, pelvis, spine (and lower limbs as needed).

In some cases, a more refined scan pattern may be indicated (targeted CT). However, all unconscious head injuries should have their neck imaged at the time of the first head CT scan. CT scanning should be undertaken for patients prior to transfer from a TU to the MTC; there may be rare exceptions to this in time critical cases but these should be discussed with the MTC TTL.

It is important to take a rational approach to CT acquisition and not utilise a blanket approach of performing a full body scan for every patient who presents with a traumatic injury. Recognising the limitations of physical examination in detecting injuries, balancing diagnostic yield against radiation exposure and imaging demands across the Emergency Department and hospital mean that the decision on what imaging to perform should be taken by a senior clinician with advanced training in trauma management (likely to be an ST3 or above who has completed a trauma course such as ATLS) in conjunction with the hospital radiology team.

Performing the scan.

The standard approach for trauma imaging for those requiring a full body CT should be the Bastion protocol. Teams should be aware of the guidance from RCEM and RCR on the use of iodinated contrast

Emergency_CT_Scans_Requiring_IV_Iodinated_Contrast_Agent.pdf (rcem.ac.uk)

Measurement of renal function is not a pre-requisite for scanning and pre-existing renal disease should not delay scanning.

For patients who have had a targeted CT and serious injuries are identified a full bastion protocol trauma CT should be performed as a completion CT, rather than just adding the adjacent body compartment.

Trauma CT should be performed within one hour of patient arrival and a written report available within 1 hour of the CT being performed (2).

Imaging in Older patients

Older and frail patients present particular challenges in identification of injuries and careful clinical assessment is required. “Low-energy” mechanism of injuries such as a fall from

standing in older and frail patients are more likely to lead to injury and “high energy” mechanisms of injury are more likely to lead to significant and possible life-threatening multi-system injury. Standard “abnormal” parameters of physiology that are used to define states of shock and cardiorespiratory distress are not always applicable to the elderly patient. Patients on warfarin or DOACs with blunt abdominal trauma are particularly susceptible to significant injury (e.g. retroperitoneal bleeding, soft tissue bleeding) so the threshold for scanning such patients should be lowered.

Further resources are available in the HECTOR manual, https://www.embeds.co.uk/wp-content/uploads/2019/10/Hector-manual.pdf

St George’s elderly trauma screening tool is at appendix 1

Imaging in Children

NICE Guideline 39 states:

- Do not routinely use whole-body CT to image children (under 16s). Use clinical judgement to limit CT to the body areas where assessment is needed.

Further details are available in the RCR guidance https://www.rcr.ac.uk/media/k0blz5k3/rcr-publications_paediatric-tauma-protocols_august-2014.pdf

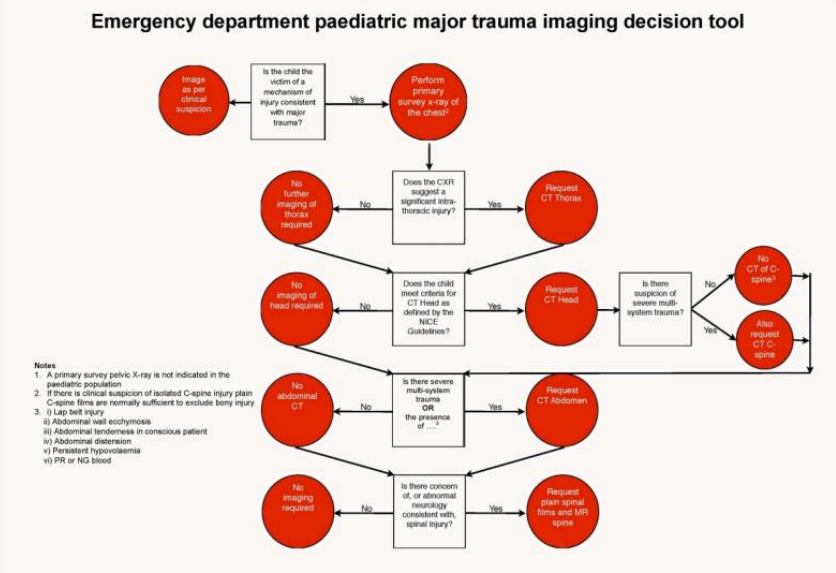
The key points are:

- There is no role for ultrasound in the assessment of the injured child
- The primary investigation for blunt chest trauma in children is the chest Xray

The following flowchart (3) offers further guidance

Appendix 4. Emergency department paediatric major trauma imaging decision tool

Developed by Dr Tony Kehoe, ED Consultant, Derriford Emergency Department



Other resources

NICE guidance on imaging the head and neck is available here

https://www.nice.org.uk/guidance/ng232/chapter/recommendations#criteria-for-doing-a-ct-head-scan

https://www.nice.org.uk/guidance/ng41/chapter/Recommendations#diagnostic-imaging

References:

1 https://www.nice.org.uk/guidance/ng39/resources/major-trauma-assessment-and-initial-management-pdf-1837400761285#:~:text=Consider%20immediate%20CT%20for%20patients,their%20haemodynamic%20status%20is%20normal.&text=Do%20not%20use%20FAST%20or,in%20patients%20with%20major%20trauma.

2 https://www.c4ts.qmul.ac.uk/downloads/quality-indicators-for-trauma.pdf

3 https://www.rcr.ac.uk/media/k0blz5k3/rcr-publications_paediatric-tauma-protocols_august-2014.pdf

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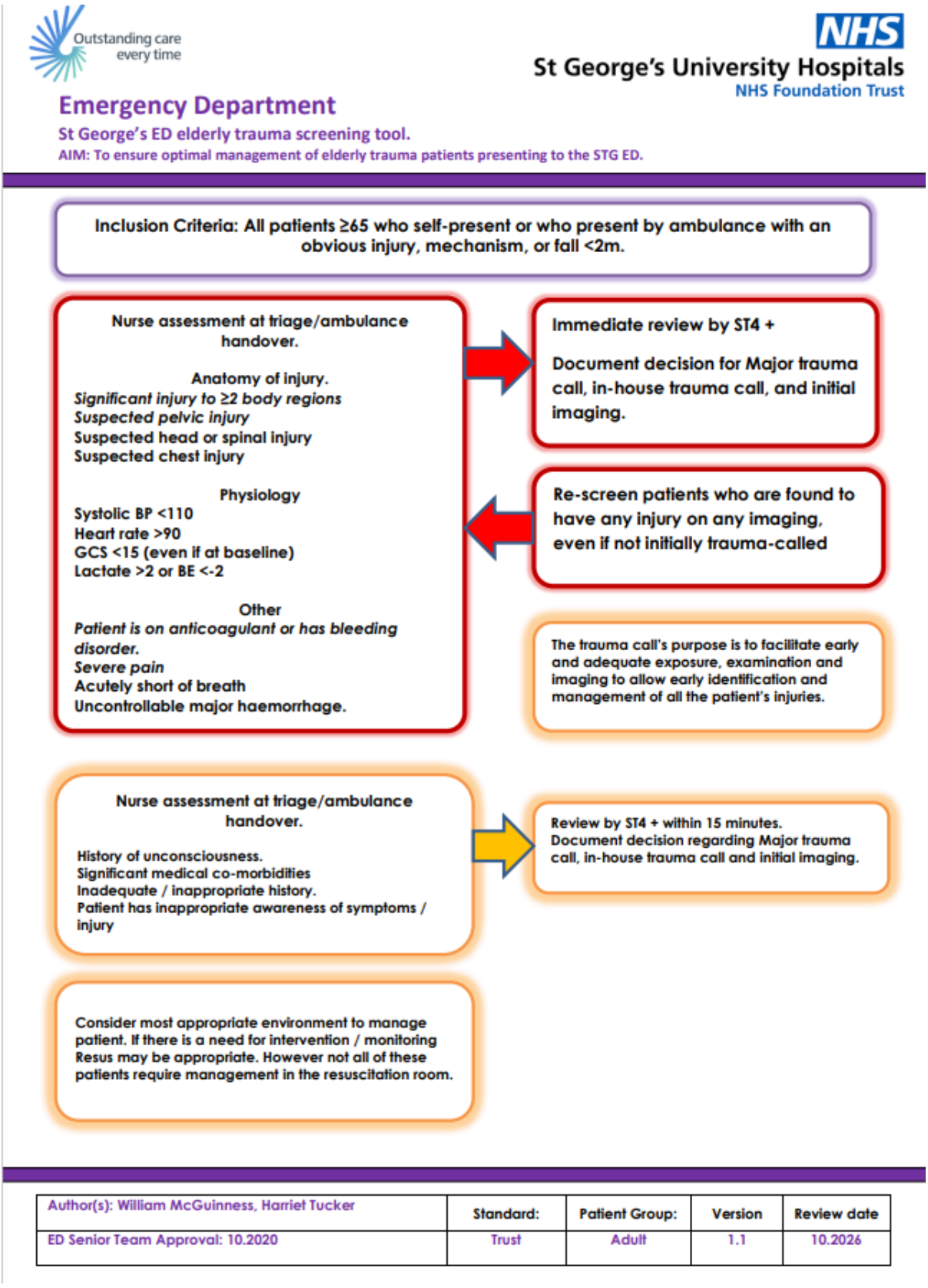
Appendix 1



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