Cork University Hospital

Major Trauma Centre

South Trauma Network

Operational Policy

18/05/2023, v15

This is a working tool which will evolve as CUH MTC develops

Contents

Introduction

Internationally, the evidence is clear - the introduction of a trauma system is associated with a reduction in death and disability. England reports a 19% increase in risk adjusted survival associated with the introduction of a trauma system [1].

Plans for Major Trauma Care delivery are laid out in *A Trauma System for Ireland* published by the Department of Health in February 2018. This was the culmination of five working groups Pre-hospital Care, Reception and resuscitation, Reconstruction and On-going Care, Rehabilitation and Organisational Networks whose work was overseen by a Trauma Steering Group chaired by Professor Eilish McGovern. This report sets out a vision for a national trauma system that aims to prevent unnecessary deaths, to reduce disabilities and to significantly improve the patient's chances of attaining the fullest possible recovery. Cork University Hospital (CUH) has been designated to become a Major Trauma Centre (MTC) for the South Trauma network subject to meeting certain designation criteria [2].

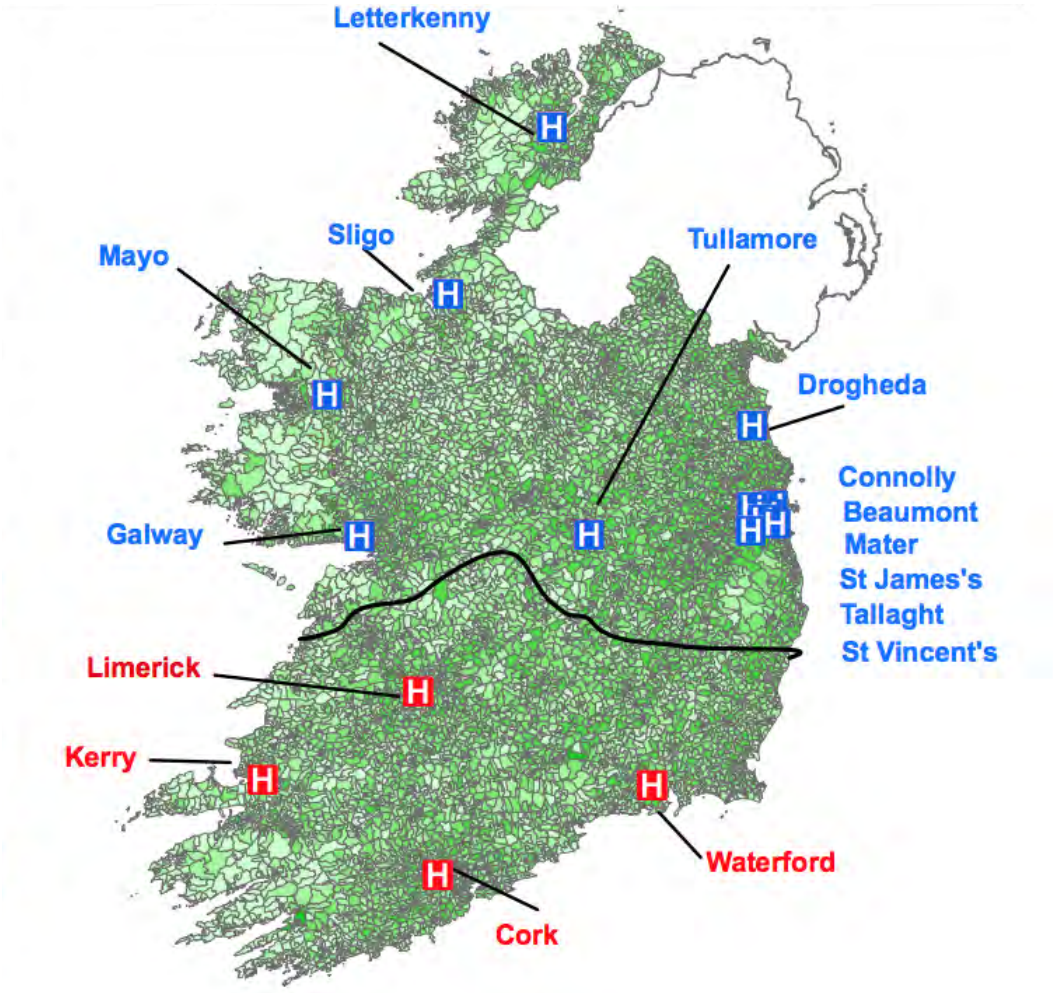
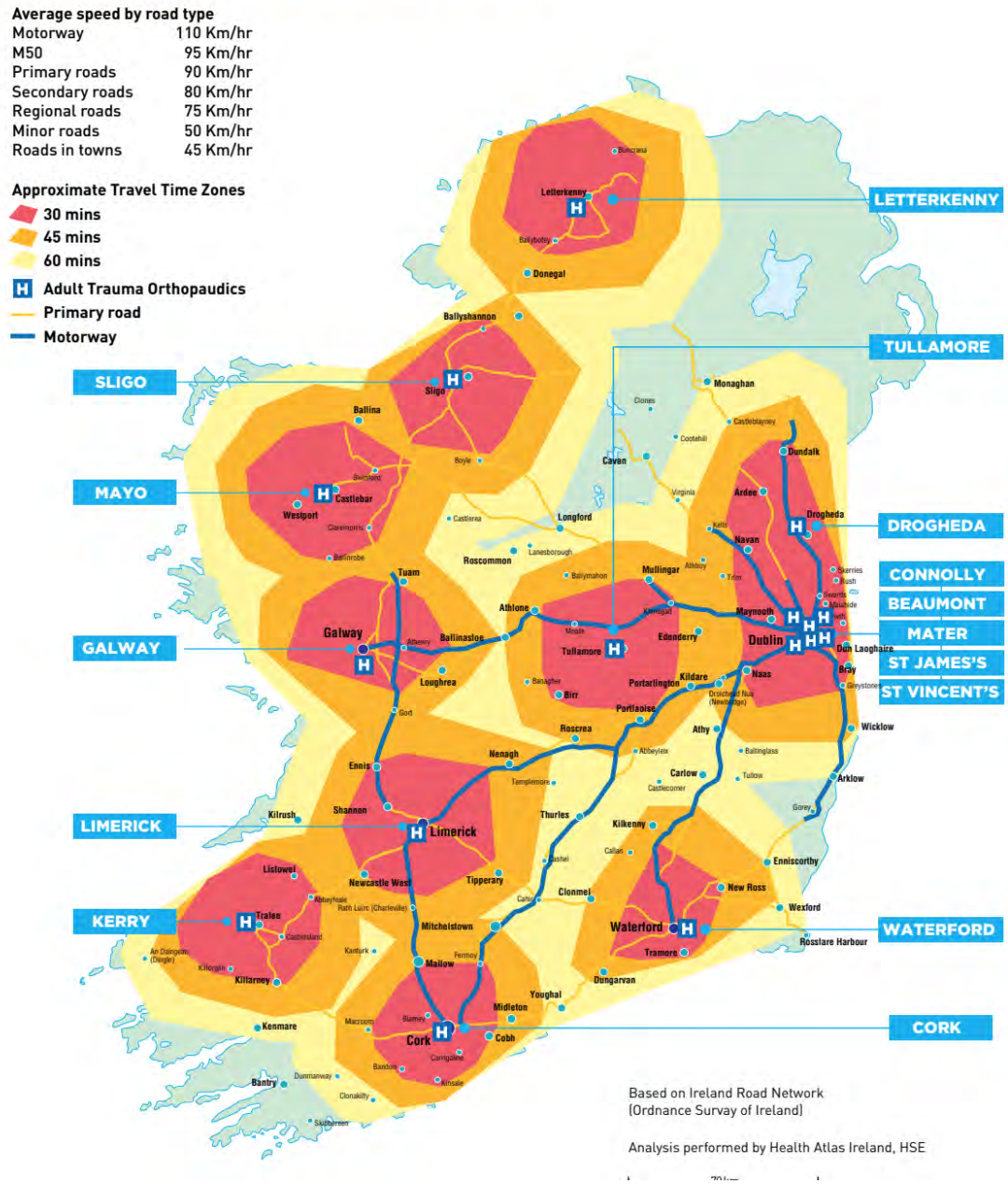


FIGURE 10: ROAD TRAVEL TIMES TO POTENTIAL TRAUMA UNITS



1. Changing the System - Major Trauma Patients and Their Outcomes in the NHS (England) 2008-17. Moran CG, Lecky F, Bouamra O, Lawrence T, Edwards A, Woodford M, Willett K, Coats TJ.EClinicalMedicine. 2018 Aug 5;2-3:13-21. doi: 10.1016/j.eclinm.2018.07.001. eCollection 2018 Aug-Sep.PMID: 31193723
2. Report of the trauma Steering Group: A Trauma System for Ireland Feb 2018 https://assets.gov.ie/10116/70fd408b9ddd47f581d8e50f7f10d7c6.pdf

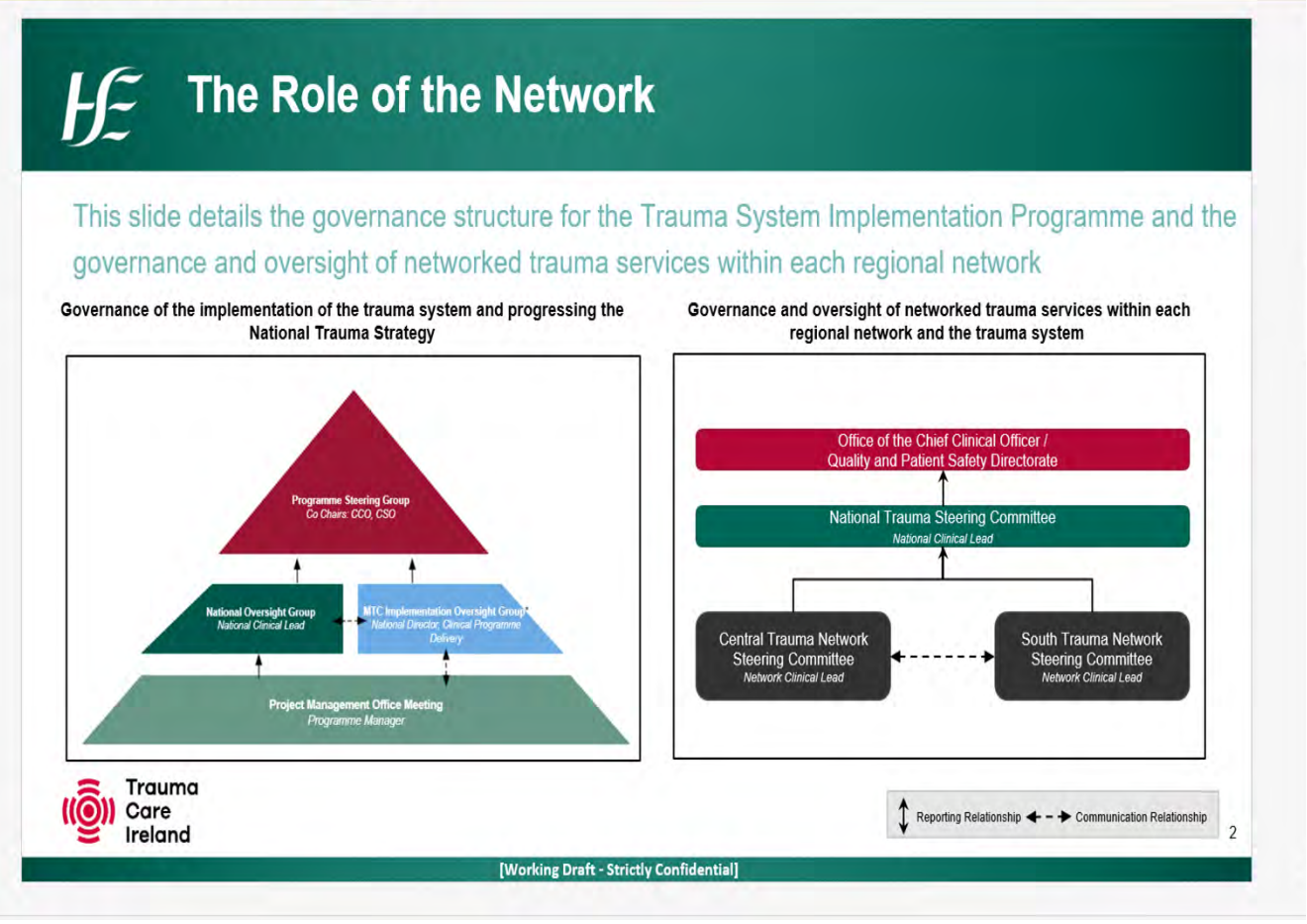
Purpose of the Operational Policy

This Operational Policy provides a framework within which the Cork University Hospital (CUH) Adult Major Trauma Centre (MTC) and Paediatric Trauma Unit (TU) operates. It acknowledges the trauma patient's journey from the pre-hospital environment through reception and resuscitation, admission to a Specialty Service or under the Inpatient Major Trauma Service while commencing Rehabilitation in parallel to effect early egress. It applies to all patients admitted with multiple injuries who meet the National Office for Trauma Services (NOTS) Trauma Triage Tool and/or fulfil Trauma Audit Research Network (TARN) criteria and those with specific isolated injuries admitted to the MTC for specialist care from Trauma Units (TUs) within the Network. It outlines the governance arrangements within the MTC and how they link with the network. It provides an overview of how care is delivered across the patient pathway and signposts key policies and protocols. *The policy is complimentary to CUH MTC evidence based guidelines and standard operating procedures which will continuously be evolving and is complimentary to operational guidelines within Specialty areas and services.*

Governance Structure (Corporate & Clinical)

National Governance Structure

NOTS governance organogram (see appendix 1)



CUH Governance Structure

The Executive Management Board of CUH, through the relevant Directorates and the SSWHG are accountable for the development and performance of CUH MTC.

Governance of the Major Trauma Centre development will occur in 2 phases:

Phase 1:

The CUH MTC Implementation Executive Committee is accountable for the implementation of the MTC at CUH within the South Trauma Network. There are 8 main groups to facilitate the work that is needed to enable implementation.

- **Reception and Intervention**
- **Inpatient Trauma Service**
- **Anaesthesia and Surgery**
- **Critical Care**
- **Planned Trauma Care**
- **Rehabilitation and egress**
- **Workforce planning and recruitment**
- **Training and education**

This is supported by the project management team from PWC and NOTS.

For membership see Appendix 2 Terms of Reference for Major Trauma Governance Group

Phase 2: Once phase 1 is complete the implementation governance structure will evolve to become the CUH MTC governance group/committee.

KPIs are determined both by NOTS and Specialty Services.

Any issues that cannot be resolved via the local governance structures will be escalated to the National Office for Trauma Services (NOTS) and the National Major Trauma Project Steering Group.

MTC Business Model

The MTC impacts on delivery of care across multiple Directorates; this is reflected in shared ownership and accountability. Leadership, during the implementation phase, is being provided by the Unscheduled Care Directorate. Service specific issues are being delegated to the relevant Specialities and Directorates. This will evolve as new staff are recruited and leadership roles are taken up.

The USC manager leads the co-ordination of business planning and continuity and works collaboratively as part of a leadership team in implementation and sustainable service delivery. A program manager is being recruited and will also support this

work. A co-ordinated cycle of quality assurance and improvement will be supported administratively through expert business management.

The CUH MTC Implementation Executive Committee will play a pivotal role in the development of a workforce plan and business strategy to ensure resource utilisation and governance is optimal.

CUH Clinical Governance

Clinical governance is a framework through which clinicians across all teams are accountable for the quality, safety and satisfaction of patients in the care they deliver. A key characteristic of clinical governance is a culture and commitment to agreed service levels and quality of care being provided.

Guiding principles include:

- Each patient is under the ultimate clinical governance of a named Consultant.
- Each discipline are accountable to their lead Consultant for the care delivered to the patient.
- Each individual, as part of a team, knows the purpose and function of leadership and accountability for good clinical and social care;
    - knows their responsibility, level of authority and to whom they are accountable;
    - Understands how the principles of clinical governance can be applied.
    - Consistently demonstrates a commitment to the principles of clinical governance in decision making.
    - Adheres to national standards and is compliant with national performance indicators.
    - Collaborates with the other South Trauma Network hospitals and Regional Health Authorities in relation to follow up, repatriation, and escalation, both across specialties and organisational boundaries.
    - Delivers to their Specific Professional standards supported by their respective line manager.
- A culture of trust, openness, respect and caring is evident among managers, clinicians, staff and patients.
- Clinical governance is embedded within the overall corporate governance arrangements for the statutory and voluntary health and personal social services in realising improved outcomes for patients.

Quality and Patient Safety

QPS function aims to build quality and patient safety capacity and capability within MTC:

- using data to inform improvements
- developing and monitoring the incident management framework and open disclosure policy and guidance
- providing a platform for sharing and learning; reducing common causes of harm and enabling safe systems of care and sustainable improvements.
- Providing continuous quality assurance
- Use of quality assurance data and risk to facilitate a continuous cycle of quality improvement to enable service development

Major Trauma Audit Governance Committee

This committee is chaired by the Lead for Major Trauma Audit supported by, MTA Data Co-ordinators with representation from trauma facing specialties. Major Trauma Audit is in place at CUH since 2014. The MTA Governance Group ensures data collection is to a high standard and supports interpreting and acting on audit reports and dashboards so patient care optimised. The data also supports research.

Major Trauma M&M

A Monthly Mortality and Morbidity (M&M) review process is central to the governance of trauma care. This will take place on the last Thursday of every month. All deaths in hospital identified by Trauma Audit will be subject to case review; cases of good clinical practice will be celebrated.

Trauma documentation

All Trauma Team members are required to complete comprehensive medical multi-disciplinary records. Documentation for all major trauma patients and supporting documentation is completed in the designated major trauma documentation booklet Traumadoc https://iaem.ie/wp-content/uploads/2021/04/Traumadoc.pdf. Traumadoc is a decision support tool and reminds staff to ensure procedures are followed as well as ensuring the required data fields are captured to facilitate major trauma audit.

Rehab Needs Assessment/ Rehab Prescriptions (RNA/RPs)

A key recommendation from *A Trauma System for Ireland* is the implementation of a Rehabilitation Needs Assessment (RNA) and Rehabilitation Prescription (RP) to be used across all stages of the patient pathway (DoH 2018). The National Office for

Trauma Services (NOTS) has provided pro-formas for RNAs and RPs to be utilised by the designated MTCs. These documents will be the central mechanism for accessing rehabilitation in the most appropriate setting to meet the patient's needs. These are important communication and referral tools between the patient and people important to them and all stakeholders in the rehabilitation and care of the patient across the health and social care systems.

Every patient should undergo routine assessment of their rehabilitation needs .The RNA should be completed for all patients who are still in hospital more than 24 hours after their injury, regardless of age and type of trauma and regardless of eventual classification of ISS.

The completion of a flexible RP should commence within 48-72 hours and should accompany all patients as they transition through the pathway.

Both these documents will be stored in in Clinical Notes Section 3 of patients Medical Record Notes alongside Traumadoc.

Education & Training

This is a pillar domain in the implementation of the trauma strategy and NOTS are working actively in defining the requirements across disciplines and specialties. ATLS, APLS, DSTS, MIMMS are foundation courses for those working in this area. All Trauma Team members are required to undertake foundation and advanced training in relation to Trauma. A separate workstream to define and govern the training needs of the Teams has been established and will continue to be a foundation operational group for the Major Trauma Centre. Team education and communication will be an integral part of the function of the Trauma service e.g. simulation and scenario based training and education. On-going CPD needs to be protected for each Team member including attending European and world wide conferences and joint education with other Centres and Units (Appendix

The MTC education and training strategy document will be circulated in due course.

National and Hospital Trauma Forum

- National trauma forum is a virtual meeting on every Wednesday's 08.30 – 0930 hrs.
- CUH MDT Trauma Forum facilitated by the CUH Trauma Fellow on every other Thursday from 1200 to 1300 hrs at 2A/2B tutorial room.

SIM Training

Training and education for all Staff is vital to the success of the MTC. It is anticipated that this will be secured via national and local training, delivered by Clinicians and Practice Tutors/Clinical Facilitators in each relevant clinical area. The use of SIM training will be promoted to optimise trauma team performance.

Nursing Clinical Facilitator for Major Trauma

Training and education of all staff at an MTC is vital. The Clinical Facilitator (CF) is an important role for ensuring professional and clinical leadership for nursing. The CF supports the Senior Nurse for Major Trauma in ensuring that high standards of nursing care are provided, monitored and evaluated. This is approached through a variety of methods but primarily through education, training and development strategies. The CF is working in conjunction with educators and clinical teams across the in-patient areas of the MTC to orientate new staff and to identify future education and training needs for nurses, in order to support and promote high standards of patient care. The Clinical Facilitator will liaise with the NPDU re training.

Objectives of the Major Trauma Centre (MTC)

Philosophy of care at CUH MTC

The vision for the National Trauma System for Ireland is that it will reduce both the incidence and burden of trauma and increase the survival rate of major trauma patients by 15-20%. Inclusive trauma systems are evidence-based and informed by population needs. They address the entire care pathway from prevention through to rehabilitation and achieve their aims by delivering a seamless transition between each phase of care. A fully resourced Trauma System for Ireland will, when implemented, save lives and enhance the health, safety and wellbeing of the population, through an organised system of injury prevention, pre-hospital care, acute care and rehabilitation.

The CUHG Major Trauma Centre will be implemented to realise the following philosophy of care:

"Deliver exceptional care for major trauma patients. This care should be of the highest quality, delivered with respect dignity and kindness in a safe environment. It should be individually tailored for the needs of each patient and will involve their carers and relatives."

As the MTC and 'hub' of the South trauma Network, CUH will:

• Function as a specialised centre for the management of seriously injured patients across the South Trauma Network.

• Have a clinical culture and management system that reflects the importance of integrated trauma care.

• Provide an integrated trauma service responsible for the ongoing care of all trauma patients in the hospital.

• Standardise delivery of acute rehabilitation services to improve clinical outcomes for all trauma patients.

• Centralise services to ensure a critical mass of work to gain experience in the care of seriously injured patients;

• Support the regional TUs, pre-hospital care and rehabilitation providers in the region to optimise the trauma chain of survival.

• Have robust trauma clinical governance and performance improvement programmes and assist in delivering quality assurance and quality improvement across the network.

• Have active and relevant research, education and injury prevention programmes that support trauma care across the region.

Patient Profile

Population

The CUH MTC has a population of 1.4 million for whom it will be required to provide integrated MTC care for adults, and Trauma Unit level care for children.

The NOCA Major Trauma Audit Paediatric report highlights that in Ireland although paediatric trauma is infrequent (5% of MTA cases are children), 41% of children sustaining life threatening or life changing injury are conveyed to hospital by car and so pre-hospital treatment and pre-alert does not occur[3].

The most recent NOCA MTA reports 51% of major trauma patients (n=2740) were aged 15–64 years and were therefore in the working-age population. Older adults, aged 65 years and over, represented 46% (n=2509) of major trauma patients. The mean age of patients is 59 years, and the median age is 62 years. Falls of less than 2 metres, termed ‘low falls’, continue to be the most frequent cause of injury (58%, n=3169). Half of all major trauma injuries occurred at home (n=2696), while 37% (n=1997) of injuries occurred in a public place or road. Head injuries accounted for 18% (n=1418) of all major trauma injuries. The predominant mechanisms of injury in patients with severe traumatic brain injury (TBI) (n=179) were road trauma (31%, n=56) and low falls (38%, n=68). Less than 10% of major trauma cases are received by a Trauma Team led by a Trauma Team Leader (TTL) of consultant grade.

https://repository.rcsi.com/articles/report/Major_Trauma_Audit_paediatric_report_2014-2019/15073524https://s3-eu-west-1.amazonaws.com/noca-uploads/general/Major_Trauma_Audit_National_Report_2018_Final_Version.pd

Patient Flow: MTC Pathway from reception & resuscitation to inpatient trauma care and egress

Reception & Resuscitation

Transfer of patients to the CUH MTC

Patients who fulfil trauma triage tool (TTT) criteria for major trauma and are within 45 minutes road ambulance drive time to CUH will be brought to CUH direct from the scene. National Emergency Operation Centre (NEOC) will pre-alert CUH ED at the earliest opportunity of the patient and provide updates of the patient’s condition. The pre-alert will activate either a local emergency trauma team or a hospital-wide

trauma team based on the TTT. The receiving Trauma Team will be led by a Trauma Team Leader (TTL) from Emergency Medicine consultant or senior registrar grade.

Secondary Transfers

1. Hyperacute transfers requiring immediate transfer for time critical surgery (e.g. craniotomy/burr hole). These will come via Protocol 37 and require pre-alert and Trauma Team assessment on arrival.

Patients with complex trauma care needs, best cared for in an MTC and requiring emergency transfer will, as the MTC is developed and capacity built over the next 6 years, be increasingly automatically accepted by the TTL. In phase 1 and until capacity, both staff and infrastructure allows, these cases will be discussed and specialist consultation will be required to inform transfer decision. It is the MTC TTL's responsibility to agree a transfer decision within 30 minutes of the original call. The Trauma Unit (TU) TTL must arrange urgent electronic transfer of all relevant radiological imaging to the MTC to facilitate the decision-making process described. If the patient has an isolated injury that may require non-time critical speciality surgery, then the Trauma Unit can contact the relevant MTC speciality directly to discuss the case. If that speciality Consultant/Registrar agrees that the patient needs management in the MTC, then it is the responsibility of the speciality team to inform the TTL. The TTL can decide if the patient should come via resus or go directly to an in-patient trauma bed. and the patient will be admitted directly to a ward (rather than coming from an inpatient bed in a Trauma Unit to an ED trolley in the MTC). Out of Hours the patient should come in via ED. This must be communicated with IPTS and Bed Management Team.

All trauma transfers, unless directed to an in-patient trauma bed, will be reviewed in the resuscitation room trauma bays on arrival.

Escalation process for decision to accept/not accept

Consultant to consultant discussion, escalate to relevant Clinical Director.

All ISS>15 in the South Trauma Network not transferred are monitored through Major Trauma Audit by NOTS to assess appropriateness and outcome. This is fed back to the CUH Major Trauma Governance groups.

Pre-hospital communication

Tetra pre-alert will be used for primary and secondary transfers.

TTL to be alerted from same and he/she will decide as to local ED trauma team or hospital-wide trauma team activation made;

https://iaem.ie/wp-content/uploads/2021/01/Trauma-Team-Position-Paper-IAEM.pdf

All pre-alert details must be captured on the Traumadoc.

Once a trauma call is activated, all team members must attend the resuscitation room in ED immediately and report to the scribe to document their name, position and grade. Team members should wear appropriate PPE and role/name stickers.

The TTL will brief the team and allocate roles.

Pre-arrival checklist must be completed by TTL to ensure all necessary personnel, drugs and equipment are prepared.

Initial assessment and stabilisation

All pre-alerted major trauma patients, and those attending as secondary transfers, will be received in the resuscitation room in the ED. Those patients triggering the trauma triage tool and who are pre-alerted, plus any other circumstance deemed appropriate by the TTL, trigger activation of a Trauma call. This will be achieved via the Acute Floor Information System (AFIS) telecoms with a request “Adult Trauma Team to ED Resus please”. The Trauma Team assembles in advance of arrival. As the AFIS system is implemented this will become more refined with prehospital details, expected time of arrival, updates etc.

If any patient has not been pre-alerted and is deemed to be an unrecognised major trauma case after arrival in ED, a call will be activated at that point in time.

The adult receiving Trauma Team will consist of the following:

- Trauma Team Leader (Emergency Medicine Consultant or credentialed senior registrar)
- Anaesthetist (Registrar +/- Consultant)
- Emergency Medicine Registrar
- Trauma and Orthopaedic Registrar
- General Surgery Registrar
- 2 EM Resus nurses

- Scribe Senior EM Resus Nurse
- HCA
- Porter

The following should be informed of the trauma call and will attend as per the demands of the patient:

- CT radiographer
- Radiology Registrar
- Theatre and ICU (ICU and Theatre Shift Leader)
- Bed Manager
- Blood Transfusion Laboratory
- Haematology, Biochemistry and Microbiology Labs
- ED CNM2 (shift leader)

Out of Hours ADON and Night Super are the out of hours site managers and must be informed for out of hours trauma

The ITU Consultant on-call receives trauma calls (to facilitate early admission planning). Likewise, other specialities such as Neurosurgery, Cardiothoracic etc. are called as required. The latter is recommended in advance where pre-alert information dictates.

In the event that the patient is pregnant please request “Obstetric Trauma Team to ED Resus please”. This team will consist of the following additional members:

- Obstetric registrar
- Midwife
- Neonatal Resuscitation Team
- Paediatric Emergency Department Senior nurse

Roles and responsibilities of the TTL and trauma team members are described separately (appendix 4)

Paediatric Trauma Team Composition

The Paediatric trauma team is made up of the following individuals: a

• Trauma Team Leader

• Anaesthetic registrar +/- Consultant Paediatric Anaesthetist

• Emergency Department Registrar

• Paediatric Registrar

• Trauma and Orthopaedic Registrar

• 2 Paediatric ED nurses

• PCCU nurse (if available)

• ED Nurse in charge

• Scribe (usually ED Resus senior nurse)

• Radiology registrar (as and when required)

The following should be informed of the trauma call but will not be expected to attend:
• CT radiographer

• Haematology, Biochemistry and Microbiology Labs

• Blood Transfusion Laboratory

Patient Registration process

Every effort will be made to place the patient on the system using their own identification. However there are many cases where a temporary MRN must be issued as a patient identifier. In this case patients are booked into the ED on iPMS upon arrival as an “Unknown male or female” with an assigned temporary MRN.

These patients may include:

- Patients transferred to CUH from scene who were intubated pre-hospital or had a reduced GCS and details were unavailable.
- Patients unable to communicate their details either due to lack of fluency in English and/or due to cognitive impairment.
- Patients who have cardiovascular instability and/or require Activation of the major haemorrhage protocol prior to arrival
- Immediate transfer to theatre

In these cases it is recommended that the patient continues under the temporary MRN for approximately 12 hours from their time of registration to ensure all diagnostics are consistently registered against 1 patient identifier. The Registration Team will work during this time to find the patient’s history and to recall notes however the patient identification band will remain under the temporary MRN until the patient has stabilised.

Trauma Team Leader

Phase 1 of MTC designation aimed to bring CUH ED up to 10 WTE allowing *12/7** consultant shop floor presence and on call outside of these hours. The new Slaintecare contract allows for 8am-10pm Mon-Fri scheduling and 8am-6pm Saturdays. The TTL will be supported by the institution in resolving disposition issues that occur for trauma patients. These can be re-explored at the MDT the following morning. The patient will be placed under the ‘best fit’ team on their first night before being redistributed through the MDT in the proceeding days based on clinical need.

**subject to agreement*

The Role of the TTL

The Team Leader will lead the initial care of the seriously ill patient by coordinating staff and resources. Roles and responsibilities include the following:

• Initiating Trauma Team activation according to protocol

• Assigning roles to staff

• Leading/ managing the reception of all major trauma patients regardless of pre-alert

• Making decisions in conjunction with specialist teams and trauma referral guidelines (appendix 2).

• Prioritising investigations and treatments

• Ensuring team wear personal protective clothing, allocated roles are clear and personal introductions are made

• Approval of out of hours admissions to Poly trauma unit (PTU) and allocation of named Speciality Consultant

• Receiving trauma related calls for primary or secondary transfers of trauma patients from TUs 24/7.

• Following the roles and responsibility guidance for TTL's including attending appropriate training sessions, governance meetings and participating in audit.

• Ensuring that the team is debriefed and documentation completed by the teams

- Oversee quality and patient safety until the patient is transferred into an in-patient bed

MTC TTLs will also be responsible for delivering the key performance indicators of major trauma quality and performance, assessed against TARN metrics. These include:

- All major trauma patients are received and managed by a consultant trauma team leader within 5 minutes of arrival and an EM Senior Registrar. They will ensure that an effective trauma team activation protocol is in place.
- Appropriate imaging (CT) should be received within 30 minutes of arrival in ED when indicated.
- Critical intervention (interventional radiology or critical surgery) should be received within one hour of arrival where necessary.
- All patients to have a handover plan in place within two hours of arrival with named consultant lead.

The performance of the TTLs and the trauma team will be subject to regular audit, and feedback will be provided regularly by the MTC Clinical Lead or USC Clinical Director via professional supervision, daily MDT trauma meeting and monthly

Trauma M&M. It is expected that all TTLs maintain up to date relevant training, including compliance standards for education and training.

Transfusion

The CUH MTC Major Haemorrhage Protocol applies to all patients, including major trauma patients. Blood and blood products are not stored within the ED however the policy allows for rapid attainment via Blood Transfusion Laboratory and this process is subject to continuous audit. All staff responsible for the administration of blood and blood products must have completed the relevant competency-based training. Specialist advice is available from Haematology Consultant/Reg on call through switch.

Prehospital blood transfusion is in place in Cork (see Appendix).

Radiology

CT in ED

A CT in ED and 2 trauma beds is due for building commencement in Q3 2023; staffing in NSP 2022 for radiographers.

Patients receive a primary survey with adjuncts and log roll in the resuscitation room including handover of clinical responsibility to the TTL with rapid re-assessment of the patient and establishment of time critical interventions prior to transfer to CT. The aim is to be in the CT scanner within 30 minutes for patients with potential life threatening bleeding.

The radiology department at Cork University Hospital provides interventional radiology services for the entire CUH campus (with the hospital functioning as the regional cancer centre, the major trauma centre for the South Network, tertiary neurosurgical/neuroscience centre, paediatric centre as well as the regional obstetrics and gynaecology centre). It serves as the supra-regional centre for 1.4 million people. As a major trauma centre, 24/7 interventional radiology support is required.

CT scan reporting is delivered 24/7 with verbal provisional reporting available through the radiology registrar. Overnight provisional Reports are verified by consultants the following morning. If the provisional report is modified the TTL or responsible consultant needs to be directly informed by phone.

MRI

MRI scanning facilities are available by consultant to consultant discussion out of hours.

Interventional Radiology

Interventional Radiology 24/7 rota is in place in CUH. Interventional radiologists diagnose and treat disease. Interventional radiology can be used instead of surgery for many conditions. Interventional procedures provided at CUH include trauma embolization of bleeding vessels or organs, angioplasty, stent placement, embolization, needle biopsy, IVC filtres, clot dissolving medicines, vascular catheter insertion and certain cancer treatment.

Resuscitative Thoracotomy

Surgical and resuscitative thoracotomy capability must be available within the MTC 24/7.

Trauma Team leaders and designated members of staff will be trained to provide this procedure.

Stand down of trauma team

It is the decision of the TTL when to stand down the receiving trauma team. A debrief should be done with Senior Members of the Team and a communication should go out to all Disciplines via silo messaging. The TTL releases individual members at the earliest appropriate opportunity. It is the responsibility of all team members to sign in and complete all actions aligned to their role, including follow up of patients once admitted to a ward bed if required. All in attendance are expected to complete the appropriate approved Traumadoc documentation.

Handover of patient from Trauma Team Leader

The TTL determines the in-patient specialty team that initially holds the duty of care for any major trauma patient (accepting that this may change as patient care progresses). All trauma call patients who are admitted are reviewed by each relevant speciality team on the consultant ward round the following day, and any observations, advice and requests clearly documented in the medical records and communicated to the admitting team.

Determination of named Consultant: The initial allocation of the named consultant is made by the Trauma Team leader on admission and is based on clinical need and priority, patient safety and appropriateness.

MTC Decision to admit process (adults) or Transition of care of patient within ED

The transfer of the major trauma patients to ITU, wards or theatre should occur with minimal delay once an admission ward has been identified.

Major trauma patients are admitted, according to clinical need, to the following areas:

1) The decision about which Speciality to admit under is determined by the injury. Single system or Primary injury goes to the Speciality e.g a patient with a brain injury goes to GA, a patient with a compound tib/fib goes to Trauma Floor (2nd floor), complex multiple trauma that does not require ITU will go to the PTU.
2) Aortic dissection goes to C.I.T.U while a patient with a chest wall injury with multiple other injuries goes to G.I.T.U. This must be agreed between TTL, ITU and the Speciality. If there is disagreement about patient care this should be immediately escalated to the relevant Clinical Director.
3) Trauma Floor 2nd floor on which the Polytrauma Unit will be developed/ with daily coordination of care provided by a major trauma coordinating consultant leading the IPTS
    a. If under IPTS, consults and time to procedures KPIs required – TBC
    b. If under specialty consultant, co-ordination of ongoing care to be supported by IPTS
4) Critical Care under the care of a named parent speciality consultant or IPTS consultant

Mass Casualty

The current CUH major emergency response aligns to the Hospital Major Incident Medical Management and Support (HMIMMS™) principles.

The main processes of our hospital mass casualty response include modifications in the deployment of staff, the utilisation of space and the postponement of all non-acute services. Certain areas involved in the epicentre of the hospital response include the Emergency Department (ED), the Intensive Care Unit (ICU) and Emergency Theatres. All this is co-ordinated through the implementation of the CUH Major Emergency Plan (MEP).

A hospital emergency control team (HECT) is formed which co-ordinates the hospital response, while liaising with the regional crisis management team (CMT) and the national emergency co-ordination centre (NECC). Furthermore, mass casualty events often require a multi-agency response, so close communication links are established with the Garda Service, National Ambulance Service (NAS) and the Local Authority.

An MEP working group updates the plan with the latest guidance and training is delivered locally through the provision of lectures, small group work and an annual table-top exercise for all emergency medicine staff. See CUH Major Emergency Plan (QPulse).

Patients discharged home from ED

There is a standardised protocol to ensure the safe and effective discharge of those patients who have been assessed, investigated and managed solely within ED. Planned trauma or minor trauma/ MSK/hand injury etc.

Major Trauma OPD will be developed (phase 2).

The Inpatient Trauma Service (IPTS)

Purpose/Function: The IPTS is a team of healthcare professionals who will manage and co-ordinate the major trauma inpatient journey and support the safe & efficient delivery of rehabilitation care to the trauma patient from multiple specialist teams. Effective communication is central to this process and will be enabled through a clinical system defined by with clear delineation of roles and responsibilities and transparent operational processes.

Composition: The Inpatient Trauma Service is a consultant led service which is managed on a daily basis by the co-ordinating Inpatient Trauma Service duty consultant. The key members of this team are as follows:

Non-Discipline Specific Trauma Co-ordinators (n=3, 7 days / week).

Medical:

- Consultant Emergency Surgery 1 WTE
- Consultant Orthogeriatrics 1 WTE
- Consultant Emergency Medicine 1 WTE made up of 2 persons, each 0.5 inpatient trauma service, 0.5 Emergency Department
- Consultant Rehabilitation Medicine
- Consultant Liaison Psychiatrist (0.4WTE)
- +/- Trauma Fellow x 1
- Registrar (SpRs) x 2 (General Surgical)
- SHO x 1 (medical)

Nursing:

- ADON
- CNM3
- Staff Nurses
- CNS Addiction and Psych Liaison
- ANP Major Trauma Older Adult
- HCAs x 3 (assigned to reception)
- Pain CNS
- Tissue Viability ANPs

HSCP – Senior HSCP

- Senior Physiotherapist
- Senior Dietitian
- Senior Occupational Therapist
- Senior Speech & Language Therapist
- Senior Clinical Psychologist
- Senior Medical Social Worker
- Senior Radiographer
- Haemovigilance Officer

In-patient Flow including access to beds and egress

- Bed Manager and Discharge Co-ordinator

Roles and responsibilities of Inpatient Trauma Service (IPTS) team members

(i) Inpatient Trauma Service Consultant

The inpatient trauma service duty consultant has an important role within the MTC and Polytrauma Unit in providing coordination of care for major trauma patients throughout the MTC. The role ensures collaboration between multiple specialty teams and promotes the delivery of seamless joined-up care in a timely and efficient manner.

Every day the IPTS duty consultant will chair the daily Major Trauma MDT and undertake a review of the previous 24 hours admissions and the prospective discharges from the service ensuring regular Planned Discharge Date (PDD). Additionally the IPTS duty consultant undertakes a daily major trauma ward round on the Polytrauma Unit and ICU (trauma). This will be undertaken with the support of the IPTS team ensuring all appropriate investigations have been undertaken and all relevant specialties are involved in the care of the patient. Fundamental to this is ensuring that the Trauma Tertiary Survey (TTS) (appendix 3) document is completed as per the SOP (appendix 4)

(ii) Inpatient Trauma Service SpR/registrars

The IPTS SpR is available to the IPTS/PTU from 0800 until 1800 each weekday. On call at NCHD middle grade level will be provided by the General Surgery Registrar tier. The registrar provides daily support to the IPTS for the week and assists with practical procedures and the co-ordination of specialist input for major trauma patients.
The registrar plays an important role in the educational support and development of more junior members of the team.

(iii) Senior HSCP Team member have a dual role

1. As Inpatient Trauma Service team member the Senior HSCP will:

- Attend & participate in the morning and afternoon huddles
- Complete Rehabilitation Needs Assessment for patients still in hospital more than 24 hours after injury if not completed and/or delegate to HSCP, Medical & nursing team caring for the patient.
- If rehabilitation needs are identified at ward huddle, a Senior HSCP in collaboration with trauma-facing, ward based HSCPs & Rehabilitation/Geriatric Medicine Consultants & Nursing colleagues will support the completion of Rehabilitation Prescription.

2. Delivery of Discipline specific duties to include:

- deliver hyper acute/acute trauma rehabilitation
- attend ward huddles
- provide leadership to support the delivery of trauma rehabilitation standards which include:
    - Formal goal planning meetings with ward based HSCP trauma facing colleagues, Consultant in Rehab/Geriatric Medicine and nursing based on Rehabilitation Prescription
    - Allocation of key workers from MDT to each patient
    - Participate in Multi-disciplinary & family meetings
- Clinical supervision to support trauma facing staff grades
- Fulfil *Keyworker* roles: this role is an assigned communication point for each family; they ensure Team are aware of all of the patient and families needs and concerns.
- Participate in teaching/education e.g. CUH MDT Trauma Forum
- Participate in clinical audit and quality improvement/quality assurance

(iv) Rehab Consultant – separate job spec

(v) Trauma Coordinator – separate job spec

Daily Operations IPTS

1. **Huddle:** A daily MDT huddle is scheduled at 08:00 with all members of the Clinical Team. A review of all Major Trauma Cases in the ED or cases admitted into Hospital is undertaken. The Team should co-ordinate with the Ortho Team meeting. An afternoon huddle at 13.00 will include the core Team members to update & review actions from morning huddle
2. **Location**: Operational Hub 08.00
3. **Format**: All new major trauma patients will be presented and discussed. Goals of care will be identified and/or revised accordingly. The huddle is chaired by the IPTS duty consultant. Attendance is part of the mandatory operational process for the IPTS core team to include:

    - Consultant
    - Fellow/Registrar
    - Trauma Co-Ordinator
    - Trauma ANP
    - SHO
    - Intern
    - Senior HSCPs
    - CNM in charge of 2A/2B/GAN/4D/ GITU/CICU
    - Bed Manager

Additional attendees may include:

- Radiology registrar fellow or consultant (imaging reviewed during MDT)
- MTC Trauma & Orthopaedic Consultant
- Neurosurgery registrar or consultant
- General Surgery registrar or consultant
- Cardiothoracic Surgery registrar or consultant
- Critical Care registrar or consultant
- Plastic surgery team registrar or consultant
- Pharmacist
- TARN MTA coordinator
- Business Manager Major Trauma Services
- Clinical Lead for Trauma Services CUH
- CNM3 for Theatre

Other attendees attending upon request include:

- Other speciality consultants (e.g. TTLs)
- Haemovigilance Officers

Facilities for Family and Carers

The inpatient trauma service is a point of contact for providing clear and consistent information to patients, family members and carers via Trauma Co-ordinator or Keyworker assigned. Regular updates of the patient's condition will be provided and when required an interpreter service is accessed.

There is provision to meet with relatives/carers in rooms offering privacy and space with refreshment facilities; these facilities are available in the ED, Critical Care Unit.

The MTC provides information regarding the facilities available within the hospital and local area and an information leaflet is available with contact details for the service.

Reconstruction & Ongoing Care

Definitive care

The ongoing care and reconstruction phase of the trauma patient's pathway starts immediately after any resuscitation and urgent surgery. It follows admission and continues until discharge from the acute setting.

In the initial stages of care most patients with major trauma are transferred without delay to the MTC. After initial resuscitation and surgery (if required) the TTL will determine (in consultation with the on-call Critical Care consultant if necessary) where the trauma patient should be admitted. The consultant with overall patient responsibility (entered onto the Patient Management System) is identified based on the predominant injury pattern/ clinical priority (Best Fit). The patient may be re-distributed the following day or in the following days at the Major Trauma MDT.

Emergency Theatre and Surgery

Damage Control Surgery

Damage Control Surgery (DCS) is the technique advised for the immediate management of major trauma patients who require emergency surgery at the MTC but remain in a state of physiological compromise at the time. The aim is to rapidly stop haemorrhage and control and remove contamination in order to stabilise the patient and allow the correction of physiological abnormalities. It is the default surgical approach in the MTC unless the patient's physiological status allows a definitive surgical approach to be undertaken and this is deemed appropriate. DCS should be undertaken as a part of Damage Control Resuscitation and reference should be made to the CUH/NOTS Clinical Guideline – Damage Control Resuscitation and the CUH Massive Transfusion Policy.

DCS is undertaken with direct involvement of the consultant general surgeon on call and/or the other surgical specialties as dictated by injuries, due to the need to complete the surgery rapidly and to ensure transfer of the patient to the critical care unit for ongoing management. All consultants on the on-call rota will be offered

training in the techniques of DCS via RCS Definitive Surgical Trauma Skills Course (DSTS) or equivalent, and are advised to maintain a record of training.

Medical and surgical staff, including orthopaedics, general surgeons and, anaesthetists senior registrar or above, are available to provide support to the MTC 24/7. There is access to consultant specialists within 30 minutes for all main specialties. All on-call rotas are available via the staff directory.

Theatre Provision *More detail to follow/needed*

There is an emergency theatre available 24 hours per day with a requirement for a 2nd theatre identified.

The following theatres exists at CUH:

- Orthopaedic Trauma
- Plastics
- Neurosurgery
- Cardiothoracic

Planned Trauma Care ambulatory theatre capacity is in development as part of phase 1 MTC implementation.

Trauma Management guidelines *More detail to follow*

Will be signed off by Quality Office and EMB

Critical Care Provision

Admission of a Major Trauma patient to an ICU bed is commensurate with all other competing demands on ICU beds and will be via the TTL to the consultant or senior registrar in intensive care.

Polytrauma Unit

This space will allow the cohorting of polytrauma major trauma patients who do not need to be in ICU in a safe area on the 2nd floor.

Criteria for admission:

- Adult and adolescent >16 years Major Trauma patients
- Poly-trauma patients i.e. injuries to more than one body region
- Specific head and chest injuries (**ONLY** as detailed in the MTC Head and Chest injury sections)

Exclusion criteria:

- Paediatric patients
- Patients meeting current requirements for the delivery of care on neurosurgery or CTS units or General Surgical Floor will continue to follow the current patient pathway
- Patients requiring intensive care (i.e. ventilated, receiving vasopressor/ inotropic support, receiving haemodialysis/haemofiltration).
- Patients requiring Intracranial pressure monitoring
- Patients requiring external ventricular drains
- Patients requiring lumbar drains
- Patients requiring non-invasive ventilation

The TTL refers patients for admission here through the Inpatient Trauma Service consultant on call (when this rota is established).

Pain Management

The Acute Pain Service provides cover to all clinical inpatient areas including Critical Care. The majority of polytrauma patients require complex pain management. Management includes neuroaxial blockade and an available anaesthetist is sought to facilitate such treatment. The management of pain in major trauma patients is subject to regular audit.

Management of Neurosurgical Trauma

The MTC provides on-site neuroradiology and neurocritical care. There is a neurosurgical consultant and a senior neurosurgical trainee available for advice to the trauma network 24/7. All neurosurgical patient referrals are discussed with a Consultant. Likewise, all decisions to perform emergency neurosurgery for trauma are discussed with a Consultant. There are facilities to allow neurosurgical intervention within 1 hour of arrival at the MTC.

Management of isolated mild, moderate and severe head trauma

Initial assessment of all patients attending the MTC following a head injury is undertaken in the ED. When the history and examination findings are compatible with mild injury, management is delivered by ED staff, and the patient is not referred to the major trauma service. However, depending upon the nature and circumstances surrounding the injury (e.g. associated intoxication, lack of appropriate supervision at home etc.), the patient may be admitted for up to 48hrs observation in the Clinical Decision Unit (CDU) under the care of the on-call Emergency Medicine Consultant.

Patients with head injuries may be discussed with the on-call Neurosurgical Registrar who, in conjunction with the on-call Consultant, will assist in deciding upon the disposition of the patient. This will either involve in-patient admission under the

direct care of Neurosurgery or admission under Emergency Medicine to CDU for 24hrs observation. Patients deemed to require admission for longer than 48hrs but not requiring neurosurgical intervention or accepted for direct admission under the care of Neurosurgery are currently managed on a case-by-case basis and will be managed by the IPTS when established.

Those patients who are admitted to CDU remain under the care of the Emergency Medicine Consultants, and any requirement for assessment of clinical deterioration or out of hours intervention is provided by the ED clinical team, with referral to Neurosurgery where required.

Patients with polytrauma which includes mild or moderate head injury (not operatively managed), who require admission for injuries other than their head trauma, are admitted to the Polytrauma Unit under the care of the appropriate on-call specialty consultant. For example, General Surgery if admitted for observation of solid viscus injury, Trauma and Orthopaedics if patient is admitted for the management of MSK injury etc). Neurosurgery provides a 24/7 on-call service to review any patient admitted with a head injury at the request of the admitting team and assists in clinical decision making.

Surgical Management of Craniofacial Injuries

Craniofacial reconstructions are generally done as a secondary repair once the swelling settles and head injuries are stable.

Surgical Management of Pelvic and Acetabular injuries

This service will continue at the National Pelvic Acetabular Centre at Tallaght hospital for now; CUH will provide initial stabilisation, interventional radiology, pelvic packing, external fixator application.

Surgical Management of Spinal Cord Injuries

Spinal cord injuries are managed in parallel with The Mater Hospital (MTC) National Spinal Centre.

Surgical Management of MSK trauma

There is a comprehensive musculoskeletal (MSK) service including facilities which support all definitive fracture care and allow joint emergency orthoplastic management of severe open fractures, as specified in the BOAST-4 guidelines. These consultants play a key role in the day-to-day clinical business of the MTC. All patients with complex MSK injuries have a comprehensive rehabilitation management plan.

Hyper link to Orthopaedic management/clinic referral guidelines
https://emed.ie/Administration/Referrals/Clinic_VTAC.php#sp

Fracture Clinics and Virtual Trauma Assessment Clinics as well as Hand Clinics are well established at CUH.

Specialist Complex Trauma Clinic/Orthoplastic Clinics will be developed providing a co-ordinated appointment avoiding multiple trips for the patient back to the MTC

Surgical Management of Hand Trauma

- **Hand Surgeons**
- **Hand Clinics**

Complex Peripheral Nerve Injuries

Patients requiring the management of complex peripheral nerve injuries, including brachial plexus are referred to Plastic Surgery on call.

Surgical Management of Vascular and Endovascular surgery

Management of Vascular Surgery is presently compromised owing to consultant staffing (n=2) and theatre access. A rota is shared with vascular surgeons (n=2) at MUH with patients being required to transfer between sites.

Specialist Burns

CUH is a designated burns unit for adults and a burns facility for children

Burns management guidelines - https://emed.ie/Trauma/Wounds/Burns.php

Cardiothoracic surgery

3 Consultant Surgeons plus a CTS fellow who does on-call

Rehabilitation & Egress

Rehabilitation:

Rehabilitation is an active, dynamic, goal-oriented & time limited process where patients are supported to achieve their maximum potential for physical, cognitive, social and psychological function, participation in society and quality of living. The patient and their families are core members of the rehabilitation team and are empowered to participate actively in the process. This process includes the provision of timely information, education and a range of supports across the rehabilitation pathway of care.

Where deficits are modifiable, the goal is optimisation and/or restoration of function.

Where deficits are not amenable to modification, and the patient is at a new baseline, goals of care shift towards maintenance rehabilitation where the objective is to maintain current functioning and/or minimize deconditioning.

The Report of the Trauma steering group recommends all trauma patients in Major Trauma Centres, Trauma Units and Trauma Units with Specialist Services can access rehabilitation and have their rehabilitation needs assessed within 48 hours of admission, generating a flexible personal prescription for rehabilitation that should accompany all patients through their pathway from acute to post-acute rehab.

Trauma rehabilitation standards:

Underpinned by:

- RNA/RP
- Clinical care pathways
- Goals of care
- Person centred ethos
- Clinical Outcomes

Hyper acute/acute rehabilitation:

Rehabilitation commences as early as possible and should start in the critical care setting to allow the patient the best possible opportunity to achieve their physical, cognitive, psychosocial and functional potential. Every patient should undergo routine assessment of their rehabilitation needs within 48 – 72 hours of admission through the completion of a flexible rehabilitation prescription that should accompany all patients as they transition through the pathway

Hyper-acute & acute inpatient rehabilitation is delivered across intensive care (GITU/CICU) and trauma wards to include, GA (neurotrauma), 2A/2B (ortho & poly trauma), 2D (burns), 4D (polytrauma).

Egress:

Transfer of Care to local hospital is defined by the National Transfer of Care policy

Post-acute inpatient rehabilitation: St. Finbarr's Hospital provides inpatient older person rehabilitation. The SIVUH provides ortho-trauma inpatient rehabilitation. Currently there are no other regional post-acute egress sites, therefore CUH MTC will continue to provide post-acute rehabilitation in interim pending the establishment of post-acute sites.

Tertiary complex specialist inpatient neuro-rehabilitation: The NRH is the national facility providing complex specialist inpatient neuro-rehabilitation. Patients identified in CUH MTC requiring admission to NRH are waitlisted for bed. CUH MTC (and future TUs) will continue to operate in a hub and spoke model with NRH.

Maintenance rehabilitation; Riverstick Transitional Care Unit will provide older person maintenance rehabilitation.

Community Specialist Rehab Team: aims to provide rehabilitation in a community setting, ***Community Healthcare Networks:*** Each CHN will deliver primary healthcare services across a population of 50,000. It will consist of between 4-6 primary care teams, with GPs involved in delivering services. Working together in multi-disciplinary teams will deliver the Sláintecare vision to provide the right care, in the right place at the right time. Benefits will include: more locally accessible services, efficient movement from community to acute services and back, more care at home.

Home care packages: this is done through Bed Management office with Discharge Co-ordinators

Rehabilitation Specific Clinical Care Pathways/Protocols

1. Management of Mild Traumatic Brain Injury: See Appendix 7
2. Rehabilitation Management of MSK Trauma: See Appendix 8
3. Rehabilitation Management of Facial Palsy Injury: See Appendix 9

4. Rehabilitation Management of Pelvic & Acetabular injuries: See Appendix 10
5. Rehabilitation Management of Spinal Cord Injuries: See Appendix 11
6. Management of Prolonged Disorder of Consciousness: See Appendix 12
7. Rehabilitaion Management for Traumatic Amputee: See Appendix 13
8. Management of Vestibular Disorders: See Appendix 14
9. Rehabilitation Management of Burns: See Appendix 15
10. Rehabilitation Management of Thoracic Injury: See Appendix 16

Psychological Wellbeing and Mental Health of Polytrauma Patients

Liaison Psychiatry
There is access to 24/7 psych liaison services for all adult patients (Adult Liaison Psychiatry or Liaison Psychiatry for Older Persons - LPOP) for those admitted following a suicide attempt, intentional self-harm, or where pre-existing mental health issues have been identified, where there is a need for a psychiatric medication review, displaying significant risk to self or others or is currently detained under a section of the Mental Health Act.

Child and Adolescent Mental Health Services and the crisis liaison team are available 7 days a week.

Clinical neuro/clinical psychology

- Psychological formulation of patients' needs and their suitability for intervention and comprehensive assessment with a focus on post-trauma sequelae such as post traumatic brain injury, PTSD, mood disorders and adjustment reactions.
- An estimated 30-40% of individuals who survive a Major Trauma report serious, long-term psychological difficulties. Anxiety, depression, post-traumatic stress (PTSD), and chronic pain are commonly reported consequences of significant injuries (Teager et al 2022). The National Institute for Health and Care Excellence (NICE) guidelines recommend the use of evidence-based psychological interventions for individuals experiencing psychological and neuropsychological difficulties. The clinical neuro/ psychologist provide psychological therapies such as: Acceptance and Commitment Therapy, Compassion Focused Therapy, Eye Movement Desensitisation and Reprocessing (EMDR), Trauma Informed Cognitive Behavioural Therapy amongst other therapies.

- Neuropsychological assessment which requires the integration and interpretation of data from a variety of sources including clinical interview, relevant neuropsychological tests across various cognitive domains, self-report measures, direct and indirect observation, and collateral information from family, carers, clinical personnel/ staff, and other persons as appropriate
- Psychoeducation on psychological neuro/sequelae of major trauma for patients and families.
- Contribute to the flexible personal prescription for rehabilitation as outlined in the Major Trauma Steering Group Report (2018)
- Contribute to multi-disciplinary positive behavioural support plans for patients with neurobehavioural sequelae and challenging behaviour.
- Contribute to multi-disciplinary capacity assessments.
- Cognitive rehabilitation interventions in conjunction with MDT colleagues.
- Delivering consultation-based practice, clinical supervision, staff support, teaching and training relating to psychological and/or neuropsychological issues, and in conducting and disseminating research and service developments.