C Trauma Unit Operational Policy

UCLH policy

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University College Hospital

National Hospital for Neurology and Neurosurgery

Eastman Dental Hospital **Royal National** Throat, Nose and Ear Hospital

Heart Hospital

Royal London Hospital for Integrated Medicine

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1. Trauma Quality Improvement Network System (TQuINS) Peer Review Referencing Table

Description	Measure Number	Page Number
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^{*}AR Annual Report – UCLH major trauma annual report 2014

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2. Summary

This policy contains detailed responsibilities, expectations and descriptions of the key processes to be followed and the key criteria to ensure management of the UCLH local Trauma Unit (TU). This is designed to ensure high quality care for UCLH trauma patients and to provide full compliance with the Trauma Quality Improvement Network System (TQuINS) TU assessment criteria and expectations.

3. Introduction

University College London Hospitals NHS Foundation Trust (UCLH) is a Trauma Unit (TU) within the North East London and Essex Trauma Network (NELETN).

The Network is comprised of 11 acute Trauma Units with the Royal London Hospital as the Major Trauma Centre (MTC), covering a population of 2.5 million across North Central, Inner and Outer North East London and South West Essex.

The Trauma Unit at University College Hospital (UCH) serves the local population from the London Boroughs of Camden, Islington and Westminster as well as a significant transient working commuter population and tourists.

4. Objectives

To ensure the UCLH Trauma Unit provides a high quality trauma service and meets the key TQuINS TU assessment criteria.

5. Scope

This policy describes the main aspects of the trauma patient pathway: Initial assessment, diagnostics and care at UCLH, transfer to the MTC, rehabilitation and repatriation. This policy is intended to be used by all those individuals and specialties within the UCLH Trauma Unit who are responsible for managing patient assessment, care, flow, transfer, rehabilitation or repatriation for trauma patients.

6. Definitions and abbreviations

APLS	Advanced Paediatric Life Support Course
ATLS	Advanced Trauma Life Support Course
BOAST	British Orthopaedic Association Standards for Trauma
CG	Clinical Governance
CWH	Chelsea and Westminster Hospital
ED	Emergency Department
ISS	Injury Severity Score
IEP	Image Export Portal
ITU	Intensive Therapy Unit

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LAS	London Ambulance Service
Major Trauma	Major trauma describes injuries that are or have the potential to be life threatening. In this context an Injury Severity Score (ISS) threshold of 15 is commonly used.
NHNN	National Hospital for Neurology and Neurosurgery, UCLH
RLH	Royal London Hospital
QSH	Queen's Square Hospital (NHNN)
SOP	Standard Operating Procedure
StR	Speciality Registrar Grade or equivalent
TARN	Trauma Audit Research Network
ТВІ	Traumatic Brain Injury
TTL	Trauma Team Leader Course
TTM	Trauma Team Member Course
UCH	University College Hospital
UCLH	University College London Hospitals NHS Foundation Trust

7. Duties

The Medical Director (MD) for the Medicine Clinical Board is accountable for implementing the Trauma Policy and ensuring compliance with the policy, via the Trauma Director, Emergency Services Divisional Clinical Director, Emergency Services General Manager, Heads of Operations, Divisional Clinical Directors and Divisional Managers, Heads of Nursing and Divisional Senior Nurses.

8. Specific details to explain the policy

8.1 Trauma Governance

The Trauma Working Group (TWG) was set up in 2012 in order to work collaboratively across specialties to promote safe and efficient trauma care at UCLH and within the NELETN community in accordance with best practice. Membership consists of representatives from the core specialities that manage trauma within the Trust. It is chaired by the Trust Trauma Director and meets on a quarterly basis. There is a clear governance structure in place for trauma care a shown in Figure 1).

The Trust Trauma Director is the clinical contact for the Trauma Unit and main point of contact for the Major Trauma Centre. Further roles include (one SPA is allocated for this role):

- Chair the TWG meetings and co-ordinate the development of best practice
- Compile a quarterly report for the Quality and Safety Committee
- Attend the NELETN meetings

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- Facilitate trauma education across the Trust
- Clinical validation for TARN data entry

Figure 1: Trauma Governance Structure at UCLH



8.2 Emergency Department Response

8.2.1 The Trauma Team

Initial Assessment

Timely clinical assessment of a trauma patient requires a suitably skilled group of professionals which may span across specialities. As far as possible this team should be assembled in readiness for the arrival of the patient.

Patients who arrive by ambulance will have been triaged according to the London Ambulance Service (LAS) 'Major Trauma Decision Tool' (Appendix 1.). Patients who are found suitable to be conveyed to a Trauma Unit (TU) may be phoned through by LAS control in order to facilitate trauma team activation prior to patient arrival.

Patient who self-present to the ED or arrive via LAS without being pre-alerted will be assessed in 'Triage' or in the Rapid Assessment and Treatment (RAT) area against the trauma team activation criteria (Refer to 'Adult Trauma Call' and 'Paediatric Trauma Call' SOPs, Appendix 2 and 3). These are based upon certain physiological, mechanism and injury pattern parameters, indicative of potential major trauma. The UCH trauma call criteria take into account that elderly, frail or intoxicated patients may suffer significant injuries from relatively minor trauma.

Trauma Team Activation

The trauma team can be activated at any time and by any doctor or nurse.

Activation is via hospital switchboard by calling 2222 and stating either 'Adult Trauma Team to A&E resus' for patient \geq 18 years or 'Paediatric Trauma Team to A&E resus' for patients <18 years.

This is followed up by a departmental public address announcement stating 'Adult Trauma Call in A&E resus' or 'Paediatric Trauma Call in A&E resus' to alert the ED consultant in charge (CIC), ED trauma lead registrar and ED trauma nurse.

Core Trauma Team

The core adult trauma team at UCH comprises

- ED consultant (CIC), Monday Friday 8-24, Weekends 8-22.30
- Trauma team leader, Decision making doctor (DmDr) as per rota
- ED junior doctor
- Anaesthetic Speciality Registrar (StR) on-call
- Anaesthetic junior doctor on-call
- Surgical StR on-call
- Surgical junior doctor on-call
- Trauma and Orthopaedic junior doctor on-call
- Nurse One, ED senior nurse as per rota
- Nurse Two, ED resus nurse
- ED radiographer

Paediatric trauma calls require additional team members as outlined in the 'Paediatric Trauma Call SOP' (Appendix 3).

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Entire Trauma Team and their availability

Core Team

Staff	08.00-24.00	24.00-08.00	Contact
ED Consultant	Attends	Available within 30min*	*Via switch
ED Registrar (DmDr)	Attends	Attends	
ED Junior Doctor	Attends	Attends	
Surgery StR**	Attends (8-20)	Available within 20min*	*Via switch
Surgery Junior Doctor	Attends	Attends	
T&O Junior Doctor	Attends	Attends**	
Anaesthetic StR	Attends	Attends	
Anaesthetic Junior Doctor	Attends	Attends	
ED Nurse 1	Attends	Attends	
ED Nurse II	Attends	Attends	
ED Radiographer	Attends	Attends	

** This role merges with the Surgery Junior Doctor from 20-8

Additional members

Staff	08.00-24.00	24.00-08.00	Contact
Surgical Consultant	Available* (at UCH 8-20)#	Available* #	*Via switch
T&O Consultant	Available* (at UCH 8-19)#	Available* #	*Via switch
T&O StR	Available* (at UCH 8-22)#	Available* #	*Via switch
ITU Consultant	Available*	Available* #	*Via switch
ITU StR	Available	Available	07939 135452
Paediatric Consultant	Available	Available*	07803853567
	08.30-21.30		*Via switch
Paediatric StR	Attends [†]	Attends [†]	
Paediatric Junior Doctor	Attends [†]	Attends [†]	
Radiology Consultant	Acute team*	Available ^{††}	*Extension 73225
Radiology StR	0800-1900	Not available	*Extension 73225
	Acute team*		
Interventional radiologist	Available 08-17*	Available 17-08**	*Extension 70225
	If not contact on call via switch	1 hour lead time to get staff in.	**Contact via switch
Haematologist	Available	Available	Contacts as per Major
			Haemorrhage SOP

[†]Attends <u>paediatric</u> trauma calls

⁺⁺ Out-of-hour senior radiology cover is provided by 'Radiology Reporting Online'

If off-site able to attend within 30 minutes

It is expected that the members of the core team attend the trauma call within 5 minutes.

Specific roles and responsibilities of the core team are described in the 'Adult Trauma Call' and 'Paediatric Trauma Call' SOPs, (Appendix 3)

Both the medical as well the nursing daily allocation sheets specify a 'Trauma Team Leader' and a 'Trauma Nurse' to cover the 24 hour period.

• The trauma team leader is of ST3 or above seniority and holds current ATLS/ETC accreditation. The team leader should hold a current APLS certificate and should have attended a simulation based 'Trauma Team Leader' course.

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- An APLS trained clinician has to available for paediatric trauma calls, i.e. the trauma team leader, ED consultant or paediatric registrar
- The 'Trauma Nurse' is a senior ED nurse of band 6.5 or above seniority who has attended an ATCN/ ATLS/ETC. He/she will resume the 'Nurse One' role within the trauma team. The trauma nurse should have attended a 'Trauma Team Member' course.

Between the hours of 08:00-24:00 (Monday-Friday) and 08:00-22:30 (weekends/bankholidays) the ED Consultant in Charge (CIC) will attend the trauma call and supervise the trauma team leader. A management plan has be documented and signed off by the ED consultant within the first 30 minutes of the trauma call. Out of hours the ED consultant has to be informed about significant major trauma patients. He/she will either provide advice over the phone or if necessary attend the trauma call.

Trauma team debrief

Every trauma call should be debriefed to enhance learning and to highlight potential concerns. The debrief should be facilitated by the ED consultant or the trauma team leader and has to be documented in the 'Trauma Booklet'. The trauma team leader has to email concerns to the Trust Trauma Director who will act upon them.

8.2.2 Trauma documentation

The NELETN designed 'Trauma Booklet' (Appendix 22) holds all major trauma related documentation and has to be filled in thoroughly. It is the trauma team leader's responsibility that all sections are completed.

The 'Trauma Booklet' has to be used in the following scenarios:

- All trauma called patients
- Trauma patients who will be transferred out to the MTC or a specialist unit (even if not trauma called).
- All patients who are admitted to UCH and require a tertiary survey.

The trauma booklet needs to be photocopied and a copy to be placed in the TARN collection box before the patient leaves the ED.



8.3 Patient Pathway/Secondary Transfer Protocol

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Notes to the flowchart:

- 1) As part of the initial assessment, potentially life-threatening injuries have to be identified and managed as per ATLS standards.
- 2) Haemodynamically stable patients either continue to show normal haemodynamics from the onset or respond to a fluid bolus rapidly and remain haemodynamically normal then after.

Transient responders or non-responders are significantly shocked and in the context of trauma major haemorrhage has to be assumed.

- 3) Consider appropriate blood products, transfusion regimes, tranexamic acid, reversal of anticoagulation and permissive hypotensive resuscitation as outlined in the 'Major haemorrhage' SOP (Appendix 4).
- 4) In exceptional circumstances (haemodynamically unstable single system injury), patients can be treated at UCH if immediate theatre access AND an appropriate senior surgeon are available (within < 30 minutes). This has to be discussed amongst the ED consultant (CIC), senior surgeon and the ED consultant at RLH taking the short transfer time between UCH and RLH into account. These patients may need to be re-trauma called post-surgery.</p>
- 5) The patient needs to be transferred to theatres with the whole trauma team, 'Level 1' and blood products. For further details refer to the 'Transfer SOP' (Appendix 5). These patients have to be discussed with the ED consultant at RLH at the earliest convenient point and are likely to need transfer to RLH post-surgery.
- 6) The majority of these patients benefit from the expertise of a MTC urgently. Arrange early for time critical transfer with anaesthetic escort as described in the 'Transfer' SOP (Appendix 5). Communicate with the ED consultant at RLH at the earliest possible point.
- 7) Early intubation of these patients has to be considered. If in doubt, contact the ED consultant (CIC) or the ED consultant at RLH for advice.
- 8) Whole body CT is the diagnostic modality of choice in major trauma where patients are stable enough for transfer to CT. Consider transfer with trauma team escort as per 'Transfer' SOP (Appendix 5).
- 9) Contact the ED consultant at RLH via switchboard. Advice will be given regarding initial management, transfer acceptance and transfer urgency (time critical vs. immediate).
- 10) The 'Transfer' SOP (Appendix 5) gives advice on how to arrange LAS transfer, the level of escort required, monitoring, transfer documentation etc.
- 11)Refer to the 'Head Injury' SOP (Appendix 6) regarding classification and initial management.
- 12)Stable patients with significant multisystem injury (ISS >15) may benefit from transfer to the MTC. These patients have to be discussed with the ED consultant at the RLH.
- 13)UCH provides specialist maxilla-facial care. Most other trauma related specialist services are located at the RLH. Discuss these patients with the ED consultant at RLH.
- 14)Queen's Square Hospital (NHNN) provides specialist care for haemodynamically stable single system spinal injuries. For the appropriate referral pathway refer to the 'Spinal Injuries' SOP (Appendix 7)
- 15)Chelsea and Westminster Hospital is the designated Burns Centre for UCLH. For the appropriate referral pathway consult the 'Burns Injuries' SOP (Appendix 8)

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16)Refer to the 'Admission to UCH' section of this document for further information regarding the admission of trauma patients to UCH.

8.4 Paediatric Trauma

Management of paediatric trauma follows the general processes above, with the following adaptations. Also refer to the 'Paediatric Trauma Call' SOP (Appendix 3)

Transfer from	Primary medical problem	Escort requirements	Documentation	Transfer destination
UCH ED Resus 5	Intubated with time- critical condition	Senior anaesthetist Paeds ED nurse	Paeds trauma booklet	МТС
UCH ED Resus 5	Intubated without time-critical condition	Senior anaesthetist Paeds ED nurse	Paeds trauma booklet	MTC or Specialist Centre
UCH ED Resus 5	Time-critical condition not requiring intubation	Senior anaesthetist Paeds ED nurse	Paeds trauma booklet	MTC or Specialist Centre
UCH ED Resus 5	Stabilised, not intubated, ongoing need for MTC or Specialist Centre	Paramedic +/- Paeds ED nurse	Paeds trauma booklet	MTC or Specialist Centre

The specific paediatric trauma booklet is used for all documentation. Also ensure that all test results and imaging reports are included and that images are transfer to the receiving hospital by IEP.

Consider CATS (Children's Acute Transport Service) transfer for non-time-critical transfers (Contact 0800 0850003).

8.5 Transfer Arrangements

The course of the trauma patient's journey at UCH is outlined in section 8.3) and follows the NELETN 'Secondary Transfer' protocol (Appendix 15).

There are clear arrangements for both intra-hospital as well as inter-hospital transfers. The 'Transfer SOP' (Appendix 5) outlines the specific personnel and equipment needs to facilitate timely and safe transfer.

8.5.1 Transfer to the RLH

There are two scenarios which require transfer to the regional MTC as outlined in the network's secondary transfer protocol.

- 1) Critical transfer: Time critical life or limb saving interventions are required which cannot be provided at UCLH.
- 2) Immediate transfer: Non time-critical specialist care is required which cannot be provided at UCLH or at any other regional specialist centre (i.e. burns centre).

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LAS response targets:

- O Critical transfer: ≤8 minutes
- o Immediate transfer: ≤60 minutes

The over-all responsibility of arranging the appropriate transfer and to communicate with the ED consultant at the RLH lies with the trauma team leader. The 'Nurse One' or nurse-in-charge communicates with LAS and books the relevant level of transfer.

Specific transfer roles and responsibilities are outlined in the 'Transfer SOP' (Appendix 5).

The transfer documentation include the trauma booklet (Appendix 22) with the transfer page completed, copies of all test results and copies of all imaging reports.

8.5.2 Transfer to Specialist Units

The 'Transfer SOP' as well as relevant process SOPs (i.e. 'Burns', Paediatric Transfer', 'Spinal Injury') provide guidance.

8.5.3 Intra-Hospital Transfer

Transfers to CT, interventional radiology, theatres, ITU and the wards have to be planned in a similar way to inter-hospital transfers. The 'Transfer SOP' provides guidance regarding personnel and equipment needs.

8.6 Major Haemorrhage and Transfusion

UCLH has a named clinical lead for transfusion and haematology.

The haematology consultant on-call (Contact via switchboard) provides 24/7 transfusion advice.

The departmental 'Major Haemorrhage' SOP (Appendix 4) incorporates:

- The NELETN massive transfusion protocol (Appendix 17)
- The Trust's Major Haemorrhage Protocol (Algorithm, Appendix 19)
- Advice about administration of tranexamic acid in accordance with the CRASH-2 trial
- o Advice about reversal of anticoagulation in acute haemorrhage

8.7 Radiology

8.7.1 Emergency Department XR

The XR facilities within the Emergency Department consist of a mobile unit covering all five resuscitation room bays as well as three XR rooms, allowing for timely trauma XRs.

There is 24/7 ED radiographer cover and the bleep-holding radiographer is part of the trauma team.

8.7.2 CT Imaging in Trauma

UCH provides 24/7 access to CT for trauma patients. There are 2 multi-detector scanners based on Level 2 in the main UCH building, dedicated to acute and inpatient imaging.

There is 24/7 on-site CT radiographer cover (Contact 07852 220814).

UCLH uses NELETN approved protocols for CT imaging in trauma (Appendix 17) and adheres to protocols used at the regional MTC (Appendix 10).

Pathway for requesting Trauma CT

To expedite the investigation of patients presenting with trauma, senior ED staff (ST4 and above) can request CT Head and CT C-spine imaging by direct discussion with the radiographers 24/7. An electronic request has to be submitted on CDR clearly stating the clinical indication as per NICE Guidelines.

CT requests in multisystem trauma must be discussed with the radiologist. It is recognised that whole body CT is the diagnostic modality of choice in major trauma where patients are stable enough for transfer to CT.

Prioritisation of CT requests from the Emergency Department

There is a prioritisation protocol in place to allow timely CT imaging in trauma.

Order of priority (with flexibility depending on clinical need):

- 1. Thrombolysable stroke
- 2. Acute aortic injury (i.e. aneurysm, dissection)
- 3. Trauma including head injury
- 4. Non-thrombolysable stroke
- 5. Other

Targets for 'time of request to time of CT'

- NELETN for CT in major trauma: ≤30 minutes
- NICE guidance for 'NICE positive' head injuries: ≤ 60 minutes

CT Reporting

Acute CT reports are issued by:

- The Acute Team at UCH Mon Fri (08:00-19:00), Sat-Sun (09:00-17:00), Bank Holidays (as per weekend hours). The Acute Team is composed of several radiology registrars and consultants.
- Radiology Reporting Online (RRO) a teleradiology company, outside of the Acute Team's working hours.
 RRO is a consultant led service delivered by a team of radiologists based in the UK and Australia.

Contact: Phone: 05603665670 or via UCLH switchboard.

If unable to connect: Unanswered calls are diverted to an RRO on-call manager (17:00-09:00 Mon-Fri, 24 hours at weekends).

If the problems persist, 0800 334 5088 connects to RRO offices.

A contingency plan for network failure is in place (Appendix 21)

The Acute Team work against NICE and NELETN targets:

- CT Head: provisional written report made available within 60 minutes of the scan being performed.
- CT C-spine: provisional written report made available within 60 minutes of the scan being performed.
- In significant major trauma where CT findings are pivotal for acute management: Immediately after completion (Trauma team leader to contact the Acute Team on completion of scan).

RRO reporting targets:

- CT Head: 30 minutes
- CT single region (spine/ limb): 60 minutes
- Multisystem CT: 90 minutes

Image Exchange Portal (IEP)

UCLH is connected to the IEP which enables immediate transfer of images to external sites. All CT radiographers have access to this application and are able to transfer images 24/7.

It is the duty of the bleep-holding ED radiographer to ensure that all images are transferred to the relevant site prior to patient transfer.

8.7.3 Angiography and Interventional Radiology

A fully equipped interventional angiography suite with adjacent hybrid theatre facilities is available on level 2 at UCH. This service is available 24/7 with on-site staffing between 09:00-17:00 Monday-Friday and on-call cover out of these hours. Out-of-hours staff will be on-site and the facilities activated within an hour.

Contact extension 70225 (9-17) or via UCH switchboard out-of-hours.

When a decision has been made to transfer a patient for interventional radiology, a senior surgeon has to be on stand-by in case the patient requires subsequent surgery.

8.8 Admission to University College Hospital

8.8.1 Roles and Responsibilities

Patients who are suitable to be treated at UCH in accordance to the trauma patient pathway outlined in section 8.3) are usually admitted under the following specialities.

Speciality	Ward	Patient needs	Designated lead speciality consultant	Responsibility of tertiary survey
ITU*	ITU	 Need for level 2 or 3 care on basis of: Patients clinical needs Observational needs which cannot be met on a ward High likelihood for deterioration which would then require level 2/3 care Chest wall injuries which require regional blocks 	ITU consultant In conjunction with the speciality consultant who will continue care after patient discharge from ITU	ITU team
Trauma & Orthopaedics	T6 T10	 Injuries require T&O surgical or non-surgical management 	Trauma and Orthopaedics consultant	T&O team
Surgery	Т9	 Injuries require surgical or non-surgical management which can be provided safely at UCH, i.e. low grade solid organ injuries, etc. Period of observations in suspected hollow viscus injuries Management of mild/moderate chest trauma which does not require specialist input 	Consultant surgeon	Surgical team
Emergency Medicine	CDU	 Minor head injuries which require monitoring Patients to be followed up in TBI clinic at NHNN 	Emergency Department consultant (CIC)	ED team
Paediatrics	T11 T12	 ≤ 18 years No need for level 2/3 Managed in conjunction with surgical speciality or For on-going observations (i.e.HI) 	Paediatric consultant in conjunction with surgical speciality consultant as indicated	On-call surgical team
Medicine of the Elderly⁺	AMU	 ≥ 65years or positive frailty scores/assessment Non-surgical management (i.e. head injuries, spinal osteoporotic compression fractures) or Post initial surgical management Specific patient needs are best met on a designated 	Medicine of the Elderly In conjunction with surgical speciality consultant as indicated	On-call surgical team

Refer to section	8.2.1 f	for team	availabilities	and	contact	details.

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		Care of the Elderly ward i.e. specialist clinician input, physiotherapy, tailored analgesia, rehabilitation etc.		
Maxillo-facial surgery	T14	 Isolated maxilla-facial injury which requires acute intervention 	Consultant Maxillo-facial surgeon	On-call surgical team

⁺ In case elderly patients are admitted to ITU or under a surgical speciality, they have to be reviewed by a Medicine of the Elderly Consultant within 24 hours of admission.

* Also refer to the 'Pathway to critical care for injured patients' SOP (Appendix 23)

Please note that neither the specialty list nor the 'clinical needs' section are exhaustive and is to be understood as guidance.

In case patients require the involvement of more than one speciality team, it is important that these specialities communicate early on consultant level. This discussion should involve the ED consultant.

Every trauma patient is admitted under a designated lead speciality consultant of the day as outlined above. This consultant is responsible for the co-ordination of on-going care. In case the clinical needs require the input of more than one speciality team, this role can be shared.

For 24/7 clinical advice the ED consultant at RLH and the on-call consultant trauma surgeon at RLH can be contacted (both via RLH switchboard) at any point throughout the patient's journey.

If the patient's condition deteriorates dramatically, critical transfer arrangements to the RLH can be initiated at any time. The 'Transfer SOP' (Appendix 5) provides guidance around this process.

8.8.2 Access to senior surgical staff

UCH provides a 24/7 response from an intensivist, anaesthetist, general surgeon and trauma & orthopaedic surgeon of ST3 or above seniority.

In case on-call commitments are covered off-site, the relevant clinician must be available at UCH within 30 minutes if requested.

There is on-call consultant cover for each of these specialities 24/7 via UCH switchboard.

Refer to section 8.2.1) for contact details.

8.8.3 Dedicated orthopaedic trauma operating theatre

Theatre 7 on level 3 at UCH is the designated trauma operating theatre and provides all equipment needed for fracture fixation.

An orthopaedic consultant is job-planned to staff a daily trauma theatre list (at weekends this is the on-call consultant).

On Tuesday, Wednesday, Friday, Saturday there is a dedicated 4 hour emergency theatre session allocated to orthopaedic trauma. On Monday, Thursday and Sunday this list is shared with other emergency operating with orthopaedics retaining priority for a 4 hour

session with the exception of life/limb threatening emergencies and paediatric emergencies.

There is 24/7 emergency theatre staffing.

Orthopaedic trauma management is discussed at a 08:00 daily trauma meeting. Prior to this is a 07:45 emergency theatre meeting attended by the theatre 7 consultant anaesthetist and the operating trauma and orthopaedic surgeon, general surgeon and maxilla-facial surgeon to prioritise the cases.

Trauma management follows the British Orthopaedic Association Standards for Trauma (BOAST) guidelines.

8.8.4 Trauma Co-ordinator Service

A Trauma Clinical Nurse Specialist is available Monday-Friday 8.5 hours/day who provides care co-ordination primarily for orthopaedic trauma patients but is also a point of contact for specific queries regarding trauma patients admitted under other specialty teams at UCH (Contact via UCH switchboard).

All trauma patients who are admitted to UCH have to be entered to the Sirona DM database (VantageTM Diagnostics). The responsibility of data entry lies with the admitting team and details captured include:

- o Patient demographics
- Lead consultant (s)
- o Ward
- o Details of injuries
- o Management plan
- o Discharge plan including follow-up arrangements and physiotherapy needs
- Rehabilitation needs

This local database can be accessed by the trauma co-ordinator, speciality teams, PERT team (ITU outreach) and therapy teams. It supports acute and future therapy planning and helps to co-ordinate the multi-disciplinary team.

8.8.5 Physiotherapy Services

There is 7 days a week physiotherapy availability for trauma patients at UCH.

This service is provided by service and ward therapy teams on a daily basis and by on-call physiotherapists out-of-hours.

Patient who were admitted to ITU and are consequently transferred to a ward get followed up by the ITU outreach team.

8.8.6 Rehabilitation

Trauma patients who are admitted to UCH get their potential needs for rehabilitation routinely assessed, following national guidance. The appropriate level of rehabilitation is then instigated and rehabilitation prescriptions are issued as indicated within 72 hours of admission.

All trauma related services and wards are covered by therapy teams comprising amongst others physiotherapists, occupational therapists and speech-and-language therapists.

The following rehabilitation pathway is followed at UCH:



Following repatriation, patients have a nominated therapist who liaises with the therapy team at the MTC and monitors the rehabilitation prescription. A clear therapy/rehabilitation plan is formulated and documented in the medical notes.

8.8.7 Discharge

A detailed discharge summery has to be generated covering the following point:

- o A list of all injuries
- o Details of operations including dates
- o Instructions for next stage rehabilitation for each injury (including braces and casts)
- o Follow up clinic appointments

This should be sent to the patient's GP in a timely fashion and a copy should be given to the patient on discharge.

The responsibility of this process lies with the designated lead speciality consultant.

8.9 Repatriation

8.9.1 Repatriation to UCLH from MTC

UCLH is responsible for medically repatriating patients from regional MTCs as outlined in the NELETN repatriation policy (Appendix 18)

Key principles of this process are:

- MTC notifies UCH bed management team of potentially suitable patients within 12 hours of admission to the MTC
- MTC informs UCH bed management team 48 hours prior to patient being expected to be ready for repatriation, outlining details about injuries, treatment and ongoing treatment and rehabilitation needs.
- UCH bed management team contact the on-call surgical and/or trauma and orthopaedics consultant and identify the admitting lead speciality.
- As soon as a decision to transfer a patient from the MTC has been reached, it is UCLH's responsible to repatriate this patient within 48 hours.

The repatriation algorithm (Appendix 20) describes the process in more detail.

An escalation process for patients who are not repatriated to UCLH within the 48 hour period is established (Appendix 20).

8.9.2 Repatriation to local care-provider from UCLH

Trauma patients who are suitable to be repatriated out following their initial acute treatment at UCLH follow the established Trust processes. The 'Management of Patient Flow – UCH Tower' Policy can be found on the Trust's intranet.

8.10 Trauma Management Guidelines

Trauma management guidelines exist primarily in the form of Standard Operating Procedures (SOP) which incorporate national, network and local protocols and guidelines. These SOPs cover both trauma related processes and procedures and are available on the Trust's intranet and as hard-copies in the ED.

Amongst others, there are SOPs covering the following topics:

- Management of spinal injuries (Appendix 7) The management of this patient group follows agreed network standards. The National Hospital for Neurology and Neurosurgery as part of UCLH provides care for single system spinal injuries on a local level. The regional Spinal Cord Injury Centre is based at the Royal National Orthopaedic Hospital. Nationally agreed jointcare management and referral pathways are in place.
- Management of multiple rib fractures (Appendix 11)
- o Management of musculoskeletal trauma
 - Compartment syndrome (Appendix12)
 - o Long-bone and peri-articular fractures, following nationally agreed standards.
 - Open fracture management (Appendix 13)
 - o Pelvic Trauma (Appendix 14)
- Management of burns injuries (Appendix 8)

UCLH - 2013

Published Date: January 2015 Review by Date: January 2017 Policy/procedure only current on date printed, refer to Insight for definitive version.

8.11 Trauma Audit Research Network (TARN)

UCLH subscribes to TARN. A TARN co-ordinator organises the data collection process and facilitates case reviews with the Trust Trauma Director as necessary. There are established links with data capture analysts in IT services.

UCH employs a number of medical students for 5 hours a week as TARN assistants to input the relevant data sets. This activity is overseen by the TARN co-ordinator to ensure consistently high quality data submission.

The TARN co-ordinator is expected to have attended all relevant TARN data-input courses and provides introductory sessions to the TARN assistants. TARN assistants are encouraged to attend the relevant data input courses.

The results of the audit are discussed both on local as well as regional level. At UCLH this involves regular updates on speciality CG, TWG and Quality and Safety Committee levels.

8.12 Training and Education

	Essential	Desirable
Senior ED doctor, ST4+/Consultants	ATLS [*] , APLS [*]	TTL, US level 1
Junior ED doctor		ТТМ
Senior doctor of the core trauma team		ATLS [*] , TTM
Junior doctor of the core trauma team		ТТМ
Senior nurse Band 6.5+	ATCN/ATLS [*] /ETC	APLS [*] , TTM
Nurse band 5		ТТМ

Training and educational requirements

* Current accreditation

Training provision

The Trust organises regular ATLS, TTM and paediatric trauma courses and all members of the multi-disciplinary team are encouraged to attend these courses in accordance to their training needs.

The Emergency Department runs regular high-fidelity trauma simulations which are facilitated by appropriately trained SIM instructors.

9. Monitoring and Audit

1. Key process/part of this policy for which compliance or effectiveness is being monitored	2. Monitoring method (i.e. audit, report, on- going committee review, survey etc.)	3. Job title and department of person responsible for leading the monitoring	4. Frequency of the monitoring activity	5. Monitoring Committee responsible for receiving the monitoring report/audit results etc.	6. Committee responsible for ensuring that action plans are completed
Compliance with the procedures for Incident reporting and management of risk assessments and action plans.	Internal and external compliance with TQuINS measures	Trust Trauma Director	Quarterly	Trauma working group	Quality & Safety Committee



10. Appendices Appendix 1: London Ambulance Service Major Trauma Decision Tool

UCLH - 2013

Published Date: January 2015

Review by Date: January 2017

Policy/procedure only current on date printed, refer to Insight for definitive version.



Published Date: January 2015 Review by Date: January 2017 Policy/procedure only current on date printed, refer to Insight for definitive version. Trauma Unit Operational Policy

Appendix 2) Adult Trauma Call SOP



RAUMA

Trauma care Standard Operating Procedure

Adult Trauma Call

<u>Scope</u>

This Standard Operating Procedure is to facilitate high level, efficient care of the trauma patient. Timely clinical assessment and treatment of a trauma patient requires a suitably skilled group of professionals who span across specialties. As far as possible, this team should be assembled and briefed in readiness for the arrival of the patient.

Equipment

January 2017 TWG

• Trauma Call Role Cards (Appendix 1)

Equipment location

Resuscitation Room Trauma Call folder

Equipment contact

trauma.equip@uclh.nhs.uk

Trauma Team Members:

- ED Consultant in Charge (CIC)* •
- ED Speciality Registrar (Trauma Team Leader as allocated on rota)
- ED Junior Doctor
- Anaesthetic Specialty Registrar
- Anaesthetic Junior Doctor •
- Surgical Speciality Registrar + •
- Surgical Junior Doctor⁺ •
- Trauma & Orthopaedic Junior Doctor⁺
- ED Nurse 1 (Band 6.5 or above as allocated on rota) •
- ED Nurse 2 (Band 5 or above as allocated on rota) •
- **ED** Radiographer

For roles and responsibilities please see Trauma Team Role Cards, (Appendix 1)

^{*} Mon-Fri 08:00-00:00, Sat-Sun (and bank holidays) 08:00-22:30.

⁺ From 20:00-08:00 the roles of Surgical Registrar, Surgical Junior Doctor and Trauma & Orthopaedics Junior Doctor are all carried out by the On-Call Surgical Junior Doctor. The Surgical Registrar has to be informed about the patient at the earliest convenient point.

Trauma Team Activation Criteria:

1) LAS pre-alert 2) Team activation according to the following criteria:

- 2013 hed Date: January 2015 January 2017 / by Date: procedure only current on date printed, refer to Insight for definitive version.

1.0 January 2015

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BEWARE

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University College London Hospitals

UCH TRAUMA UNIT

Adult trauma call criteria

A trauma call may be initiated **at any time** in the emergency department by **any doctor or nurse**. Call 2222 and state **"ADULT TRAUMA CALL IN A&E RESUS**." Then make the following PA announcement (**for <u>every</u> trauma call**): **"TRAUMA TEAM LEADER AND NURSE IN CHARGE TO RESUS FOR MAJOR TRAUMA CALL**."

Mechanism

Falls > 3m / 10 foot / 12 steps Consider trauma call for lower heights in age over 65 * RTC driver / passenger >30mph Consider trauma call for lower speed RTC in age over 65 * RTC ejection from vehicle RTC death of other passenger in RTC RTC rollover or significant vehicle deformation RTC pedestrian, pedal cyclist or motor cyclist vs. vehicle * Entrapment >30mins Gunshot wound Major crush injury Blast injury HEMS call

Physiology

History of trauma and any one of: Intubated patient Respiratory rate <10 or >30 Hypoxia (saturation <90%) Tachycardia (>100 bpm) Hypotension (SBP <90mmHg) Reduced conscious level (GCS <14) and/or

significant confusion or agitation (even if this is thought to be caused by intoxication)

Limb paralysis, paraplegia or quadriplegia

Pregnant patient (>20 weeks gestation) *

Injury pattern

Potential airway injury Significant chest injury Major haemorrhage Burns >20% BSA or any facial burns Consider trauma call for lower BSA in age over 65 * Penetrating injury to head, neck, or torso Penetrating injury to head, neck, or torso Penetrating injury to leg proximal to elbow Penetrating injury to leg proximal to knee Amputation or open fracture proximal to wrist Amputation or open fracture proximal to ankle Suspected pelvic fracture 2 or more suspected long bone fractures

* Discretionary trauma calls

At the discretion of the triage nurse, patients who meet one of these criteria (and <u>no other</u> criteria) may be assessed by the duty **Trauma Team Leader (TTL)** before deciding to trauma call. This initial assessment must be made within 5 minutes of the patient's arrival in the emergency department. If the triage nurse is concerned about the patient, or if there is a delay in TTL assessment, a trauma call must be put out.

Please document in the **trauma booklet** for all trauma call patients and change the EPR presenting complaint to **TRAUMA CALL**. Leave a copy of the completed trauma booklet in the tray at reception.

• FRAIL •
 • ELDERLY •
 • MENTAL HEALTH •
 • DEMENTIA •
 • PREGNANCY •

These patients may

suffer serious injuries from relatively minor trauma.

They may not be able to communicate effectively and can be difficult to manage.

Apparently normal physiology may mask serious underlying injury.

SEEK SENIOR HELP EARLY. IF IN DOUBT TRAUMA CALL



Patient Assessment and Initiation of Interventions



6

<u> Appendix A – Trauma Team Role Cards</u>



ED Consultant

- 1. Retains overall responsibility for the Trauma Patient's care until discharged/transferred/admitted
- 2. Oversees the trauma team including co-ordination of primary and secondary surveys and timely investigations
- 3. Assesses clinical management priorities in conjunction with the Trauma Team Leader
- 4. Communicates effectively with Consultant colleagues within the Core Team of specialties as well as ITU and other relevant specialties
- 5. Signs off initial management plan in trauma booklet within 30mins of the arrival of the Trauma Patient
- 6. Oversees a short debrief with the trauma team following the completed trauma call
- 7. Debriefs the Trauma Team Leader



ED Specialty Registrar Trauma Team Leader

- 1) Greets arriving Trauma Team members and ensures team introduce themselves and are wearing appropriate PPE including lead aprons and have read relevant Role Card
- 2) Ensures equipment is available and easily accessible as required
- 3) Briefs Trauma Team and ensures clear allocation of roles
- 4) Leads co-ordination of the trauma team including co-ordination of primary and secondary surveys and timely investigations
- 5) Assesses patient's clinical presentation and management priorities in conjunction with surgical and anaesthetic colleagues and ensures the trauma team are aware of these
- 6) Considers decision to initiate Major Haemorrhage Protocol
- 7) Considers early involvement of Intensive Care Team
- 8) Ensures appropriate analgesia given
- 9) Ensures early referral to appropriate specialties not represented on the Trauma team e.g. Interventional Radiology, Maxillofacial
- 10) Arranges admission, transfer or discharge of patient including direct liaison with the MTC as appropriate
- 11)Ensures the Trauma Booklet is completed with all relevant and mandatory information prior to the patient leaving the department
- 12)Undertakes a short debrief with the Trauma Team following the completed Trauma Call and ensures team members complete ² Trauma Call Feedback forms



ED Junior Doctor

- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Works closely with Nurse 1.
- 3. Gains IV access as per Advanced Trauma Life Support protocols.
- 4. Ensures appropriate trauma blood samples are obtained (FBC, U&E, LFT, CRP, Coag, VBG and G&S or Crossmatch) and labs informed,
- 5. Requests further investigations as directed by the ED Registrar ie CXR, CT etc
- If directed by the Trauma Team Leader, facilitates the Major Haemorrhage Protocol as per Major Haemorrhage Protocol SOP
- 7. If directed by Trauma Team Leader, inserts urinary catheter
- 8. Awaits instruction to stand down from Trauma Team Leader
- 9. Takes part in debrief following Trauma Call and completes feedback form



<u>Anaesthetic Specialty</u> <u>Registrar</u>

- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Works closely with Anaesthetic Junior Doctor
- 3. Takes responsibility for managing the patient's airway
- 4. Assists with difficult vascular access/invasive monitoring as requested by Trauma Team Leader
- 5. Prepares for and provides anaesthetic escort for patient transfers when requested by Trauma Team Leader (Refer to 'Transfer SOP')
- 6. Completes relevant sections of the Trauma Booklet
- 7. Communicates with Anaesthetic Consultant as required
- 8. Awaits instruction to stand down from Trauma Team Leader
- 9. Takes part in debrief following Trauma Call and completes feedback form



Anaesthetic Junior Doctor

- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Works closely with Anaesthetic Registrar
- 3. Assists Anaesthetic Registrar with assessment of airway as required
- 4. Assists Anaesthetic Registrar with placement of invasive monitoring as required
- 5. Contacts Critical Care as advised by Trauma Lead or Anaesthetic Registrar
- 6. Awaits instruction to stand down from Trauma Team Leader
- 7. Takes part in debrief following Trauma Call and completes feedback form



Surgical Specialty Registrar

- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Works closely with Surgical Junior Doctor
- 3. Undertakes the primary survey, including eFAST scan
- 4. Notifies the Trauma Team Leader & ED Consultant if unable to perform eFAST scan who will then proceed with scan
- 5. Undertakes immediately required interventions for lifethreatening injuries as identified by the primary survey
- 6. Liaises with Surgical Consultant as appropriate
- 7. Completes relevant sections of the Trauma Booklet
- 8. Awaits instruction to stand down from Trauma Team Leader
- 9. Takes part in debrief following Trauma Call and completes feedback form

Over-night (20.00-8.00):

The roles of the 'Surgical Specialty Registrar', 'Surgical Junior Doctor' and 'T&O Junior Doctor' are carried out by the surgical on-call doctor.

If at any stage the Junior Doctor is required to perform a procedure beyond their competency level, they must inform the Trauma Team Leader immediately for reallocation of the task.

The surgical registrar has to be contacted and updated by the surgical on-call doctor by phone at the earliest convenient point.



Surgical Junior Doctor (*)

- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Works closely with Surgical Registrar
- 3. Assists Surgical Registrar with assessment of injuries
- 4. Assists Surgical Registrar with immediate interventions for life-threatening injuries
- 5. Contacts theatres as advised by Trauma Team Leader or Surgical Registrar
- 6. Awaits instruction to stand down from Trauma Team Leader
- 7. Takes part in debrief following Trauma Call and completes feedback form

(*) Over-night (20.00-8.00):

The roles of the 'Surgical Specialty Registrar', 'Surgical Junior Doctor' and 'T&O Junior Doctor' are carried out by the surgical on-call doctor.

. If at any stage the Junior Doctor is required to perform a procedure beyond their competency level, they must inform the Trauma Team Leader immediately for reallocation of the task.

The surgical registrar has to be contacted and updated by the surgical on-call doctor by phone at the earliest convenient point.



Trauma & Orthopaedics Junior Doctor

- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Undertakes the secondary survey
- 3. Liaises with on-call T&O Registrar as appropriate
- 4. Completes relevant sections of Trauma Booklet, marking all injuries in the secondary survey section
- 5. Initiates initial interventions in discussion with the Trauma Team Leader i.e. splinting/traction/immobilisation
- 6. Awaits instruction to stand down from Trauma Team Leader
- 7. Takes part in debrief following Trauma Call and completes feedback form

Over-night (20.00-8.00):

The roles of the 'Surgical Specialty Registrar', 'Surgical Junior Doctor' and 'T&O Junior Doctor' are carried out by the surgical on-call doctor.

. If at any stage the Junior Doctor is required to perform a procedure beyond their competency level, they must inform the Trauma Team Leader immediately for reallocation of the task.

The surgical registrar has to be contacted and updated by the surgical on-call doctor by phone at the earliest convenient point.





- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Undresses patient and assists into gown
- 3. Ensures patient has patient name band
- 4. Assists ED Junior Doctor with bloods and cannula
- 5. Manages Level 1 Blood Transfusion equipment if required
- 6. Administers any medication and fluids as instructed by the Trauma Team Leader
- 7. Facilitates and prepares equipment required for intra/inter-hospital transfer
- 8. Facilitates handover to ward
- 9. Facilitates portering assistance
- 10. Facilitates LAS transfer if required
- 11. Awaits instruction to stand down from Trauma Team Leader
- 12. Takes part in debrief following Trauma Call and completes feedback form


ED Nurse 2

- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Documents the hand-over informations and the findings of the primary survey in the relevant sections of the trauma booklet
- 3. Obtains, documents and communicates all relevant observations at 10minute intervals
- 4. Checks blood products and IV medications/fluids with Nurse 1
- 5. Prepares and assists with relevant procedures
- 6. Communicates with the patients family/friends present in the department
- 7. If patient being transferred, photocopies completed Trauma Booklet and puts original in Trauma Tray in resus
- 8. Re-stocks any relevant equipment following the Trauma Call
- 9. Awaits instruction to stand down from Trauma Team Leader
- 10. Takes part in debrief following Trauma Call and completes feedback form



ED Radiographer

- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Takes Chest and Pelvic XR as required during the Primary Survey when directed by the Trauma Team Leader
- 3. Facilitates further imaging as directed by Trauma Team Leader
- 4. Prioritises trauma imaging as per trust protocol
- 5. Communicates with the CT radiographer in order to arrange for an immediate CT imaging slot
- 6. Facilitates the transfer of images via Image Exchange Portal (IEP) on patient transfer to MTC/Specialty Unit as required
- 7. Awaits instruction to stand down from Trauma Team Leader
- 8. Takes part in debrief following Trauma Call and completes feedback form

Appendix 5) Paediatric Trauma Call SOP

RAUMA

University College London Hospitals MHS **NHS Foundation Trust**



Trauma care Standard Operating Procedure

Paediatric Trauma Call

Scope

January 2017 TWG

This Standard Operating Procedure is to facilitate high level, efficient care of the trauma patient and includes all patients under the age of 18 years. Timely clinical assessment and treatment of a trauma patient requires a suitably skilled group of professionals who span across specialties. As far as possible, this team should be assembled and briefed in readiness for the arrival of the patient.

Equipment

• Trauma Call Role Cards (Appendix 1)

Equipment location

Resuscitation Room Trauma Call folder

Equipment contact

trauma.equip@uclh.nhs.uk

Trauma Team Members:

- ED Consultant in Charge (CIC)* •
- ED Specialty Registrar (Trauma Team Leader as allocated on rota) •
- **ED** Junior Doctor ٠
- Anaesthetic Specialty Registrar •
- Anaesthetic Junior Doctor •
- Paediatric Specialty Registrar •
- Paediatric Junior Doctor
- Surgical Specialty Registrar ⁺ •
- Surgical Junior Doctor⁺ •
- Trauma & Orthopaedic Junior Doctor⁺ ٠
- ED Nurse 1 (Band 6.5 or above as allocated on rota)
- Paediatric ED Nurse 2 (Band 5 or above as allocated for Resus) •
- ED Radiographer

For roles and responsibilities please see Trauma Team Role Cards, (Appendix 1)

Mon-Fri 08:00-00:00, Sat-Sun (and bank holidays) 08:00-22:30.

⁺Out of hours the roles of Surgical Registrar, Surgical Junior Doctor and Trauma & Orthopaedics Junior Doctor are all carried out by the On-Call Surgical Junior Doctor The Surgical Registrar has to be informed about the patient at the earliest convenient point.

Trauma Team Activation Criteria:

1) LAS pre-alert 2) Team activation according to the following criteria:

2013

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hed Date: January 2015 January 2017 *i* by Date: procedure only current on date printed, refer to Insight for definitive version.



BEWARE

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APPROPRIATE

VITAL SIGNS AND MODIFIED

GCS / AVPU

SCORES.

SEEK SENIOR

HELP EARLY. IF IN DOUBT TRAUMA CALL

REMEMBER SAFEGUARDING

University College London Hospitals **NHS**

NHS Foundation Trust

UCH TRAUMA UNIT

Paediatric trauma call criteria

A trauma call may be initiated at any time in the emergency department by any doctor or nurse. Call 2222 and state "PAEDIATRIC TRAUMA TEAM TO EMERGENCY DEPARTMENT RESUS ROOM." Then make the following PA announcement (for <u>every</u> trauma call): "TRAUMA TEAM LEADER & NURSE IN CHARGE TO RESUS FOR PAEDIATRIC TRAUMA CALL."



Mechanism

Fall more than twice the child's height RTC passenger >30mph RTC ejection from vehicle RTC death of other passenger in RTC RTC rollover or significant vehicle deformation RTC pedestrian or cyclist vs. vehicle Bicycle injury resulting in groin / abdominal pain Fall from or trampled by large animal Entrapment >30mins Gunshot wound Major crush injury Blast injury HEMS call

Physiology

History of trauma and any one of:

Intubated patient

Respiratory rate outside the range given in the table to the right

Injury pattern

Potential airway injury Significant chest injury Major haemorrhage Burns >20% BSA (Burns >15% BSA in children younger than 1 year) Facial burns or circumferential burns Penetrating injury to head, neck, or torso Penetrating injury to head, neck, or torso Penetrating injury to arm proximal to elbow Penetrating injury to leg proximal to elbow Penetrating injury to leg proximal to knee Amputation or open fracture proximal to wrist Amputation or open fracture proximal to ankle Suspected pelvic fracture 2 or more suspected long bone fractures

CHILDREN'S NORMAL VITAL SIGNS

Age (years)	Resp. rate (min ⁻¹)	Pulse rate (min ⁻¹)
< 1	30 – 40	110 – 160
1 – 2	25 – 30	100 – 150
2 - 5	25 - 30	95 – 140

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Patient Assessment and Initiation of Interventions





NHS Foundation Trust

Appendix A – Trauma Team Role Cards

ED Consultant

- 1) Retains overall responsibility for the Trauma Patient's care until discharged/transferred/admitted
- 2) Oversees the trauma team including co-ordination of primary and secondary surveys and timely investigations
- 3) Assesses clinical management priorities in conjunction with the Trauma Team Leader
- 4) Communicates effectively with Consultant colleagues within the Core Team of specialties as well as ITU and other relevant specialties
- 5) Signs off initial management plan in trauma booklet within 30mins of the arrival of the Trauma Patient
- 6) Oversees a short debrief with the trauma team following the completed trauma call
- 7) Debriefs the Trauma Team Leader



ED Specialty Registrar Trauma Team Leader

- 1) Greets arriving Trauma Team members and ensures team introduce themselves and are wearing appropriate PPE including lead aprons and have read relevant Role Card
- 2) Ensures equipment is available and easily accessible as required
- 3) Briefs Trauma Team and ensures clear allocation of roles
- 4) Leads co-ordination of the trauma team including co-ordination of primary and secondary surveys and timely investigations
- 5) Assesses patient's clinical presentation and management priorities in conjunction with anaesthetic, surgical and paediatric colleagues and ensures the trauma team are aware of these
- 6) Ensures appropriate early analgesia is given. Where appropriate considers the use of distraction techniques or involvement of the play specialist.
- 7) Considers decision to initiate Major Haemorrhage Protocol
- 8) Ensures early referral to appropriate specialties not represented on the Trauma team e.g. Maxillofacial
- 9) Arranges admission, transfer or discharge of patient including direct liaison with the MTC as appropriate
- 10)Considers early involvement of CATS retrieval service and where required the intensive care team
- 11)Ensures the Trauma Booklet is completed with all relevant and mandatory information prior to the patient leaving the department
- 12)Undertakes a short debrief with the Trauma Team following the completed Trauma Call and ensures team members complete Trauma Call Feedback forms



ED Junior Doctor

- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Works closely with Paediatric ED Nurse 2.
- Ensures appropriate trauma blood samples are obtained (FBC, U&E, LFT, CRP, Coag, VBG and G&S or Crossmatch) and labs informed,
- Requests further investigations as directed by the ED Registrar ie CXR, CT etc
- 5. If directed by the Trauma Team Leader, facilitates the Major Haemorrhage Protocol as per Major Haemorrhage Protocol SOP
- 6. Awaits instruction to stand down from Trauma Team Leader
- 7. Takes part in debrief following Trauma Call and completes feedback form



<u>Anaesthetic Specialty</u> <u>Registrar</u>

- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Works closely with Anaesthetic Junior Doctor
- 3. Takes responsibility for managing the patient's airway
- 4. Assists with difficult vascular access/invasive monitoring as requested by Trauma Team Leader
- 5. Prepares for and provides anaesthetic escort for patient transfers when requested by Trauma Team Leader (Refer to 'Transfer SOP')
- 6. Completes relevant sections of the Trauma Booklet
- 7. Communicates with Anaesthetic Consultant as required
- 8. Awaits instruction to stand down from Trauma Team Leader
- 9. Takes part in debrief following Trauma Call and completes feedback form



Anaesthetic Junior Doctor

- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Works closely with Anaesthetic Registrar
- 3. Assists Anaesthetic Registrar with assessment of airway as required
- 4. Assists Anaesthetic Registrar with placement of invasive monitoring as required
- 5. Contacts Critical Care as advised by Trauma Lead or Anaesthetic Registrar
- 6. Awaits instruction to stand down from Trauma Team Leader
- 7. Takes part in debrief following Trauma Call and completes feedback form



Surgical Specialty Registrar

- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Works closely with Surgical Junior Doctor
- 3. Undertakes the primary survey, where appropriate including an eFAST scan
- 4. Notifies the Trauma Team Leader & ED Consultant if unable to perform eFAST scan who will then proceed with scan
- 5. Undertakes immediately required interventions for lifethreatening injuries as identified by the primary survey
- 6. Liaises with Surgical Consultant as appropriate
- 7. Completes relevant sections of the Trauma Booklet
- 8. Awaits instruction to stand down from Trauma Team Leader
- 9. Takes part in debrief following Trauma Call and completes feedback form

Overnight (20.00-8.00):

The roles of the 'Surgical Specialty Registrar', 'Surgical Junior Doctor' and 'T&O Junior Doctor' are carried out by the surgical on-call doctor.

The surgical registrar has to be contacted and updated by the surgical on-call doctor by phone at the earliest convenient point.



Surgical Junior Doctor

- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Works closely with Surgical Registrar
- 3. Assists Surgical Registrar with assessment of injuries
- 4. Assists Surgical Registrar with immediate interventions for lifethreatening injuries
- 5. Contacts theatres as advised by Trauma Team Leader or Surgical Registrar
- 6. Awaits instruction to stand down from Trauma Team Leader
- 7. Takes part in debrief following Trauma Call and completes feedback form

Overnight (20.00-8.00):

The roles of the 'Surgical Specialty Registrar', 'Surgical Junior Doctor' and 'T&O Junior Doctor' are carried out by the surgical on-call doctor.

The surgical registrar has to be contacted and updated by the surgical on-call doctor by phone at the earliest convenient point.



Trauma & Orthopaedics Junior Doctor

- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Undertakes the secondary survey
- 3. Liaises with on-call T&O Registrar as appropriate
- 4. Completes relevant sections of Trauma Booklet, marking all injuries in the secondary survey section
- 5. Initiates initial interventions in discussion with the Trauma Team Leader i.e. splinting/traction/immobilisation
- 6. Awaits instruction to stand down from Trauma Team Leader
- 7. Takes part in debrief following Trauma Call and completes feedback form

Overnight (20.00-8.00):

The roles of the 'Surgical Specialty Registrar', 'Surgical Junior Doctor' and 'T&O Junior Doctor' are carried out by the surgical on-call doctor.

The surgical registrar has to be contacted and updated by the surgical on-call doctor by phone at the earliest convenient point.



Paediatric Specialty Registrar

- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Checks WETFLAG calculations by paediatric junior doctor
- 3. Gains IV access as per Advanced Trauma Life Support/Advanced Paediatric Life Support protocols
- 4. Ensures appropriate trauma blood samples are obtained
- 5. Ensures appropriate early analgesia
- 6. Assists Trauma Team Leader with fluid and medication calculations
- 7. If required liaises with CATS retrieval service
- 8. Considers any safeguarding issues, checks child protection plan
- 9. Completes relevant sections of the trauma booklet
- 10. Communicates with Paediatric Consultant
- 11. Awaits instruction to stand down from Trauma Team Leader
- 12. Takes part in debrief following Trauma Call and completes feedback form

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Paediatric Junior Doctor

- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Prepares WETFLAG calculations
- 3. Assists Paediatric Registrar with IV access and bloods
- 4. Assists Trauma Team Leader with fluid and medication calculations when required
- 5. Communicates effectively with parents/family
- 6. Awaits instruction to stand down from Trauma Team Leader
- 7. Takes part in debrief following Trauma Call and completes feedback form



ED Nurse 1

- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Documents the hand-over informations and the findings of the primary survey in the relevant sections of the trauma booklet including initial observations
- 3. Manages Level 1 Blood Transfusion equipment if required
- 4. Administers any medication and fluids as instructed by the Trauma Team Leader
- 5. Facilitates and prepares equipment required for intra/inter-hospital transfer
- 6. Facilitates handover to ward
- 7. Facilitates portering assistance
- 8. Facilitates LAS transfer if required
- 9. If patient being transferred, photocopies completed Trauma Booklet and puts original in Trauma Tray in resus
- 10. Awaits instruction to stand down from Trauma Team Leader
- 11. Takes part in debrief following Trauma Call and completes feedback form

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Paediatric ED Nurse 2

- 1. Prepares by reading Role Card and putting on PPE & lead apron
- 2. Remove scoop if required, undresses patient and assists into a gown
- 3. Attach initial monitoring
- 4. Ensures patient has patient name band
- 5. Obtains, documents and communicates all relevant observations at 10minute intervals
- 6. Checks blood products and IV medications/fluids with Nurse 1
- 7. Prepares and assists with relevant procedures
- 8. Communicates effectively with family as required
- 9. Facilitates intra/inter hospital transfer as required
- 10. Re-stocks any relevant equipment following the Trauma Call
- 11. Awaits instruction to stand down from Trauma Team Leader
- 12. Takes part in debrief following Trauma Call and completes feedback form

Appendix 4) Major Haemorrhage SOP

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University College London Hospitals **NHS NHS Foundation Trust**



Trauma care Standard Operating Procedure

Major Haemorrhage

Scope:

The Massive Haemorrhage Protocol is the pathway to obtain blood and blood products in acute or anticipated massive blood loss. Please use this SOP alongside the Fluid Resuscitation in Trauma SOP.

Massive haemorrhage can be defined as the loss of one blood volume within 24 hours, or loss of 50% of the blood volume within 3 hours or >150mls/min. During a massive haemorrhage, blood loss greater than 40% of the patient's estimated blood volume (EBV) is immediately life threatening.

The goals for management are maintenance of tissue perfusion and oxygenation by restoration of blood volume and haemoglobin and appropriate use of additional blood components to correct coagulopathy. Empiric use of blood components may be required whilst awaiting coagulation results. Control cause of bleeding by treating the cause (see Pelvic Trauma, Abdominal Trauma and Thoracotomy SOPs).

Equipment

MAJOR HAEMORRHAGE PACK

6 x Packed Red Cells (PRC) 4 x FFP

ADDITIONAL PACK (IF REQUIRED)

2 x Cryoprecipitate 1 x Platelets

Indications

Trauma Team Leader's clinical decision Suspicion of ongoing haemorrhage or uncontrolled haemorrhage Haemodynamic instability (Pulse rate >100bpm or SBP <90) in the context of penetrating or blunt trauma

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Pathway of the Management of Major Haemorrhage in Trauma:

A single nominated person will be the liaison between the blood bank, the Transfusion StR and Switchboard.

- This person will telephone 2222 and declare a Major Haemorrhage stating "I want to trigger a Major Haemorrhage Protocol" giving the patient's exact LOCATION, their NAME and PHONE NUMBER
- Switchboard will tell the Blood Bank and Transfusion SpR to contact the nominated liaison
- The nominated liaison will tell Blood Bank
 - 1. Exact Location
 - 2. Patient's Full Name
 - 3. Hospital number
 - 4. Date of Birth
 - 5. Whether emergency O negative/positive blood has been used
- Send courier to collect Haemorrhage Pack from Blood Bank, giving them the red blood box to do so.
- This may be done prior to patient arrival to ensure timely arrival of further O negative blood and FFP.
- Send one group and save sample as soon as possible. This must be handwritten. This is to ensure group specific blood is provided.
- Blood should also be taken for FBC, U&Es, LFTs, Coagulation and Clauss Fibrinogen
- Give 1g tranexamic acid (within 3 hours of injury), followed by 1g over 8 hours
- Octaplex is a human plasma-derived Prothrombin Complex Concentrate (PCC) and should be used for the <u>reversal of warfarin</u> in cases of trauma related major bleeding. (See Appendix 1)
- Transfuse blood and FFP according to University College London Hospitals transfusion policy. Aim for a 1:2 ratio PRC:FFP

TRANSFUSION TARGETS

Initial resuscitation for severely injured patients is based on a strategy of permissive hypotension

Resuscitation aims are to increase blood pressure without reaching normotension, aiming for cerebration in the awake patient, or 70-80 mm Hg in penetrating trauma and 90 mm Hg in blunt trauma)

This strategy should be used to bridge the time between the emergency department and definitive treatment

• Note higher ratios of plasma and platelets to packed red cells appear to be associated with improved survival in patients with massive hemorrhage.

- Stand down the Major Haemorrohage when further products not required, informing courier and Blood Bank.
- Discuss with Haematology Consultant / SpR if transfusion ongoing or patient is or becomes coagulopathic.
- All blood products must be prescribed and accounted for (especially in the case of patients are being transferred to an MTC)

IMPORTANT C	ONTACT DETA	AILS
Blood Bank	Ext 78523/78522	Bleep 7060
Haematology	Ext 78961	Bleep 7060
Coagulation	Ext 78547	
Transfusion SpR		Bleep 7050
General Haem SpR	(out of hours)	Via switch
Haematology consult	ant	Via switch

References

UCL Hospitals NHS Foundation Trust Major Haemorrhage Protocol 2012

British committee for standards in haematology (BCSH) (2006): Guidelines on the Management of Massive Blood Loss. *British Journal of Haematology* 135(5): 634-41

CRASH-2 trial collaborators (2010) Effects of tranexamic acid on death, vascular occlusive events, and blood transfusion in trauma patients with significant haemorrhage (CRASH-2): a randomised, placebo-controlled trial.*Lancet.* Jul 3; 376(9734):23-32

Harris T, Thomas GO, Brohi K (2012) Early fluid resuscitation in severe trauma BMJ 345:e5753

Young PP, Cotton BA, Goodnough LT (2011) Massive transfusion protocols for patients with substantial haemorrhage. *Transfus Med Rev* 25(4): 293-303

APPENDIX 1

Protocol for Warfarin Reversal

Octaplex is a human plasma-derived Prothrombin Complex Concentrate (PCC) and should be used for the reversal of warfarin in cases of trauma related major bleeding. These situations include intracranial, compartment syndrome, pericardial, intraocular and active bleeding with haemodynamic compromise. Patients on warfarin presenting with a strong suspicion of intracerebral bleed should have their anticoagulation reversed before the result of any investigations.

Octaplex (Prothrombin complex concentrate-PCC) contains blood clotting factors II, VII, IX, X, protein C and S. Octaplex rapidly and specifically replaces the vitamin-K clotting factors depleted by warfarin to correct INR

Haemostasis Consultant must authorise use via the haemostasis or transfusion SpR (via switchboard)

Indication	Dose of Octaplex Max 3,000 u(120 ml)/single dose	Also administer phytomenadione (Vitamin K) as below
Major bleeding	15U/kg(0.6ml/kg) or 30U/kg (1.2 ml/kg) depending on severity/whether crucial site	5-10mgIV
Intracranial haemorrhage	50 U/kg(2ml/kg)	10mg IV

Do NOT wait for INR result before giving PCC.

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Trauma care Standard Operating Procedure

Patient Transfer- inter and intra facility

Scope:

This standard operating procedure is intended to cover transfer of the patient from ED resuscitation to another intra-hospital destination (e.g. theatres or radiology) and inter-facility transfer, usually to UCLH's receiving Major Trauma Centre, the Royal London Hospital.

This SOP incorporates the North East London and Essex Trauma Network decision tree, the London Trauma Office "Pan London Guidance for Transfer to a Major Trauma Centre" and pre-existing local guidelines.

Personnel and equipment:

The nature of the escort and equipment required will vary according to the distance to be travelled, the clinical status of the patient and the potential interventions required.

Equipment location:

ED resus

Equipment contact:

Trauma.equip@uclh.nhs.uk

Abbreviations:

	Chest X-Ray
eFAST:	Extended focussed assessment using sonography in trauma
IV:	Intravenous
MTC:	Major Trauma Centre
PXR:	Pelvic X-Ray
Resus:	ED resuscitation room
RLH:	Royal London Hospital
SOP:	Standard Operating Procedure
UCH:	University College Hospital
UCLH:	University College London Hospitals NHS Trust



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Decision To Transfer

A full primary survey including CXr, PXR & eFAST scan should take place on arrival at UCH. Decision to transfer to any location outside of ED resus ultimately rests with the trauma team leader.

Inter-Facility Transfer Required

The necessary interventions cannot be provided within UCLH

YES

Critical or Immediate Inter-Facility Transfer?

Is intervention required to preserve life or limb?

YES

Critical Transfer LAS arrival within 8 minutes

- Make early decision to transfer
- Perform Critical Interventions (IV access, chest drain, pelvic binder etc)
- Package patient for transfer
- Prepare escorting team and equipment
- Copy trauma booklet
- Initiate image transfer via IEP
- Send copies of all tests
- Team Leader to inform UCH ED consultant in charge
- Nurse in charge to book "Critical transfer" to RLH with LAS control (020 7343 6212)
- UCLH Trauma Team Leader should make a courtesy call to the consultant ED physician at RLH prior to departure or whilst the patient is en route
 BLH ED consultant, 020 2446 5000 (art, 45722)

RLH ED consultant: 020 3416 5000 (ext. 45722 or bleep 1113)

• The RLH has an automatic acceptance policy for major trauma within the network, so prior discussion is not routinely required.¹

NO

Immediate Transfer LAS arrival within 60 minutes

- Discuss patients on a case by case basis with RLH as these are NOT covered by the automatic acceptance policy
- Team Leader to discuss with RLH ED consultant: 020 3416 5000 (ext. 45722 or bleep 1113)
- Package patient for transfer
- Prepare escorting team and equipment
- Copy trauma booklet
- Team leader to inform UCLH ED consultant in charge
- Nurse in charge to book "immediate transfer" to RLH with
 LAS control: 020 7343 6212

Indications for Anaesthetic Escort²

- The patient is intubated (N.B. Patients with GCS ≤8 should be intubated prior to transfer)
- GCS has fallen 2 points in the last hour
- Posterior fossa haemorrhage with brainstem signs
- Evidence of respiratory/airway compromise
- Significant ongoing bleeding
- Significant haemodynamic compromise
- Team Leader discretion

YES

Transfer with LAS crew, UCH ED nurse and UCH anaesthetist

In hours the anaesthetist will keep the anaesthetic lead informed of an impending transfer. Out of hours the anaesthetist will inform the first on-call anaesthetic consultant (second if unavailable) and the critical care registrar of an impending transfer out of the hospital

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Transfer with LAS crew and UCH ED nurse

NO

If LAS provides a paramedic crew, the need of a nurse escort can be reviewed by the trauma team leader.

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Follow Relevant Intra-Facility Transfer guidance on Equipment, IV Access, Monitoring and Drugs

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LAS may return escorting team to UCH. If not, a taxi should be booked and the nurse in charge of UCH ED will pay on return.

Intra-Facility Transfer Required

The necessary interventions can be provided within UCLH. Critical interventions (IV access, chest drain, pelvic binder etc) should be performed prior to leaving resus.

YES	_	
Is the patient significantly haemodynamically compromised?	YES	Transfer with all members of the trauma team.
NO		
Is there possible airway or respiratory compromise not requiring immediate intubation?		Transfer with ILS trained ED nurse and an an anaesthetist
Is the patient stable and intubated?	YES	Consider intubation prior to transfer
Does the patient require sedation for a CT scan (consider intubation pre-transfer)?		
NO		
Is the patient stable and non-intubated?	YES	Transfer with ILS trained ED nurse

	Transfer Equipment and Guidance		
Significantly Haemoo	lynamically Compromised Patient		
Equipment:	Ensure pelvic binder and emergency interventions are undertaken in resus Internal transfer bag, level one infuser (see Level One SOP) Oxygen, suction, emergency airway bag, ventilator (if intubated)		
Patient Access:	2x wide bore peripheral or trauma lines		
Monitoring:	Continually monitored, SpO ₂ , ECG, NIBP (5 minute cycle), end tidal CO ₂ , and invasive blood pressure		
Drugs:	RSI drugs, propofol for maintenance, muscle relaxants, anti-emetics, major haemorrhage protocol blood products for volume expansion		

Possible Airway or Respiratory Compromise Not Requiring Immediate Intubation Agitated But Haemodynamically Normal Patient Requiring Sedation for Scan Stable Intubated Patient

Equipment:	Internal transfer bag, oxygen, ventilator, monitor, suction, emergency airway bag
Patient Access:	2x IV access
Monitoring:	Continually monitored, SpO_2 , ECH, NIBP (5 minute cycle), end tidal CO_2 , invasive blood pressure monitoring only available if arterial line present
Drugs:	RSI drugs, propofol for maintenance, muscle relaxants, anti-emetics

		_
Stable, Non-Intubated	Patient	
Equipment:	Internal transfer bag	
Patient Access:	Minimum single peripheral IV access	
Monitoring:	Continually monitored, SpO ₂ , ECG, NIBP (5 minute cycle)	9
Drugs:	Nil specific for transfer	

References

1 NELETN Major Trauma Centre Automatic Acceptance Policy 2 UCLH Trauma Critical Care Transfer Policy v1.1 2012 Appendix 6) Head Injury SOP

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Trauma care Standard Operating Procedure

Head Injury

January 2017

J Hunter, J Mackenney <u>Review Date:</u>

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Review Body:

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Author:

Scope:

This Trauma Standard Operating Procedure applies to all adults presenting to the Emergency Department (ED) with head injury.

It is intended to aid decision-making relating to CT imaging that may be required and to clarify admissions policies and referral pathways for minor and moderate head injured patients within UCLH and more broadly within the trauma network.

Abbreviations used:

CDR	Clinical Data Repository
CDU	Clinical Decision Unit
СТ	Computerised Tomography
DMDR	Decision Making Doctor (ED registrar or above)
DMR	Duty Medical Registrar
ED	Emergency Department
GCS	Glasgow Coma Scale
IEP	Image Exchange Portal (image-linking to another trust)
RLH	Royal London Hospital
RRO	Radiology Reporting Online
UCH	University College Hospital

Severe Head Injury



If imaging not suggestive of significant significant trauma, continue workup looking for other causes of low GCS and refer to UCLH ITU registrar.

General treatment measures for severe head injury

- Nurse head up 30 degrees if possible (bed tilt if spinal precautions).
- Secure ETT without obstructing venous return.
- Avoid hypotension.
- When ventilating, aim for normocapnoea on arterial blood gas analysis.
- Seizure prophyaxis with phenytoin IV loading.
- Use hypertonic saline if evidence of actual or impending cerebellar tonsillar herniation, or as directed by a neurosurgeon.

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Initial Assessment of minor/moderate head injured patient on arrival to the ED



If required, imaging will need discussion with radiologist: **73259** or OOH: RRO via

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Admission pathway



under ED consultant (1)

<u>Notes</u>

(1) Criteria for admission to UCH if none of the above

- New clinically significant abnormality on imaging discussed with the Royal London UCLH - **Detus**osurgical on call and not requiring surgical intervention Published Osteot returning to \$5 after imaging

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No competent adult at home to supervise patient for 24 hours

Policy for admission to CDU

- Must be sanctioned by consultant (StR at night)
- Must have a drug chart and CDU paperwork completed
- Patients clinically suitable for admission to CDU and at a low risk of significant CT abnormality can be admitted to CDU to await CT head

Neuro-Observations in ED or CDU

- Minimum documented observations
 - o GCS, pupil size and reactivity, limb movements
 - o Respiratory rate, heart rate, BP, temperature, SpO2
- Performing and recording observations
 - o Half hourly until GCS 15
 - When GCS 15: half hourly for 2 hours, the 1-hourly for 4 hours, then 2 hourly
 - o Revert to half hourly observations if patient deteriorates

Discharge Criteria

- CT scan performed if indicated and reported
- Resolution of all significant symptoms and signs
- Supervision at home in place
- Verbal and written head injury advice given

Follow Up – Refer to Traumatic Brain Injury clinic if:

- Period of post-traumatic amnesia >1 hour in the absence of drugs/alcohol
- Loss of consciousness at the scene
- An abnormal CT head scan
- Significant post-concussion symptoms
- Abnormal neurological findngs
- Other concern identified

References

- NICE Head Injury Guideline CG176
- UCLH trustwide guideline: Head injury admission pathways for adult patients (intranet)

University College London Hospitals NHS Foundation Trust

Contact details

Fraumatic Brain Injury Outpatient Service The National Hospital for Neurology and Website: www.uclh.nhs.uk/nhnn Queen Square Neurosurgery WC1N 3BG Box 125 London

Email: UCLH.TBIreferrals@nhs.net **[BI Clinical Nurse Specialists**] Direct Tel: 020 3448 4303 Fax: 020 3448 3796

University College London Hospitals NHS Foundation Trust Date next review due: September 2016 Leaflet code: UCLH/NHNN/TBI /PIL01 Date last reviewed: September 2014 Publication date: January 2014 2014

translated copy of this document, please contact us on 020 3448 4303. We will try lf you need a large print, audio or our best to meet your needs.



National Hospital for Neurology and Neurosurgery

Fraumatic Brain Injury **Outpatient Service**



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Teamwork Improving Kindness

delivering top-quality patient care, excellent education and world class research We are committed to

Safety

Injury Intervention Group – a workshop run community based provision including social services, community rehabilitation teams, We also have strong links with external Neurorehabilitation and vocational providing psycho education, cognitive Headway and Headway East London, strategies and support for adjustment. Complex post traumatic epilepsy Attend ABI, and the Homerton RNRU by our dedicated Neuropsychologist On-site we also have access to: Post traumatic Headache Spasticity Management Neuro-ophthalmology Neuro-endocrinology Specialist referrals Pain Management Sleep Disorders Neuropsychiatry Uro-neurology Neuro-otology rehabilitation Outreach team. All patients have access to comprehensive specialist neurological, neuropsychological Neurologists, a Clinical Neuropsychologist Depending on the complexity of the injury, ollowed by referral to relevant community Complex brain injury follow-up clinic, ehabilitation as indicated, and our Brain and a Consultant Neuro-endocrinologist The clinic is staffed by three Consultant consequences of traumatic brain injury. and endocrinological assessment, with follow up at NHNN will be in either the: access to specialist neuro-radiological This clinic presents an opportunity for Other relevant specialist clinics. diagnostic imaging during the clinic, based and/or in-hospital services. individualised cognitive feedback neuropsychological assessment, Neuropsychology services Brain injury CNS-led clinic Individual or group based with specialist expertise in the Neuropsychology Б • comprehensive multi-disciplinary outpatient Centre (MTC) and to all patients with brain disciplinary Brain Injury clinic appointment to fully assess the patient and their needs. We provide an initial Consultant-led multi-Our Traumatic Brain Injury Clinical Nurse hotline and messaging service for advice, behavioural needs that require specialist relatives, social services and other case Initial Brain Injury Triage Clinic Specialist (CNS) provides a telephone This patient group often have complex njured patients on discharge from the Royal London Hospital Major Trauma injury on discharge from the NELETN ollow up service for Traumatic Brain support and information for patients, We aim to provide a dedicated and workers. Any referrals can also be physical, cognitive, affective and Initial Point-Of-Contact ongoing care and support discussed via this hotline. Frauma Units (TUs).

Appendix 7) Spinal Injury SOP

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Trauma care Standard Operating Procedure

Spinal Injury

January 2017

Review Date:

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Scope:

This SOP is to provide clinical and operational guidance for multi-disciplinary and cross-departmental management of patients suffering from spinal injuries. This includes assessment, initial resuscitation and management as well as definitive care arrangements.

Occasionally, serious spinal injuries would be taken to the ED at UCH due to one of the following reasons:

- Patient has a compromised ABC that needs immediate resuscitation.
- Patient deteriorated following initial triage. •
- Patients were under triaged. •

This guidance sets out the pathways for protecting the spine, clinical and radiographic assessments and admission routes for patients presenting with suspected or diagnosed spinal injury as well as the management of Spinal Cord Injuries (SCI) at UCLH.

1) Spinal precaution and protection

I- Indications for immobilisation

- Altered level of consciousness (GCS <15 on initial assessment) 0
- Intoxication 0
- Distracting injury
- Neck pain or tenderness 0
- Neurological deficit 0
- Mechanism of injury suggestive of SCI 0

II- Contraindications

- Isolated gunshot to the head, unless the bullet path traverses the neck 0
- Isolated stab wound to the neck even if a neurological deficit is identified 0

III- Technique of immobilisation

The spine should be protected, as per ATLS standards, at all times during the initial management of the multiply injured patient.

IV- Cervical Spine clearance in the unconscious/intubated patient

- Cervical spine clearance should be performed within 72 hours of injury. Ο
- Computed tomography of the cervical spine from the occiput to T1 including axial, 0 sagittal, and coronal images, should be utilised for cervical clearance.
- Computed tomography of the cervical spine is sufficient to allow clearance of the 0 cervical spine.

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2) Spinal Assessment

The following rules should apply when assessing the spine in all trauma patients:

- Initial assessment should be as per ATLS protocol (ABCD).
- Spinal immobilisation is a priority in multiple trauma if indicated.
- The spine should be assessed as part of the primary survey and cleared when appropriate.
- Imaging the spine does not take precedence over life-saving diagnostic and therapeutic procedures.

I- Clinical Assessment

The spine can be clinically cleared when the following criteria are met:

- 1- Alert (GCS 15)
- 2- Not intoxicated
- 3- No distracting injury
- 4- No neurological deficit
- 5- No focal tenderness or pain
- 6- Pain free range of motion could be assessed

* This category includes patients who were involved in a simple mechanism of injury, sitting comfortably in the ED or delayed presentation.

II- Radiographic assessment

If unable to assess the spine clinically precede to radiographic assessment.

XR assessment with 3-view c-spine

- 1- Not in coma (GCS>13)
- 2- No neurology
- 3- Focal spinal tenderness
- 4- Age < 65 years

Indication for CT

- 1- Unconscious: GCS<13
- 2- Conscious with Positive-Neurology (Paraesthesia or Focal deficit)
- 3- Scanning for multiple trauma (Esp. Head Injury)
- 4- Inadequate or suspicious XRs
- 5- Continuous clinical suspicion (i.e. continuous significant pain) and equivocal XR assessment

Indication for MRI

- 1- Neurological deficit, assessment of the spinal cord
- 2- Further fracture assessment
- 3- Assessment of ligamentous integrity
- 4- Assessment for occult injury in cases of equivocal CT findings
- 5- Assessment of osteoporotic compression fractures: acute versus chronic

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3) Patient Pathway/Secondary Transfer

Notes to the flowchart:

- 1) As part of the initial assessment, potentially life-threatening injuries have to be identified and managed as per ATLS standards. Consider appropriate spinal precautions.
- 2) Following relevant imaging, patients should be discussed with the duty neurosurgical specialty registrar at QSH (Bleep 8100 or mobile 07960 664901) to establish the need for admission. Other helpful contacts are: ED consultant at RLH or neurosurgical on-call at RLH (both via switchboard).
- Patients who have suffered a spinal injury which <u>does not</u> require admission (i.e. spinous/transverse process fracture) but who need to be admitted for other injuries which can be treated at UCH, should be admitted to UCH.
- 4) Contact the ED consultant at RLH via switchboard. Advice will be given regarding initial management, transfer acceptance and transfer urgency. Also refer to the 'Transfer SOP'.
- 5) \geq 65 years taking the outcome of frailty/functional assessment into account.
- 6) Contact bleep 4301. These patients will need onward referral to 'Medicine of the Elderly'. These patients should be discussed with the neurosurgical StR at QSH and a management plan should be documented in the notes.
- 7) Bleep 8100 or mobile 07960 664901
- 8) LAS transfer as per 'Transfer SOP' in case of time critical or immediate transfer needs. UCLH hospital-transport (via switchboard) in all other cases.

4) Spinal Cord Injury

In case a patient with Spinal Cord Injury (SCI) is admitted to UCLH, it is the duty of the admitting team to ensure that:

• The patient is referred to a Spinal Cord Injury Centre (SCIC) within 4 hours of admission. The Royal National Orthopaedic Hospital is the regional SCIC.

Referral platform: <u>www.nscisb.nhs.uk</u> which links into the NSCID database.

- A joint management plan is then formulated with the SCIC consultant. This plan has to be documented in the medical notes.
- If the patient is not transferred to the Spinal Cord Injury Centre, the SCIC will provide out-reach nursing/therapy services within 5 days of referral. It also provides telephone advice and support to team and patient.

5) References

NICE Guidelines (CG 176) Head Injury: Triage, assessment, investigation and early management of head injury in children, young people and adults, 2014

UCLH Spinal Injury Admission Pathway for adult patients, 2014

Helical Computed Tomographic Scanning for the Evaluation of the Cervical Spine in the Unconscious, Intubated Trauma Patient. Brohi, Karim, Healy, Marie, Fotheringham, Tim et al. Journal of Trauma-Injury Infection & Critical Care: May 2005 - Volume 58 - Issue 5 - pp 897-901


RAUM

Trauma care Standard Operating Procedure

Burn Injuries

January 2017 TWG

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anuary 2015

Scope

This SOP is to provide clinical and operational guidance for multi-disciplinary and cross-departmental management of patients suffering from burn injuries for both individual and mass casualty scenarios. This includes assessment, initial resuscitation and management as well as definitive care arrangements.

Roles and Responsibilities

Whilst the majority of burn injuries can be managed within the scope of the ED, more complex cases will require multi-disciplinary initial resuscitation as well as fast and reliable referral arrangements to a specialist burns service provider. Complex burn injury represents major trauma, and as such care should ideally be consultant led with responsibilities of staff outlined in the Trust's 'Trauma Unit Operational Policy'.

It is likely that in the event of mass casualty burns injuries the trust's 'Major Incident Policy' as well as the local burns network's 'Burns Major Incident Plan' will take effect.

London and South East of England Burns Network (LSEBN)

Specialist burns care within London and the South East of England is provided by four centres. The primary referral unit for both adult and paediatric burns for UCLH is Chelsea and Westminster Hospital.

Hospital	Contact Adult	Contact Paediatrics
Chelsea and Westminster Hospital	0203 3152500	0203 3152500
Queen Victoria Hospital	01342 414440	01342 414469
St Andrew's (Broomfield Hospital)	01245 516037	01245 516037
Stoke Mandeville Hospital	01296 315040	01296 315145



Notes to the flowchart:

- Assessment of burns includes depth, size and Total Body Surface Area (TBSA) calculation (Refer to Appendix 4. For further guidance on visual thickness assessment and the Lund-Browder chart). In particular in the paediatric and elderly subgroups burn injuries may be related to non-accidental injuries (Refer to the relevant Trust guidance).
- Careful assessment of airway, breathing, circulation (Refer to pull-outs in appendices 1. and
 It is important to recognise that burns patients may have additional injuries.
- 3) Refer to 'Adult Trauma Call SOP' and 'Paediatric trauma call SOP'
- 4) More superficial burns can be extremely painful and therefor an accurate pain score assessment should be carried out to enable appropriate analgesia.
- 5) Whilst patients between the ages of 16-18 years are treated according to the 'Adult Burns Algorithm' (Appendix 1.), they are still paediatric patients. Therefor a paediatric trauma call has to be activated.
- 6) The local 'Burns Centre' is located at Chelsea and Westminster Hospital (CWH), both for paediatric and adult patients. Patients should be discussed early and images are to be transferred via Telemedicine Referral Image Portal (TRIPs), see 'TRIPS SOP'. Relevant contact details can be found in algorithms 1. and 2. Use the LSEBN transfer document (Appendix 3.)
- 7) Multisystem major trauma should be referred to the Royal London Hospital (RLH). Please refer to the 'Transfer SOP'
- 8) Please refer to appropriate section in the burn algorithm (Appendix 1. or 2.)
- 9) Consider the following: De-roofing blisters, dressings, tetanus and analgesia. Burns should be re-assessed within 48 hours in the 'ED clinic'.

1) Complex Burns in Adults – Assessment and Treatment Algorithm

Referral Criteria For Specialised Burn Service Consider if more than 3%TBSA PT or FT burns. All burns associated with electrical or chemical injury. All burns associated with non-accidental injury (these cases should be referred within 24 hours for further as-	AIRWAY In case of suspected airway injury/Smoke inhalation: 15l/min O ₂ via non-rebreathing mask. Senior anaesthetic review considering ETT (uncut ETT. Allow for soft tissue swelling). Difficulty intubating: Surgical Airway.
All burns to the face, hands, perineum or feet. All circumferential burns to the neck, trunk or limbs. All burns with inhalation injury	IV ACCESS Burns ≥10%TBSA—Secure IV access via 1 cannula. Haemodynamic instability—Consider central venous access and an arterial line.
All burns which are unhealed after 2 weeks. Discuss with the burns service:	IV FLUID RESUS Burns >15%TBSA OR urine output <0.5ml/kg/hour—Administer fluid resuscitation according to Parkland formula. Discuss patients with fluid overload as a concern with the burns service.
All burns with other injuries. All burns with other comorbities. All burns with wound infection. Any other case which causes concern.	CATHETERISATION Catheterise if: Burns >20%TBSA. Patient intubated. Burns>15%TBSA w/ cause for concern. Perineal burns w/ cause for concern.

PAIN CONTROL

First aid—Cool with luke-warm water and cover wound. Assess pain using pain scale. Administer appropriate analgesia. Consider opioids ±anti-emetic. Use entonox only with extreme caution, particularly with those with inhalation injury or pneumothorax.

DRESSINGS

Single layer of clingfilm. Do NOT apply creams or ointments if transferring.

ANTIBIOTICS

Do NOT give antibiotics unless burn is infected.

PPI

Consider the early use of PPI to prevent SRMD in severe burns.

TETANUS

Consider reinforcing dose of Tetanus/Diphtheria/Polio vaccine ±HATI according to tetanus vaccination status.

FLUID BALANCE

All patients receiving IV fluids should have fluid balance documented on the LSBEN Transfer Document.

OTHER INJURIES

Consider implications of ALL other injuries and discuss with the burn service.

Consider C-spine immobilisation in suspected neck injury Consider alternative causes of shock.

TEMPERATURE CONTROL

Take extra precautions to ensure normothermia. Take extra precautions with the elderly and major trauma.

If ANY of the above criteria are met CALL LOCAL BURN SERVICE

Chelsea and Westminster	(BC)	0203 3152500
Queen Victoria	(BU)	01342 414440
St Andrew's (Broomfield)	(BC)	01245 516037
Stoke Mandeville Hospital	(BU)	01296 315040
National Burn Bed Bureau		01384 215576
NPIS		08448 920111

Fluid Resuscitation Formula

Parkland Formula: 4ml/kg/%TBSA over 24 hours from time of injury: ½ in first 8 hours. Remainder over subsequent 16 hours. Use Hartmann's solution

2) Complex Burns in Children – Assessment and Treatment Algorithm

Referral Criteria For Specialised Burn Service	AIRWAY			
Consider if more than 1%TBSA PT or FT burns.	In case of suspected airway injury/Smoke inhalation: 15l/min O₂ via non-rebreathing mask.			
All burns associated with electrical or chemical injury.	Senior anaesthetic review considering ETT (uncut ETT. Allow			
All burns associated with non-accidental injury (these	for soft tissue swelling). Difficulty intubating:			
cases should be referred within 24 hours for further as-	Patient over 12—Surgical Airway.			
sessment).	Patient under 12—Needle cricothyrotomy with jet oxygenation.			
All burns to the face, hands, perineum or feet.				
All circumferential burns to the neck, trunk or limbs.	Burns ≥30%TBSA—Secure iv access via T cannula. Burns ≥30%TBSA—Secure second cannula ±intraosseus ac-			
All burns with inhalation injury.	cess.			
All burns which are unhealed after 2 weeks.	Haemodynamic instability—Consider central venous access.			
Neonatal burns of any size.	IV FLUID RESUS <3/12 with 10-20%TBSA—IV fluid resus using Parkland formula.			
All burns with wound infection.	<3/12 with >20%TBSA—IV fluid resus using Parkland formula			
All burns accompanied by severe metabolic disturbance (base excess exceeding -6mmol/I).	with maintenance fluids. Keep NBM. >3/12 with <10%TBSA—Maintenance fluids only. Keep NBM >3/12 with >10%TBSA—IV fluid resus using Parkland formul			
All children who are "unwell" (Where "unwell" is defined	Keep NBM.			
as presenting with any of the following: Temperature	Keep urine output ≥1ml/kg/hour.			
not eating/drinking, tachycardia, tachypnoea, hyperten-	CATHETERISATION			
sion).	Burns >20%TBSA.			
All children suffering from a progressive non-burns skin	Patient intubated.			
loss condition e.g. TENS, SSSS etc.	Perineal burns with cause for concern.			
Any other case which causes concern.	PAIN CONTROL			
If ANY of the above criteria are met	First aid—Cool with luke-warm water and cover wound.			
CALL LOCAL BURN SERVICE	Assess pain using pain scale. Administer appropriate analgesia.			
Chelsea and Westminster (BU) 0203 3152500	Consider 0.1mg/kg morphine (titrated to response).			
Queen Victoria (BU) 01342 414469	Consider nasal diamorphine.			
St Andrew's (Broomfield) (BC) 01245 516037	DRESSINGS Single layer of clinafilm			
Stoke Mandeville Hospital (BU) 01296 315145	Do NOT apply creams or ointments if transferring.			
CATS 0800 0850003	ANTIBIOTICS			
National Burn Bed Bureau 01384 215576	Do NOT give antibiotics unless burn is infected.			
NPIS 08448 920111	TETANUS			
	±HATI according to tetanus vaccination status.			
Fluid Resuscitation Formulae	FLUID BALANCE			
Parkland Formula:	All patients receiving IV fluids should have fluid balance documented on the LSBEN Transfer Document.			
⁴ / ₂ in first 8 hours. Remainder over subsequent 16 hours	OTHER INJURIES			
Use Hartmann's solution.	burn service.			
	Consider C entry immediates in successful and interest			

Maintenance Fluids:

100ml/kg over 24 hours for 1st 10kg

PLUS 50ml/kg over 24 hours for 2nd 10kg

Use 0.45%NaCL and 5% Glucose solution.

PLUS 20ml/kg over 24 hours for each additional kg.

Consider C-spine immobilisation in suspected neck injury. Consider alternative causes of shock.

TEMPERATURE CONTROL

Take extra precautions to ensure patient stays normothermic.

SPECIALIST TRANSFER Consider early activation of CATS.

3) LSEBN Transfer Document

11.3 LSEBN Transfer Document Burns Transfer Information LONDON & SOUTH EAST OF ENGLAND BURN NETWORK (LSEBN) – Version 2 (November 2010)

See LSEBN website <u>www.lsebn.nhs.uk</u> for ad ult and paediatric referral guidelines. Please complete all details and use when phoning the burn service to refer the patient.

Fax the chart to the accepting burn service and send a copy with the patient.

Referring Hosp	ital					Pa	tients Name		
Referring Docto	or					Da	te of Birth	Weight (kg)
Contact Numbe	ər					Но	me Postcode		
Date and Time	Date and Time of Burn How of					How die	the burn happen		
Data 8 Time Ar	rived (AS								
Date & Time Ar	rivea (Ad	× =)				Otherl	njuries		
Details of First	Aid					GCS at	scene	Time last fo	bod
						Allergie	s status s	l ime last di	rink
Past Medical Hi	istory	smokir	ng alco	hol me	ental he	alth issu	(29		
(menduling med	ications,	SHICKI	ig, alco	noi, me	intai ne	aith 1990			
Burn % Chart	lanora e	imple e	nthom	-			Wound management (discu	es with receiving	a upit)
Draw what you s	ignore s	imple e	rythem	a			wound management (discu	iss with receiving	g arne)
	B C		11				For circumferential burns: please Safeguarding concerns and Next of kin / parental respo contact details) Referral Process Please contact your local bur The local service may refer y within the network. Burn	e discuss if eschard d action taken msibility (name rns service for ac ou on to anothe Phone	otomy is required , relationship and dvice or admission. r burn service
(m)	(<u></u>)			\bigcirc	\bigcirc		Service	Number	Number
							Stoke Mandeville,	01296	01296
Area	Age 0	1	5	10	15	Adult	Aylesbury, Bucks St Andrews Centre	01245	01245
							Chelmsford	516037	516171
A=½ one head	9 ½	8 ½	6½	5 1⁄2	4 1⁄2	3 1⁄2	Chelsea & Westminster, London	0203 3152500	0203 3152510
B= ½ one thigh	2 ¾	3 ¼	4	4 1/2	4 1/2	4 ¾	Queen Victoria Hospital, East Grinstead	01342 414440	01342 414104
C= ½ one lower leg	2 1⁄2	2 1⁄2	2 ¾	3	3 1⁄4	3 1/2	National Burns Bed Bureau	01384 215576	01384 215580
							Children's Acute Transfer Service (CATS)	0800 085 000 Phone for refe	3 errals / advice
Estimate Bu	ırn Perce	entage	=	%					

Analgesia adequate

Fluid continued in transit

Airway / breathing				Circulation					
SpO ₂ % RR	/min	Oxygen	%	HR	/min	BP	/	Cap refill	sec
Suspected Inhalation Inju Seen by Anaesthetist	ry Yes / N Yes / N	0		Site and Size	of IV cannul	ae			
Intubation – please use U	NCUT tube			2					
Laryngoscopy grade Size ETT	I II cuffed /	III IV uncuffed		Fluid resus co	ommenced)	Yes/No	(see below)	
Fixed cm at teeth Laryngoscopy findings				Urinary Cathe	eter Yes/No				
Pre-intubation GCS				Temperature					
C/spine immobilised	Yes / No			ATLS prima	ry survey do	ne	Yes / No	>	
If not name / grade who c	leared c/spine			ATLS secon Performed by	dary surve y /	done `	Yes / No)	
Fluid Resuscitation (Fo	r adults >15% t	ourn, Childre	en >10% burn)					
For 1 st 8 Hours: ().25 mls x		% Burn x	Weight (kg)	=	mls	/ hour H	lartmann's	Solution
For next 16 hours: ().125 mls x		% Burn x	Weight (kg)	=	mls	/ hour H	lartmann's	Solution
This is based on 4mls/kg/ Fluid is calculated from ti Please check LSEBN refe	% burn, half over me of injury no erral guidelines	er the first 8 ot presentati to see if ma	hours, rest o on so a catch intenance flui	ver next 16 hou up bolus may t d is required an	irs. De required. Ind if oral intak	e is allow	ed.		
Fluid balance chart – Pl	ease complete v	with actual	volumes given	for each hour					
Burn Time	Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour	5	Hour 7	Hour 8
Hartmann's mls									
Other fluids mls									
Oral fluids (mls)									
Urine output mls (aim 0.5 – 1ml/kg.hour)									
Time Medica	ition Given	Dose	Route	Hb g/dl			ABG pH		
				WCC x 10	⁹ /I		PO2 k	PA	
				Plts x 10 [°] /	1		PCO2	kPA	
				Sickle Cel	Screen		HCO3	mmol/l	
				K+ mmol/	/1		Lactate	e mmol/l	
				Urea mmo	М		CoHB	%	
				Creatinine	µmol/L		Glucos	se mm ol/l	
				Albumin g	л. 🔶		Creat	Kinase	
				ECG					
Other tests / imaging ca	rried out inclu	ding result	S						
Pre- Transfer Check Lis	t							Comple	ted by:
Airway still safe / secure			Appropriate	e staff for transf	er				
Tubes / lines secure			Jewellery /	watches remov	/ed				
Catheter taped			Notes / X-fa	ays te				Positior	1:

Burns service contacted on departure

Relatives aware

Burn % Chart - Ignore simple erythema Draw what you see		Area Age 0 1 5 10 15 Adult	A=½ one 9½ 8½ 6½ 5½ 4½ 3½ head	B= ½ one 2 % 3 ½ 4 4 ½ 4 ½ 4 % 4 % thigh	C=½ one 2½ 2½ 2¾ 3 3¼ 3½ lowerleg		Estimate Burn Percentage = %
 Damage to epidermis only Pink with Blisters Painful; sensate Should be fully healed within 2 weeks Not included in TBSA calculation 	 Damage extends to papillary dermis Pink with patchy white/yellow areas Painful; sensate Should be fully healed within 3 weeks Included in TBSA calculation Damage extends to reticular dermis Mottled pink/yellow/white discolouring May be painful; sensation may be reduced Included in TBSA calculation 		 Damage extends through entire dermis 	 Dry white or charred black/brown 	• Painless	 Included in TBSA calculation 	
Superficial	SPRTIAL THICKNESS		Full Thickness	Provide the second			

4) Assessment of Burn Depth and TBSA

References:

- Advanced Trauma Life Support for Doctors 8th Edition, 2008
- LSEBN Adult Burn Referral Guidelines 2011
- LSEBN Children's Burn Referral Guidelines 2011
- LSEBN Consensus on burn blisters management
- LSEBN Guidelines for Management of Adults with safeguarding concerns 2012
- LSEBN Guidelines for Management of Children with safeguarding concerns 2012
- National Burn Care Referral Guidance 2012
- Science review: The use of proton pump inhibitors for gastric acid suppression in critical illness. S. Brett; Critical Care 2005; 9:45-50

Appendix 9) TRIPS SOP

RAUMA



TRIPS – Telemedicine Referral Image Portal System

ersior

Equipment

- Digital camera, Canon Power Shot A 1300
- SIM card, 1GB
- 2 AA batteries, 2 AA backup batteries
- USB cable
- Card reader
- Consent form folder (20 consent forms)

Equipment location

• Box labelled TRIPS in the Nurse-in-charge cupboard (opposite cubicle 23)

Equipment contact

• trauma.equip@uclh.nhs.uk

Scope:

TRIPS (Telemedicine Referral Image Portal Service) is a web-based system which provides a secure (encrypted) transfer of digital images, allowing referring hospitals to link directly with their local burn service. It is expected to greatly improve the quality of advice that burn professionals can provide to EDs and to reduce the number of patients who are inappropriately transferred to a burn service.

Indication:

- Adults: > 3% total body surface area partial thickness burn
- Paediatrics: > 1% total body surface area partial thickness burn
- Neonates: any burn
- All deep derma and full thickness burns
- All electrical and chemical burns
- All burns to hands, perineum, face and feet
 - All circumferential burns
 - All burns not healed within two weeks or infected burns
 - All burns associated with non-accidental injury

procedure only current on date printed, refer to Insight for definitive version.

Contraindication:

Failure to consent (failure of parental consent has to be discussed with a DmDr). - 2013 ned Date: January 2015 / by Date: January 2017

Procedure:

- Complete consent form (see Appendix 1) and leave in ED notes.
- Go to website: <u>www.trips.nhs.uk</u> and log in/register.
- If not already registered: Fill in page with an email (Use NHS email address) and password and follow instructions on the Page, this will register you to **TRIPS**, this takes about 3 minutes.
 - Take good quality photos of the burn ensuring dignity where appropriate, demonstrating the extent of the burn.
 - Click on Refer a Patient.



• Fill in our area details: South London/ North West London. Select UCLH.



• Fill in patients details with description of the burn appearance and location.

E Max Investigation Company				N (8) (4) (8) (8 - 1 - 1 -		1.00
ER ver forms lot rep						
enter i 🙀 🖉 en en en en e						
1011 - Taknadone Kafana brage Karta tumen				B + B - (2)	a - Auge - Salas -	104 - Ø-
TRIPS	Seferral Image Portal 3	12007		emonstration Hub 1 🛙	123	
NUMB I ADDRESS	nun mass i sige out i hy w	COVED ONE Advertised Overlage	Top of Sector	In charge to treestantistic rest treestantistics treestantist (Ack Aure to charge research	n Flak 1 - Hall 1 - Hold 1	
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• Plug camera into the USB port of the computer using the USB cable. Alternatively, remove the memory card from the camera (press down to release) and put into the card reader. Plug the card reader into the computer using the USB cable.

• Click on Select Image, Go to My Computer on the left column.



• Click on Canon Powershot or Removable Disc, find DCIM folder.



• Change the icons to thumbnails and select desired images to upload. A yellow dot should start flashing and will turn green when images are uploaded.

Instructions	
Please upload your i	mages and
Select Image	Show 1
Patient Details 🥹	

- You can click on **preview images** and the uploaded images should appear on the left hand side. You can upload as many images as required before you submit the form.
- Press SUBMIT. Confirm consent.
- Print a copy of the referral and leave in ED notes. Document TRIPS referral in ED notes.
- Sign out of website.
- Phone Chelsea and Westminster Hospital on 0203 315 2500 for adult patient and 0203 315 3706/07 for paediatric patients. (See LSEBN guidelines for alternative numbers if the referral is made to a different burns centre).
- Supporting guidance http://www.lsebn.nhs.uk/downloads/

RAUMA



Trauma care Standard Operating Procedure

Protocols for CT Scanning in Trauma

Scope:

This protocol provides CT personnel with guidance about regionally agreed CT protocols in the context of trauma.

1.0 January 2015 **sia Ahmed**



Indication	Protocol
Intracranial injury	Non-contrast CT head
Facial bone injury	Non-contrast CT facial bones
Cervical Spine injury adults	Non-contrast C spine
Stable large body trauma/high impact injury	CT CAP plus contrast
Complex pelvic fracture/unstable/possible active haemorrhage	Pre-contrast CAP, arterial phase CAP, PV CAP
Stabbing-stable patient	Post contrast study of appropriate region
Stabbing-unstable likely arterial bleed	Pre, arterial and delayed study through area
Neck stabbing	Pre, arterial and PV from skull base to thoracic inlet
Cervical spine injury children	Plain film 2 views, CT c spine if GCS < 8, neurological deficit, high suspicion of injury

Reference:

CT Protocols in Trauma, Royal London Hospital - 2013

ned Date: January 2015 / by Date: January 2017 procedure only current on date printed, refer to Insight for definitive version. Appendix 11) Thoracic Trauma SOP

RAUM

University College London Hospitals MHS **NHS Foundation Trust**



Trauma care Standard Operating Procedure

Thoracic Trauma

January 2017 TWG

Ir Michael Patterson

anuary 2015

Scope:

A pathway for the management of patients with injuries to the thorax.

This will include:

- guidance in the initial assessment, diagnostics & interventions for patients presenting with thoracic trauma
- guidelines for the management of multiple rib fractures including: pain management / access to regional anaesthesia / surgical support mechanisms
- guidance on effective decompression & drainage of traumatic haemopneumothoraces
- guidance for resuscitative interventions for penetrating trauma to the chest in cardiac arrest

Equipment (Chest drain insertion)

2 x 3ml Chlorhexadine Sponges (eg
ChlorPrep)
Sterile drape
Green and Blue needle
5 ml syringe (luer slip)
10ml syringe (luer slip)
50ml syringe (luer lock)
Lignocaine 1% 10ml ampoule
Disposable whole scalpel (large)
Instruments for blunt dissection (eg curved
clamp / Spencer Wells forceps)
Argyle thoracic drains (24-32F) –
trocarremoved immediately upon
unpacking
Closed drainage system, including sterile
water
1 x suture 2-0 silk on curved or straight
1 x sterile 'dressings' pack
2 x sterile pack 5 x 5cm gauze swabs
3-4 Biocclusive dressings (eg Tegaderm
10x12cm)
(1 x procedure audit form)

Equipment location

Pre-packed "Chest Drain" bags in ED Resus

Critical Care Unit (T3)

Equipment contact

Trauma.equip@uclh.nhs.uk

Consultant contacts:

Dr Alexander Schueler (Consultant in **Emergency Medicine**)

needleDr Michael Patterson (Consultant in Critical care & Emergency Medicine)

> Dr Toby Hillman (Consultant in Thoracic Medicine)

Indication

Patients presenting to the Emergency Department with injuries involving the thorax who require resuscitative interventions prior to transfer to the MTC (Royal London Hospital), or who can be admitted to UCLH (the TU).



Review by Date: January 2017

Policy/procedure only current on date printed, refer to Insight for definitive version.

Management of Haemopneumothoraces

Tension Pneumothorax

Where a patient is haemodynamically unstable & has chest injuries with a suspected or confirmed pneumothorax, urgent action is needed to decompresses the thoracic cavity

- in the environment of an ED Resus room, do not waste time by attempting needle decompression; the primary & definitive resuscitative procedure is to perform a thoracostomy to the injured side(s) of the chest
- where there is sufficient time, use local anaesthesia, parenteral opiate analgesia or procedural sedation
- once access to the pleural space is secured & tension released, the decompression can be formally secured by insertion of a chest drain

Haemothoraces & Pneumothoraces: Chest Drain Insertion

In blunt or penetrating trauma severe enough to cause haemopneumothorax, there are often significant injuries to the lung tissue or bronchial tree with significant air leak into the pleural space.

Do not attempt simple drainage by needle decompression or drainage with small-bore drains by Seldinger technique, as this is likely to provided insufficient drainage of air leak & pneumothoraces may quickly reaccumulate.

Insertion of Chest Drains in Trauma:

1. Thoracostomy

- Identify safe area (5th intercostal space anterior axillary line) & prepare skin with chlorhexadine



- infiltrate local anaesthetic & administer parenteral analgesia or procedural sedation
- attempt full asepsis in performing procedure
- using scalpel make 3-5cm horizontal incision along intercostal space to skin & superficial tissue only
- blunt dissect down into chest, across intercostal muscles & pleural using forceps until air is released
- open foreps to increase size of thoracostomy & sweep carefully with gloved finger to ensure correct passage into chest

2. Chest Drain Insertion

- Large bore drains (24-34F) must only be inserted following blunt dissection into the pleural space and the track explored with a finger into the thoracic cavity to ensure that underlying organs are not damaged at tube insertion.
- Drain tip should aimed apically for pneumothorax and basally for fluid.
- It may be required to place 2 (or more drains) to drain both basal blood & apical air. Also note that in large air leaks (especially in patients who are being mechanically ventilated) more than one drain may be required to decompress pneumothoraces *consider this in patients with worsening haemodynamics & ventilator pressures despite apparently well-functioning drains*

- All other chest tubes should be connected to a single flow drainage system e.g. underwater seal bottle.

The bottle must always be kept below the level of the drain insertion site to prevent back flow.

3. Securing the Chest Drain

- Drain incisions / thoracostomies should be closed by a suture. A vertical mattress suture is an appropriate closure technique for large and medium bore drain incisions.



- The drain site should be thoroughly cleaned & a bio-occlusive dressing adhered to cover all sides of the drain & thoracostomy
- A chest radiograph should always be performed and reviewed as soon as possible after insertion of a chest drain to assess drain position and complications e.g. pneumothorax/haemothorax.

Management of Multiple Rib Fractures

Patients with multi-level rib fractures are at significant risk of deterioration from evolving lung injury. Following initial resuscitation, early management / avoidance of ventilatory dysfunction & access to multi-modal analgesia is key.

Early discussion & clinical contribution from Thoracic Surgery is key – prior to organising imaging, discuss with on-call registrar.

Patients with chest drains & rib fractures should be considered for Level 2/3 care where invasive monitoring may help identify early ventilator deterioration.

PERT & Critical Care Outreach SpR should be fully informed regardless of ward destination.

Analgesic plan involving on-call anaesthetic team / Acute Pain Service should be made prior to transfer from the ED – early access to thoracic epidural should be considered in all patients with multiple rib fracrtures



UCLH - 2013 Published Date: January 2015 Review by Date: January 2017 Policy/procedure only current on date printed, refer to Insight for definitive version. January 2017

Review Date:

shish Kalraiya

TRAUMA

University College London Hospitals

Trauma care Standard Operating Procedure

Compartment Syndrome of the Limbs

Scope:

Acute compartment syndrome of a limb is due to raised pressure within a closed fascial compartment causing local tissue ischaemia and hypoxia. In clinical practice, it is most often seen after tibial and forearm fractures, highenergy wrist fractures and crush-injuries. Other important causes include restrictive dressings or casts, prolonged immobilization and reperfusion of ischaemic limbs. Early diagnosis and treatment is vital to avoid severe disability. Pulses are normally present in compartment syndrome. Absent pulses are usually due to systemic hypotension, arterial occlusion or vascular injury.

Equipment

• Stryker Intra-Compartmental Monitor

Equipment location

Theatre 7

Equipment contact

Trauma.Equip@uclh.nhs.uk

uclh

ersion

ALL patients with significant limb injuries should be assessed for compartment syndrome.

Clear documentation should include: time and mechanism of injury, time of evaluation, level of pain, level of consciousness, response to analgesia and whether a regional anaesthetic has been given.

- Compartment syndrome is a clinical diagnosis. The key clinical findings are:
- · Pain out of proportion to the associated injury
- · Pain on passive movement of the muscles of the involved compartments
- Limb neurology and perfusion, including capillary refill and distal pulses, should be clearly documented but do **not** contribute to **early** diagnosis of the condition.
- In patients who are obtunded, unconscious, or have received regional anaesthesia, compartment pressure (CP) monitoring may be indicated. (Equipment for measuring this is stored in Theatre 7.)
- All patients having compartment pressure measurements should have their diastolic blood pressure (DBP) recorded. The difference between the DBP and the CP should be measured.

Patients deemed AT RISK of compartment syndrome



- Perform hourly nursing limb observations for the early signs and record in the notes.
- Seek senior clinical review if pain scores do not improve.
- Avoid regional anaesthesia as it can mask the symptoms of compartment syndrome.
- Use of IV opiates via PCA can also mask the symptoms.

JCLH - 2013

Published Date: January 2015 Review by Date: January 2017 Policy/procedure only current on date printed, refer to Insight for definitive version Patients with:

- A clinical diagnosis of compartment syndrome
- Suspected compartment syndrome & absolute CP >40mmHg
- Suspected compartment syndrome & DBP CP < 30mmHg
- Release all circumferential dressings and cast to the skin
- Elevate the limb to above the level of the heart
- Resuscitate and ensure a normal blood pressure is maintained
- Refer urgently to the on-call Orthopaedic team on bleep 5421

Compartment syndrome is a surgical emergency and surgery should occur within an hour of the decision to operate

<u>Reference</u>: BOAST 10: Diagnosis and Management of Compartment Syndrome of the Limbs, 2014

Quick Pressure Monitor Set

Sterile Procedure

The Stryker Intra-Compartmental Pressure Monitor System is a convenient, self-contained unit for an immediate or continuous reading of compartment pressure.

Instructions

- 1. First you must turn the unit on.
- 2. Remove contents of disposable pouch onto a sterile field.
- 3. Place needle firmly on the tapered chamber stem.
- 4. Remove cap on pre-filled syringe and twist the syringe against remaining chamber stem without contaminating the fluid.



Figure 1

5. Open the monitor's cover and place slot in well, gently pushing it until disposable settles in.



Figure 2

- 6. Snap cover closed without forcing it.
- 7. Pull cap off syringe and attach needle rod.
- 8. Slowly force fluid through the disposable to flush out air without allowing saline to pour down the needle.
- 9. Fix the intended angle of insertion of the needle into the skin. Press the zero button and wait 2 seconds. The display should read 00.



Figure 3

- 10. Insert needle into body. Slowly inject less than 3/10cc of saline into the compartment.
- 11. Wait for the display to reach equilibrium before reading pressure.
- 12. For additional measurements, make sure to reset unit and repeat steps 9-12.

UCLH - 2013

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Appendix 13)

January 2017

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Open Fracture SOP



Trauma care Standard Operating Procedure

Open Limb Fractures

RAUM

Scope:

Open limb fractures can lead to poor patient outcomes if not appropriately managed in the acute setting. Contrary to traditional teaching, best outcomes are achieved by timely, specialist surgery rather than emergency surgery by less experienced teams. These injuries will likely require early and joint input from both Plastics and Orthopaedics.

Roles and Responsibilities:

Early recognition of such injuries and appropriate subsequent treatment by the initial professional assessing the patient is vital in improved clinical outcome.

Reference:

BOAST 4 guideline, 2009

P R P **HIGH ENERGY OPEN FRACTURE**

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Administer Tetanus injection
 Administer intravenous antibiotics (2)
 Analgesia

INITIAL WOUND CARE (3)

3) Remove gross contamination
4) Photograph wound
5) Cover wound in in saline soaked gauze and an impermeable film
6) Immobilise fracture with cast or splint

7) Assess neurovascular status of the limb systematically

8) Refer to Orthopaedics SHO at UCH



Discuss with on call Consultant whether patient requires:

UCH ADMISSION

TRANSFER SPECIALIST CENTRE

9) Compartment syndrome requires immediate surgery with 4 compartment decompression. See Compartment Syndrome guidelines.

10) Primary surgical management aim is wound excision and fracture stabilisation

	a) Fracture: -Multifragmentary (comminuted) tibial fracture with fibular fracture at same level - Segmental fractures - Fractures with base level and a structure of the debuildement
	b) Soft tissue injury:
	- Swelling or skin loss, such that direct, tension-free wound closure is not possible - De-gloving
	 Muscle injury that requires excision of devitalised muscle via wound extensions Injury to one or more major arteries of the leg
	- Wound contamination with marine, agricultural or sewage material
- Co-amo - IF PEN	xiclav (1.2g) or Cefuroxime (1.5g), 8 hourly CILLIN ALLERGIC: Clindamycin 600mg, 6 hourly
3. The w then be 4. Dopple ideally w	bund should be handled only to remove gross contamination and to allow photography. It should covered in saline soaked gauze and an impermeable film to prevent desiccation. Frs can be found in the Emergency Department. Vascular impairment requires immediate surgery ithin 3-4 hours with an acceptable maximum delay of 6 hours warm ischaemia. These injuries dditional urgency



Trauma care Standard Operating Procedure

Pelvic Trauma

Scope:

Major pelvic and acetabular fractures must be managed with an established trauma system with defined referral pathways. This document defines the established pathway for patients who present to UCLH with a pelvic injury.

A mismanaged pelvic injury can lead to early death from haemorrhage or major disability while delayed or poor management of an acetabular fracture can lead to accelerated osteoarthritis and avoidable permanent hip dysfunction. 5-10% of pelvic fractures will have a major urological injury.

Equipment:

SAM Pelvic Sling II (For application guidance refer to Appendix 2).

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Equipment location:

ED resus

Equipment contact:

Trauma.equip@uclh.nhs.uk

Assessment:

- In case of clinical suspicion of pelvic injury, DO NOT manipulate/'spring' the pelvis
- Apply pelvic binder in case of evidence/suspicion of pelvic instability
- Perform a XR pelvis as part of the primary survey
- DO not logroll the patient until the XR pelvis has been performed
- Assess haematological stability (stable vs. unstable)
- Follow flow charts accordingly



Notes from the flow-chart:

- 1) The neurovascular status before and after reduction must be documented. Skeletal traction should be applied.
- 2) Chemical thromboprophylaxis should start within 48 hours of injury providing there are no contraindications.
- 3) Following reduction of all hip dislocations, a CT scan must be done within 24 hours to exclude bony entrapment and to assess hip congruence and the extent of any fracture. These images should be referred to an expert in acetabular fracture reconstruction promptly to secure an urgent transfer for surgery if required.
- 4) A high index of suspicion of genito-urinary damage requires early contrast studies (cystography + CT and urethrography).





Reference:

- BOAST 3: PELVIC and ACETABULAR FRACTURE MANAGEMENT, December 2008
- http://www.sammedical.com/wp-content/uploads/2014/02/SLI-206-CIV-6_web.pdf

Appendix 1)

Application of SAM pelvic sling II



- 1) Carefully place sling black side up underneath the patient on the level of the greater trochanter, avoiding unnecessary movement.
- 2) Place BLACK STRAP through buckle and pull completely through.
- 3) Hold ORANGE STRAP and pull BLACK STRAP in opposite direction until you hear and feel the buckle click. Maintain tension and immediately press BLACK STRAP onto surface of SAM Pelvic Sling II to secure. You may hear a second click as the sling secures.

<u>Appendix 2)</u>

Guide to pelvic fracture

1. Acetabular fracture with 'central dislocation' / medialisation of the femoral head

FRACTURE DESCRIPTION

There are two common forms: *a)* Associated both column fractures, or *b)* Anterior column posterior hemi-transverse fractures

Figures 1 and 2 demonstrate this injury pattern well, with the femoral head clearly subluxated medially.



2. The acetabular fracture that has a posterior fracture +/- dislocation.

FRACTURE DESCRIPTION

- These are usually:
- 1. Posterior wall
- 2. Posterior wall/posterior column
- 3. Transverse/posterior wall

Figures 3 and 4 - on both AP views both clearly show a dislocated hip. The head is sitting slightly superior and often a little lateral. In some cases the hip may reduce spontaneously and is clinically in joint on arrival to A&E. X-rays must still be obtained as associated fractures must be ruled out.



3. The symphyseal diastasis

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FRACTURE DESCRIPTION

These can arise either from AP compression OR (less commonly) lateral compression. Diagnostic difficulties can occur as x-rays are often taken in a binder masking the true magnitude of the injury. However, **any** widening seen represents an unstable injury and requires specialist intervention.

Figures 6 and 7 demonstrate such injuries. It may appear that Figure 7 seems only a bit widened, but if it were to be screened (not that this is advised), the gap would almost certainly widen. This therefore represents an unstable injury which would require fixation.



4. The pelvic ring injury - usually a lateral compression or vertical shear

FRACTURE DESCRIPTION

These are often difficult fractures to manage correctly because, although you can see the pubic rami fractures on the AP pelvis view (often extending into the bottom of the acetabulum – called 'root of rami fractures'), you often cannot see what is happening at the back (the sacrum). Figure 8 is classic of this as it is possible to see the rami are broken but not much else. Below outlines how to manage such injuries from here.





Appendix 15) NELETN Secondary Transfer Protocol

UCLH

Appendix 16) NELETN Massive Transfusion Protocol

Barts and The London NHS

NHS Trust

CODE RED TRAUMA - MASSIVE HAEMORRHAGE

SENIOR MEMBER OF TRAUMA TEAM MUST DECLARE CODE RED if:

- Systolic BP < 90
- Poor response to initial fluid resuscitation
- Suspected active haemorrhage
- Take baseline blood samples prior to transfusion for:
- FBC, G&S, clotting screen and fibrinogen
- Near patient testing ABG, FBC and ROTEM

Nominate a member of team to call blood bank on 61108 to activate CODE RED

- State "patient unique identifier & CODE RED TRAUMA"
- Request: <u>EITHER</u> "CODE RED PACK A" (contains: 6 units RBC, 4 units FFP) OR
- "CODE RED PACK B" (contains: 6 units RBC, 4 units FFP, I unit platelets, 2 pools cryoprecipitate)
- Send porter to lab to collect pack immediately

Red cells are available from the BloodTrack Fridge

Use O NEG units in females or O POS units in males

Use group specific blood as soon as available

Check Ca++ levels after 6 units of RBC

Check if bolus dose of Tranexamic acid (TxA) has been given by HEMS team prior to arrival in ED

Give bolus of 1g IV TxA over 10min (within 3 hrs of massive haemorrhage)
 followed by IV infusion of 1g over 8 hrs

IF BLEEDING CONTINUES:

Continue requesting one "CODE RED PACK B" until bleeding stops
 Use near patient testing to determine if Ca⁺⁺ therapy is required (CaCl₂ 10 mls 10% IV)

If bleeding persists after 2 x "CODE RED PACK B" Transfusion Lab must contact the on call haemophilia SpR on bleep 1155 or via switchboard out of hours If bleeding is controlled REPEAT FBC AND CLOTTING SCREEN and administer: Platelets: if count <100x10⁹/I Cryoprecipitate: if Fibrinogen <1.5g/I FFP: to maintain PT/APTT ratio <1.2x normal Keep Temp >36°C and Ca+ >1.0

Revised in July 2011

UCLH - 2013

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Appendix 17) NELETN CT Protocol





THE ROYAL LONDON HOSPITAL

Trauma Chest Abdomen and Pelvis

Indications

Trauma

Technique

- Protocol Trauma CAP
- Position Feet first (supine), Arms up
- Zero Sternal Notch
- Scan direction Cranio-caudal

Coverage

- Lung apices to below pelvis
- Include all soft tissue in the FOV

<u>Scan</u>

- Single Bolus technique
- 100mls Contrast @ 3mls/s
- Scan @ 50 secs post contrast

Recon jobs

	RT/1 st	2 nd Recon	3 rd Recon	4th Recon	5 th recon
	Recon	Soft tissue	Lung	Bone	Coronal
	Thorax	Fine		and the second s	Lung
kV / Quality Ref.	120 / 210		Y		
mAs					
Slice Collimation	Acq.128 x				
	0.6mm				
CARE Dose/ Care	On				
kV					
Slice Thickness /	5.0 / 5.0	1.5/1.2	5.0/5.0	1.5/1.2	2/2
Recon Increment					
Image order	Cr-Ca	Cr-Ca	Cr-Ca	Cr-Ca	Ant-Post
Kernel	B25f	B20f	B70f	B70f	B70f
Window	Abdomen	Abdomen	Lung	Bone	Lung

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THE ROYAL LONDON HOSPITAL

	6 th Recon Coronal CAP Soft Tissue	7 th recon Coronal Spine/Pelvis Bone	8 th recon Sagittal Bone
Slice Thickness / Recon Increment	2.0/2.0	2.0/2.0	2.0/2.0
Image order	Cr-Ca	Ant-Post	Right-Left
Kernel	B20f	B70f	B70f
Window	Abdomen	Bone	Bone



Sagittal Bone (please note we now include the whole rib cage)

NORTH EAST LONDON & ESSEX



THE ROYAL LONDON HOSPITAL



NORTH EAST LONDON & ESSEX

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TRAUMA NETWORK





Appendix 19) UCLH Major Haemorrhage Protocol algorithm

University College London Hospitals

NHS Foundation Trust

Appendix 20) UCLH Repatriation Algorithm

Major Trauma Centre (MTC) repatriation to UCLH



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University College Hospital Department of Imaging

Standard Operating Procedure for sending images to RRO for out of hours reporting

This is the standard pathway for sending images out of hours for reporting, and what should happen in the event of a system failure.

- Referring clinician calls RRO (see Appendix 1 for contact numbers and contingency) with patient details and discusses referral with RRO radiologist. Trauma CT head scans and CT KUB scans as per the agreed protocols will not be discussed with RRO initially, but are discussed directly with the radiographer.
- **2.** On acceptance of the request, RRO will ring the radiographer at UCH with the details of the request, including patient details and appropriate imaging protocol for the examination.
- **3.** If there are delays in the patient being imaged, RRO will call the radiographer for a status update (30, 60, 60, 120 mins)
- **4.** The radiographer will call for the patient as normal, and perform the imaging according to the agreed protocol.
- 5. Immediately after the examination, the radiographer will confirm the examination on the Radiology Information System (RIS). This will enable the report from RRO to be accepted back onto RIS once it is sent, and <u>MUST</u> be completed <u>BEFORE</u> the study is uploaded to RRO.
- 6. The radiographer will send the appropriate images/image series to the network node "IPOGATEWAY" ready for uploading to RRO. On the CT scanner, this is done automatically for Trauma CT head and KUB scans performed using the special IPO protocols. For all other CT scans, only the thin slices (1.5mm or 1mm) need to be sent to RRO.
- **7.** Using the IPO GATEWAY software on the desktop PC, the appropriate study to be sent should be selected.
- 8. An anonymised (only patient data covered up) copy of the imaging request should be placed into the document scanner and scanned by the Gateway software. The hospital number <u>MUST</u> be left visible on the request and not covered up
- **9.** The request is then attached to the imaging study in the software, and the study will be sent to RRO, and will appear in the upload queue within the Gateway software, confirming it is being sent.
- 10. Once this is transmitting, the radiographer rings RRO with the image count (taken from the scanner), stating the number of images being transmitted. If the patient involved was a trauma head or KUB from A/E (which are not discussed with RRO as per guidelines), the patient details/clinical details of the examination need to be given to RRO during this conversation as well.

11. If there is a problem when the images are transmitting, attempts should be made to Restart the IPO Gateway services on the software client. If, when checking the upload queue, the image count doesn't start decreasing as the images transmit then the radiographer can go back to the CT scanner and resend the transmission direct to RRO using the IPOBACKUP gateway, and inform RRO of the problem. If there are problems with RRO receiving the images, or the image counts do not match, RRO should inform the radiographer who can check the gateway software to see if there is a problem, and if necessary, re-send the images.

Failure to send images

- If there is a failure with transmitting images via IPO GATEWAY, and this persists after restarting the services, or receipt of failure messages by the modality, images can be sent alternatively to the IPOBACKUPGATEWAY network node. If this is used, the radiographer will let RRO know, and the image count given as per usual. The radiographer will also have to give the clinical details verbally to RRO for each examination, or fax a paper copy of the request, as per agreed anonymisation requirements.
- 2. In the event of a failure of the backup gateway after the agreed fail time, the on-call interventional radiologist will assume responsibility for reporting on the images, either by coming in to report the images, or remotely via VPN access.
- 3. The on-call interventional radiologist should be contacted at this point by the radiographer to let them know of problems with the gateway access.
- 4. The fail times (after sending images) for implementing the back up system are :
 - i. CT Head/CT KUB 10 minutes
 - ii. All other CT 15 minutes
- 5. In the event that an urgent OOH case is reported by a UCH consultant radiologist, the following will be done:
 - a. An DATIX form will be generated by the radiographer
 - b. A support ticket will be raised with UCH ICT regarding the gateway failure
 - c. The radiographer will notify the CT & Operational Supt by email
 - d. RRO will generate an incident form
 - e. RRO will also notify CT & Op Supt at UCH by email
 - f. The incident will be reviewed at the RRO/UCH monthly management meetings.
UCLH Urgent Workflow

Sites: UCLH main hospital; Heart Hospital Reporting: Urgent CTs, NG tube placement and Border Agency x-rays only TaT: Single region 60mins; multi-region 90minutes Double Reads: 2%



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Appendix 22) NELETN Trauma Booklet

A copy of the NELETN trauma booklet can be found on the ED 'shared server' and print copies are available in the ED.

TRAUMA

University College London Hospitals NHS

NHS Foundation Trust

Trauma care Standard Operating Procedure

Pathway to Critical Care for Injured Patients

January 2017 TWG

Review Body

Dr Michael Patterson

anuary 2015

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Scope:

To provide guidance on those trauma patients requiring formal review by specialist in Critical Care, for provision of clinical assistance & contribute to clinical decision making. Liaison with the Critical Care Outreach Registrar will facilitate admission to Level 2/3 beds where required.

Indication:

Absolute:

Patients requiring organ support and/or invasive monitoring where there is no indication for transfer to a Major Trauma Centre

Relative:

(The below non-exhaustive list indicates Trauma clinical scenarios where a Critical Care specialist opinion is required as a minimum regardless of Level 2/3 bed requirement)

- Multiply-injured patients / ISS score > 15
- Patients requiring massive transfusion
- Patients requiring complex or high-risk resuscitative interventions in ED, theatres or Interventional Radiology
- · Injured patients with complex pre-existing medical complaints
- Patients with multiple rib fractures & pneumothorax (who require emergency chest drain & thoracic epidural analgesia)
- Patients >65 years old with high-risk mechanism of injury or who are anticoagulated
- Where involvement of a Critical Care Specialist would augment the primary Trauma Team response (providing additional support in managing complex or shocked patients)

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Contraindications:

- Patients requiring urgent transfer to Major Trauma Centre should not be transferred to Critical Care awaiting transfer
- Where there are patient-specific ceilings of care or advanced directives prohibiting care that would be provided within the ICU

Procedure:

Primary Trauma Team Response

Early Critical Care interventions will be provided by Emergency Medicine & Anaesthesia during the initial response Critical Care On-Call

CLINICAL SUPPORT: Outreach SpR: ST4+ Critical Care Registrar 07939135452

ICU BED MANAGEMENT: ICU Nurse in Charge 07736330331

24/7 dedicated Critical Care Consultant Support (mobile via switch)

Supporting guidance

Duane TM et al. Are trauma patients better off in a trauma ICU? J Emerg Trauma Shock. 2008 Jul-Dec; 1(2): 74–77.

Baker SP, O'Neill B, Haddon W Jr, et al. The injury severity score: a method for describing patients with multiple injuries and evaluating emergency care. *J Trauma*. Mar 1974;14(3):187-96

Taylor MD et al. Trauma in the elderly: intensive care unit resource use and outcome.J Trauma. 2002 Sep;53(3):407-14

Shere-Wolfe RF, Galvagno SM Jr, Grissom TE. Critical care considerations in the management of the trauma patient following initial resuscitation. *Scand J Trauma Resusc Emerg Med.* Sep 18 2012;20:68

http://www.londonhp.nhs.uk/wp-content/uploads/2013/03/Critical-care-case-forchange-FINAL_Feb2013.pdf

http://www.ficm.ac.uk/sites/default/files/Core%20Standards%20for%20ICUs%20E d.1%20(2013).pdf