

Paediatric Trauma Imaging Policy

V3.1

September 2026

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Data Protection Legislation

The Trust must comply with the UK GDPR, Data Protection Act 2018, and Data (Use and Access) Act 2025 by ensuring all personal data is processed lawfully, fairly, transparently, and for a defined purpose.

Before processing personal data, an appropriate Article 6 UK GDPR lawful basis must be identified and recorded. Where special category data is involved, a relevant Article 9 condition must also be documented.

All staff, contractors, students, volunteers, agency workers, and third parties working on behalf of the Trust are responsible for complying with data protection legislation.

Further guidance is available in the Trust's Information Use Framework and Information Governance policies. Advice can also be obtained from the Information Governance Team.

1. Introduction

- 1.1. This document has been developed for local use and is based on and informed by national evidence-based guidance for paediatric trauma imaging.
- 1.2. The RCR is acknowledged as the primary source of clinical guidance underpinning this policy. The Royal College of Radiologists (RCR) publication: *“Major Paediatric Trauma Radiology Guidance” (2024)*.
- 1.3. This policy also aligns with relevant UK national standards and legislation, including:
 - National Institute for Health and Care Excellence [NICE] trauma guidelines (NG39, NG41, NG232).
 - Ionising Radiation (Medical Exposure) Regulations (IR(ME)R) 2017.
- 1.4. Local adaptation has been undertaken to reflect RCHT clinical pathways, resources and governance arrangements.
- 1.5. This document has been reviewed and updated following a reported patient safety incident relating to paediatric trauma imaging. The review identified gaps in dissemination and accessibility of guidance. Actions have been taken to ensure this policy is accessible, clearly signposted, and supported by staff communication and training.
- 1.6. This version supersedes any previous versions of this document.

2. Purpose of this Policy

- 2.1. The purpose of this policy is to provide a clear framework for the safe, effective and consistent use of imaging in paediatric trauma patients within RCHT.
- 2.2. This policy aims to ensure that imaging is:
 - Clinically appropriate and justified.
 - Performed using the lowest reasonable radiation dose.
 - Consistent with national standards and best practice.
- 2.3. It also supports timely clinical decision-making within trauma pathways and promotes a standardised approach to imaging across the organisation.

3. Scope

- 3.1. This policy applies to all healthcare professionals involved in the imaging of paediatric trauma patients within RCHT. This includes radiologists, radiographers, Emergency Department clinicians, paediatricians and members of the trauma team.
- 3.2. The policy provides a framework for the justification, optimisation and delivery of imaging in paediatric trauma, including the selection and use of appropriate imaging modalities in accordance with national guidance and legislation. It supports the safe and effective use of plain radiography, CT and MRI within trauma pathways and clarifies the roles and responsibilities of clinical and imaging staff involved in patient care.
- 3.3. This policy applies to children and young people under 16 years of age presenting with traumatic injury, including blunt, penetrating and blast trauma. Clinical judgement should be applied when managing older adolescents, where adult imaging pathways may be more appropriate based on physiological maturity and mechanism of injury.
- 3.4. This document is intended to support, not replace, clinical judgement and should be used in conjunction with relevant Trust policies and procedures, including local imaging protocols, contrast administration policies and safeguarding procedures.
- 3.5. This policy does not apply to imaging outside of acute trauma pathways, such as elective or outpatient imaging. The assessment and imaging of suspected non-accidental injury [NAI] is excluded and should be managed in accordance with separate safeguarding policies and standard operating procedures.

4. Ownership and Responsibilities

- 4.1. Overall responsibility for this policy sits with the Consultant Lead for Paediatric Imaging, who is accountable for ensuring that the document reflects current national guidance and local practice.
- 4.2. This policy will be ratified by the groups for purposes of clinical content and adherence to RCHT governance process:
 - Specialist Paediatric Imaging Group [SPIG].
 - Clinical Imaging Clinical Governance Group [CICGG].
- 4.3. This policy will be disseminated to respective clinical teams by:
 - Clinical Lead professional: Dr Claire Keaney.

- Line-manager: Florence Martin, CT Team Lead.
 - Line-manager: Tim O’Leary, Radiography Service Lead.
- 4.4. All staff are responsible for adherence to this policy and for reporting concerns via the Trust incident reporting system.
- 4.5. The policy owner is responsible for review and updates.

5. Standards

- 5.1. Imaging decisions in paediatric trauma should be based on clinical assessment and multidisciplinary discussion between senior clinicians and radiologists where appropriate. In the acute trauma setting, the final decision regarding imaging rests with the Trauma Team Leader, informed by advice from the wider trauma team, including radiology. Appendix 1 may be used to support decision-making.
- 5.2. Children and young people under 16 years of age should be managed according to paediatric imaging principles and protocols, in line with Royal College of Radiologists (RCR) guidance. For older adolescents, imaging pathways should be determined using clinical judgement, taking account of physiological maturity, mechanism of injury and clinical presentation.
- 5.3. Radiation protection principles must be considered for all paediatric patients. Whilst paediatric imaging protocols should be followed wherever appropriate, imaging must not be restricted where this may compromise the timely diagnosis and management of significant injuries.
- 5.4. All imaging examinations must comply with the principles of justification and optimisation as defined by the Ionising Radiation (Medical Exposure) Regulations 2017 (IR(ME)R). The requirements of the RCHT IR(ME)R Employer's Procedures must be adhered to at all times.
- 5.5. Ultrasound is not routinely indicated as a primary imaging investigation in major paediatric trauma but may be used in specific clinical circumstances following discussion with a senior clinician or radiologist.
- 5.6. Penetrating and blast injuries require consideration separate from blunt trauma pathways. Relevant imaging guidance is provided in Appendices 3 and 4.
- 5.7. The full RCR Major Paediatric Trauma Radiology Guidance is available at: <https://www.rcr.ac.uk/our-services/all-our-publications/clinical-radiology-publications/major-paediatric-trauma-radiology-guidance/>

6. Practice

6.1. Paediatric CT protocols.

Trauma in children is managed differently to adults. There is no single standardised whole-body trauma CT protocol, as the RCR recommends adherence to the “*as low as reasonably practicable*” (ALARP) principle. In the trauma setting, a key initial clinical question should be: “Does the child need imaging at all?”

Scans on individual areas should only be performed after discussion with radiologists and justified separately. Unlike adult trauma pathways, routine whole-body CT (head, cervical spine, chest, abdomen and pelvis) is not standard practice in children.

Where CT imaging is required on a child involved in trauma, individual protocols from the paediatric protocol list on the scanner must be selected. The initial topogram may be increased in range if appropriate (this is particularly relevant in blast injuries):

- Intravenous contrast agents should only be administered to paediatric patients undergoing CT scanning under the direct instruction of a radiologist - this instruction must be documented as an event comment on CRIS by the Radiologist and should state the type of contrast required.
- The ‘bastion wheel’ method of contrast administration should be used for contrast CT. See Appendix 2.

6.2. Access to Imaging Protocols and Decision Support.

All paediatric trauma imaging must be performed using approved local protocols. These protocols are available via the following systems:

- CT protocols are available on the scanner protocol list under the paediatric imaging directory.
- Detailed CT protocols are available via the Trust IQM system - CI.CT.PPG.243.
- MRI protocols are available on IQM - CI.MRI.PPG.40.
- Plain Radiography protocols are available on IQM – CI.TAG.PPG.04.

The Radiology Information System (CRIS) should be used to document radiologist authorisation, including contrast instructions.

Where there is any uncertainty regarding protocol selection, scan range, or contrast administration, radiographers must seek advice from the hot hub / duty radiologist prior to imaging.

Senior clinical discussion is mandatory for:

- Unclear clinical indications.
- Consideration of CT in borderline cases.
- Requests for imaging outside standard protocols.

Failure to access or follow approved protocols must be reported via the Trust incident reporting system.

6.3. Blunt trauma.

CT Head/Neck:

- Please follow the NICE guidance (NG232), which provides validated criteria for CT imaging in children following head injury.
- CT neck should be used selectively, given the relatively high radiation dose to the thyroid, and only undertaken where clinically justified. It should follow NICE guidance (NG41 and NG232).

Thoracic/lumbar spine:

- Imaging should be guided by clinical findings. Generally plain radiography will be the initial modality of choice (unless either is already covered as part of a CT thorax or abdo/pelvis).
- In patients with definitive neurology, MRI is the modality of choice (where possible).

Chest X-ray:

The primary investigation of choice in blunt trauma. If this is normal, and the patient is clinically stable, CT is unlikely to be required.

Chest CT:

Clinical assessment should dictate further imaging. Chest CT should be considered particularly in the following scenarios:

- Rapid deceleration injury, including fall greater than 6 metres.
- High-impact motor vehicle crash greater than 40 miles per hour.
- Intoxication.
- Reduced Glasgow Coma Scale [GCS].
- Distracting painful injury.
- Penetrating chest trauma.

Abdomen:

- Ultrasound is not routinely indicated in acute trauma assessment.
- Dual contrast CT of the abdomen is the modality of choice. This should be guided by the patient's clinical condition, for example, abdominal bruising, abdominal pain, unstable patient.
- The 'bastion wheel' method of contrast administration should be used for abdominal CT. See Appendix 2.

Pelvis:

- Pelvic fractures are rare in children and therefore no routine screening pelvic radiography is performed.
- Children with a strong suspicion of pelvic fracture, after full clinical assessment, should undergo pelvic CT.
- 'Camp bastion contrast wheel' should again be used.

Limbs:

- Plain radiography is the modality of choice.
- CT can be used in complex fractures or vascular injury concern.

6.4. Penetrating trauma:

- In the event of penetrating trauma, post-contrast CT imaging is the modality of choice for patients.
- Clinical assessment (for example, entry site wounds) may underestimate the extent, depth and number of penetrating injuries. Therefore, the choice of imaging should account for this potential uncertainty. If a wound is a junction between 2 regions of interest e.g. in the vicinity of the diaphragm – it is appropriate to image both regions of interest.
- Clinical assessment of the number, size and depth of any puncture wound in hypovolemic patients is difficult to assess, and it is safer to assume the patient has suffered a greater level of trauma rather than take a more conservative approach.
- If the trauma is consequent to crime-related assault, the patient may be less forthcoming with a true reflective history. Senior level discussion and decision making with '*Is there any part of the body that we do not need to image?*' included in the decision-making process.
- Suggested imaging algorithm for penetrating trauma in paediatric patients – see appendix A3.

Blast injuries and trauma:

- Imaging algorithm for paediatric blast injuries – see appendix A4.
- This algorithm aims to provide quick and essential information for managing several paediatric victims with multiple known and occult injuries who present in a short period of time to RCHT.
- Imaging modalities such as X-ray and CT suggested in the algorithm are prioritised on resources and apply to the first wave of victims, as well as the following ones typically 8 and 16 hours after the event.
- Avoid MRI for acute investigation of blast injuries due to the risk associated with likely ferromagnetic properties of shrapnel.

6.5. Intraosseous access in paediatric trauma:

- Use of standard IV access is best practice for the administration of IV contrast in paediatric trauma, even if a surgical cutdown is required to achieve this.
- However, if the only access available is an intraosseous needle, continue with contrast volume according to the paediatric weight protocol. Use the smallest syringe possible (to reduce the pressure required to inject) and perform with 2 hand injected split boluses, 5 mls saline push after each bolus with scan starting roughly 45-50 seconds after the initial contrast injection is in (or as close to this when everyone is out of the scan room).

6.6. Interventional radiology in paediatric trauma:

- Patients who require interventional radiology input should initially be discussed with RCHT's interventional radiology team.
- There may be appropriate skills and anaesthetic, intensive care and paediatric surgical support to treat locally. If the patient cannot be managed RCHT IR, they need to be transferred to an appropriate major paediatric trauma centre.

7. Dissemination and Implementation

This policy will be formally implemented following approval from the relevant governance committees and made accessible to all relevant staff via RCHT Document Library and Clinical Imaging IQM. It will be clearly indexed to ensure ease of access at the point of care.

Initial dissemination will be supported through a structured communication plan, including:

- Circulation to all clinical imaging, Emergency Department and paediatric clinical teams.
- Presentation at departmental and governance meetings (SPIG and CICGG).
- Inclusion within team briefings and safety huddles.

Following dissemination, clinical leads and line managers are responsible for ensuring that staff are aware of the policy and understand how to apply it in practice. This includes ensuring familiarity with the location of:

- Paediatric CT protocols on scanners.
- Supporting documentation on IQM (including contrast protocols).
- Processes for radiologist authorisation and escalation.

Ongoing assurance of implementation will be supported through governance processes, including monitoring of incidents, audit activity, and feedback through relevant clinical governance groups.

8. Monitoring compliance and effectiveness

Information Category	Detail of process and methodology for monitoring compliance
Element to be monitored	Compliance with the Paediatric Trauma Imaging Policy, including appropriate justification of imaging, correct selection of imaging modality, adherence to paediatric CT protocols, and evidence of senior clinical discussion where required.
Lead	Paediatric Imaging Leads.
Tool	Monitoring of incidents and/or complaints. Targeted clinical audit of paediatric trauma imaging where indicated.
Frequency	When issues arise through incident reports or complaints or when guidance is updated. Formal review at least 3-yearly, or more frequently in response to identified trends, incidents, or changes in national guidance.
Reporting arrangements	Findings are reported to the Specialist Paediatric Imaging Group [SPIG] and escalated to the Clinical Imaging Clinical Governance Group [CICGG] where necessary.
Acting on recommendations and Lead(s)	Specialist Paediatric Imaging Group [SPIG] is responsible for reviewing findings, agreeing actions, and overseeing implementation of improvements.

Information Category	Detail of process and methodology for monitoring compliance
Change in practice and lessons to be shared	Learning will be disseminated through Clinical Imaging Clinical Governance Group meetings, departmental briefings, and IQM updates. Changes to protocols or practice will be communicated to all relevant staff and embedded within local procedures.

9. Updating and Review

- 9.1. The document will undergo formal review every three years (as a V0.0.), or sooner (as an incremental review as practice dictates as a V0.0 update) if there are changes to national guidance, legislation, or local practice.
- 9.2. Interim updates may be made in response to:
- Changes in Royal College of Radiologists [RCR] guidance.
 - Updates to NICE guidance.
 - Learning from incidents, audits or complaints.
- 9.3. All updates will be managed through the Trust governance process and version controlled within the IQM system.

10. References

The Royal College of Radiologists (RCR) publication: *“Major Paediatric Trauma Radiology Guidance”* (2024) has been referenced. RCR is recognised as the primary source for guidance within the scope of this document. Appendices 3 (A1), 5 (A3) and 6 (A4) reproduced by kind permission RCR Publications (25-06-2026).

11. Equality and Diversity

- 11.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the [Equality Diversity and Inclusion Policy](#) or the [Equality and Diversity website](#).
- 11.2. Quality and Equality Impact Assessment [QEIA].

The QEIA process allows RCHT to monitor the impact of changes to its policies and services, ensuring that nobody is unduly disadvantaged. The QEIA Form is available via the link in [Appendix 2](#).

Appendix 1. Governance Information

Information Category	Detailed Information
Document Title:	Paediatric Trauma Imaging Policy V3.1.
This document replaces (exact title of previous version):	Paediatric Trauma Imaging Guidelines V3.0.
Date Issued/Approved:	July 2026.
Date Valid From:	September 2026.
Date Valid To:	September 2029.
Author/Owner:	Dr Claire Keaney, Consultant Radiologist, Clinical Imaging.
Contact details:	01872 252285.
Brief summary of contents:	This document has been developed for local use and is based on and informed by national evidence-based guidance for paediatric trauma imaging.
Suggested Keywords:	RCR ED Bastion, CT Paediatric Trauma CI.GEN.PPG.44
Target Audience:	RCHT: Yes CFT: No CIOB ICB: No
Executive Director responsible for Policy:	Chief Medical Officer.
Approval route for consultation and ratification:	Clinical Imaging Governance Group. Specialist Paediatric Imaging Group.
Manager confirming approval processes:	Richard Andrzejuk, Care Group General Manager Clinical Support.
Name of Governance Lead confirming consultation and ratification:	Jemma Moore.

Information Category	Detailed Information
Links to key external standards:	National Institute for Health and Care Excellence [NICE] trauma guidelines (NG39, NG41, NG232). Ionising Radiation (Medical Exposure) Regulations (IR(ME)R) 2017.
Related Documents:	The Royal College of Radiologists (RCR) publication: Major Paediatric Trauma Radiology Guidance (2024).
Training Need Identified:	No.
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Intranet Only
Document Library Folder/Sub Folder:	Clinical/Clinical Imaging.

Version Control Table

Date	Version Number	Summary of Changes	Changes Made by
November, 2017.	V1.0-V3.0	Published exclusively via Imaging QPulse (now IQM).	Claire Keaney, Consultant (Radiology).
July, 2026.	V3.1	Incremental update to content. Trust template applied as document is now required to sit on Trust DL.	Claire Keaney, Consultant (Radiology).

All or part of this document can be released under the Freedom of Information Act 2000.

All Policies, Strategies and Operating Procedures, including Business Plans, are to be kept for the lifetime of the organisation plus 6 years.

This document is only valid on the day of printing.

Controlled Document.

This document has been created following the Royal Cornwall Hospitals NHS Trust [The Policy on Policies \(Development and Management of Knowledge Procedural and Web Documents Policy\)](#). It should not be altered in any way without the express permission of the author or their Line Manager.

Appendix 2. Quality and Equality Impact Assessment [QEIA] Form

The QEIA process allows RCHT to monitor the impact of changes to its policies and services, ensuring that nobody is unduly disadvantaged.

Please ensure you have completed a Quality and Equality Impact Assessment [QEIA] using this link to complete the form:

[E11 QEIA Policy](#).

For guidance, please see the [QEIA Essentials – Quick Reference Guide](#) or contact as required below:

Equality, Diversity and Inclusion guidance, please contact: rcht.inclusion@nhs.net.

Quality Governance guidance, please contact Jillian Tozer: jillian.tozer3@nhs.net

Appendix 3. Major Paediatric Trauma Radiology Guidance RCR

A1

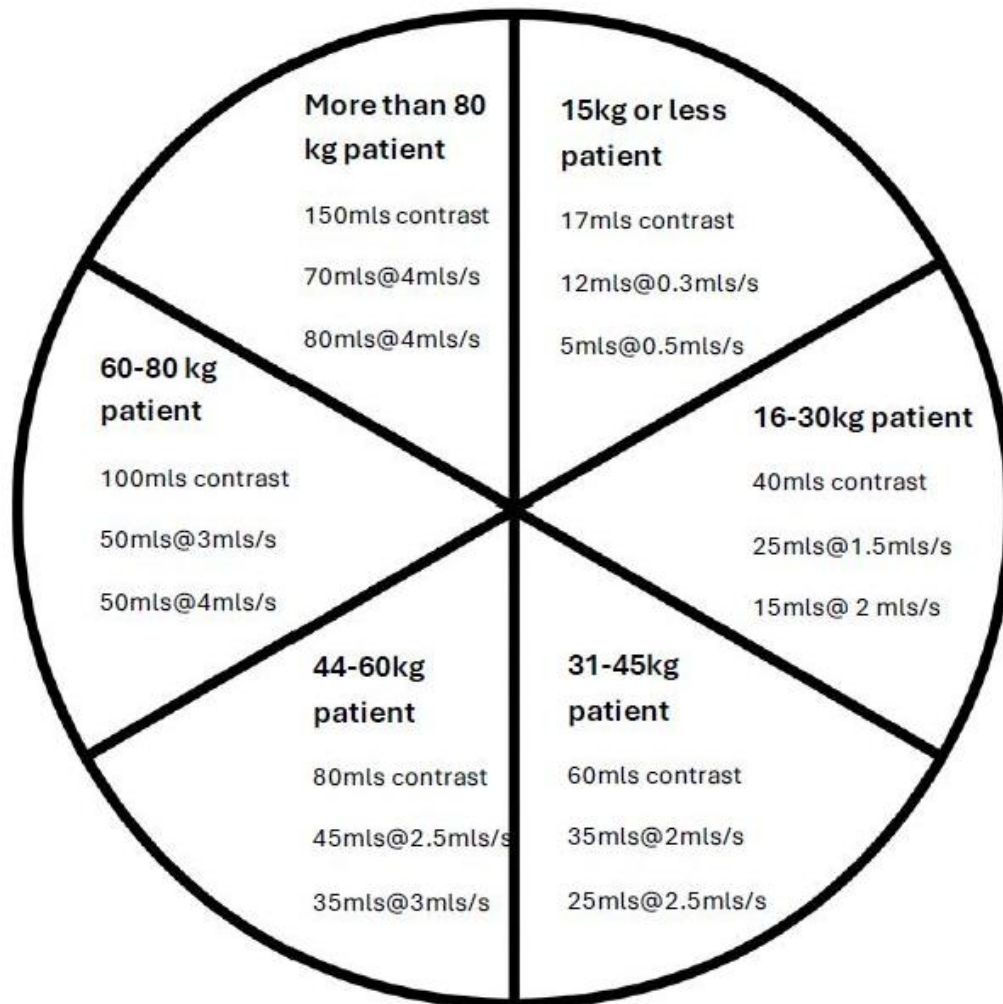
CT scan exclusion tool for blunt poly-trauma in under 16s

This tool is aimed to help with a focused CT scan approach in children rather than undertaking whole-body CT scans without consideration. **This tool should be used in conjunction with RCR guidance.**

- If an anatomical region satisfies all the criteria, not scanning that anatomical region should be considered.
- Senior clinical discretion is still advised.

Anatomical region	
1. Head	
a. Not reduced GCS below 13 or intubated	☐
b. Did not trigger NICE guidelines	☐
2. Neck	
a. Not reduced GCS below 13 or intubated	☐
b. Did not trigger NICE guidelines	☐
3. Chest	
a. Chest X-ray normal	☐
b. Chest exam normal	☐
c. Not rapid deceleration (Defined as fall >6 metres or high-impact motor vehicle crash >40 mph)	☐
4. Abdomen	
a. Not lap belt or handlebar injuries	☐
b. No abdominal wall ecchymosis	☐
c. No abdominal tenderness in a conscious patient	☐
d. No abdominal distension	☐
e. No clinical evidence of persistent hypovolaemia; eg persistent unexplained tachycardia	☐
f. No blood from the rectum or nasogastric tube	☐
5. Spine	
a. No midline tenderness	☐
b. Low level of concern on mechanism	☐
c. No neurology	☐
(MRI should be used where possible as first line)	☐
6. Limbs	
a. No complex fractures (consider)	☐
b. No concern of vascular injuries (consider)	☐
Wider concerns, which could lower the threshold to CT scan:	
a. Patient needs emergency operation	☐
b. Patient has long secondary transfer	☐
c. Patient will be sedated in critical care area for an extended period	☐

Appendix 4. Major Paediatric Trauma Radiology Guidance RCHT Clinical Imaging

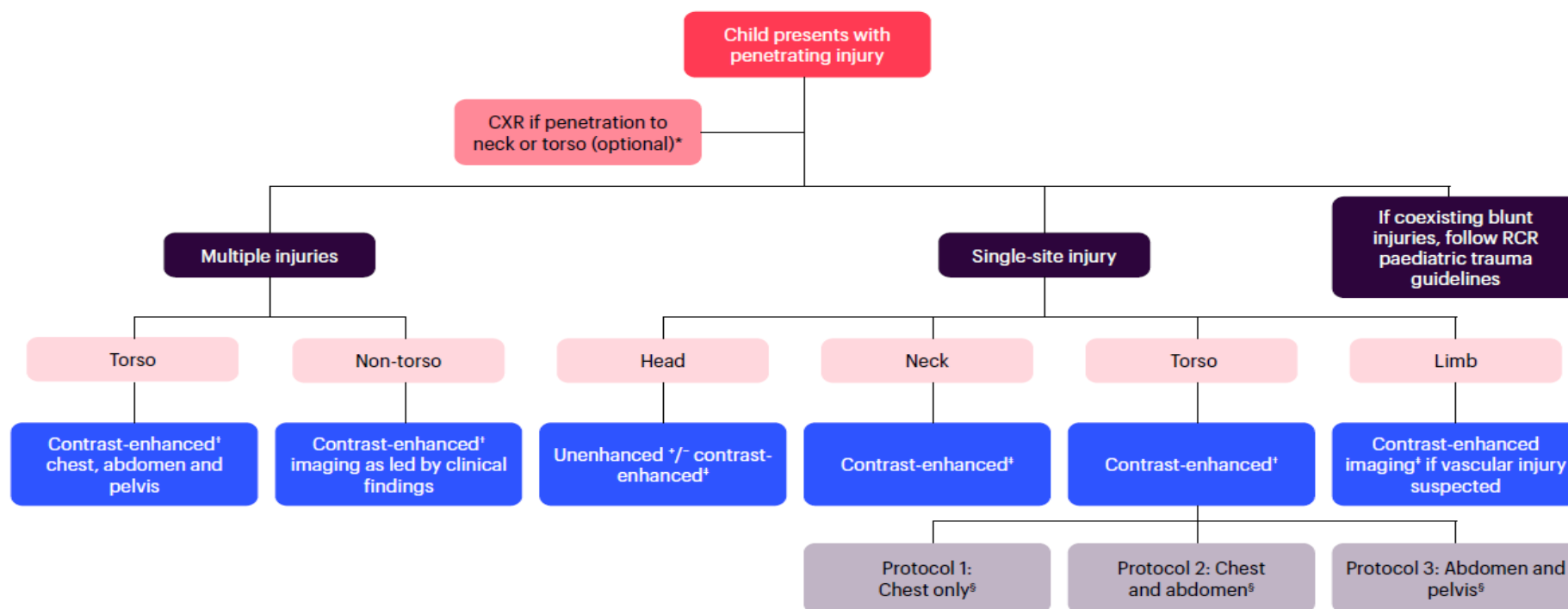


- RCHT modified Camp Bastion wheel – these are the different protocols available on the injector pump for contrast volume and flow rates.
- The CT scan protocol will have different age/weight options that may be slightly different to the options that are shown here.
- Don't forget there will also be saline boluses and timing pauses – these will all be in-built into the pump and scan protocols

Appendix 5. Major Paediatric Trauma Radiology Guidance RCR

A3

Suggested algorithm for the imaging of penetrating trauma in paediatric patients



* The need for CXR is a clinician-led decision, based on factors such as history and examination findings, patient stability, need for intervention, availability of cross-sectional imaging, etc

† Bastion or modified Bastion protocol is considered the standard for contrast administration, although the choice between the two protocols would be based on local practice

‡ Consider CT angiogram in place of Bastion or modified Bastion protocol if arterial injury is suspected

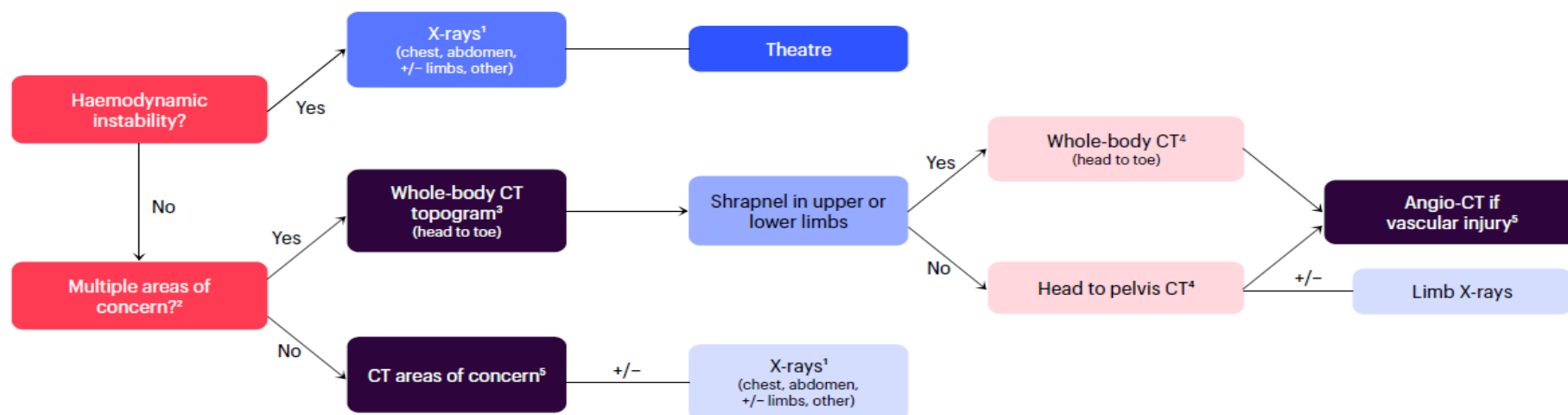
§ A wider CT coverage rather than a single body part should be considered if the entry wound occurs at the junction of two body parts or if there was a possibility of a wound depth or trajectory crossing between two body parts

Source: Low SBL, Tan Y, Patel H, Johnson K. Four-year experience of paediatric penetrating injuries: findings from a paediatric major trauma centre in the UK. *Clin Radiol* 2022; **77**: 244–254.

Appendix 6. Major Paediatric Trauma Radiology Guidance RCR

A4

Imaging algorithm for paediatric blast injuries



1. Include areas where there are visible injuries (eg point of entry for possible shrapnel) to guide surgical exploration
2. Low threshold for wider CT coverage when injuries suspected in multiple regions (eg head, neck, abdomen and pelvis, bones, vascular injuries)
3. Provides a whole-body map of shrapnel location and distribution
4. Non-contrast for head, split bolus for chest, abdomen, pelvis and limbs
5. Used to plan management by interventional radiology