

1. What are the most common mechanisms of injury in trauma patients presenting to RLH Emergency Department and what underlying factors predispose to these specific types of injury in relation to the hospital's catchment area (NE London)?

The most common traumatic mechanisms of injury arriving at The Royal London are stabbings, road traffic collisions (as pedestrian, cyclist, motorcyclist or motor vehicle occupant), falls from height and 'one unders'. The majority of trauma cases that I saw were stabbings and RTCs. Whilst I was aware that stabbings are more common in London than elsewhere, I was surprised at the imaginative range of items used as weapons, ranging from a machete to a screwdriver. Several of the cases I saw were related to gang crime and there are particularly high rates of gang membership in areas of East London. A high proportion of the road traffic collisions that I saw involved cyclists; two of TFL's Cycle Super Highways run through Newham and Tower Hamlets including the CS2 route which has become infamous for the number of cyclist fatalities since opening in 2012.

2. How are trauma cases in London managed and what specialist services are available?

Major trauma is considered to include: traumatic injury requiring amputation of a limb, severe knife and gunshot wounds, major head injury, multiple injuries to different parts of the body, spinal injury, and severe burns.

In 2010, a specialist trauma system was introduced in London. Certain hospitals were designated Major Trauma Centres, and trauma patients are routed to one of these centres where 24 hour specialist facilities and consultant led care are available. London has 4 such centres – Kings, St. Mary's, St. George's and The Royal London. When a patient is identified as having potentially sustained a major trauma they are taken to the trauma centre most appropriate to their needs (given the high calibre of facilities and expertise available in London, this is usually the nearest centre), where details are provided in advance and a trauma team are assembled in resus to evaluate the patient on arrival. The core trauma team usually includes a team leader (usually an EM doctor), an anaesthetist, a general/orthopaedic surgeon (or both), nurses, a radiographer and a scribe – depending on the mechanism of injury neurosurgeons and plastic surgeons may also be present. I saw a wide range of trauma that I had not previously seen during A&E placements due to being placed in smaller non-specialist hospitals. I was involved in several cases as scribe notes for the trauma team as they stabilised patients.

The London HEMS team are based at The Royal London Hospital and I completed an observer shift with the Trauma Car one night. At one point during the night when things were quiet, we stopped off at the London Ambulance Service despatch centre in Waterloo and I learnt how trauma calls were triaged and assessed by a HEMS paramedic to ensure that the team are dispatched to patients who would most benefit from their intervention. Later in the night we attended a high speed RTA polytrauma case which required practically every intervention HEMS are able to provide including pre-hospital RSI, blood transfusion, tranexamic acid, thoracostomies, and roadside clamshell thoracotomy with open cardiac massage.

From speaking with one of the paramedics involved, I also learnt about the Hazardous Area Response Team, who often attend trauma cases where there may be additional hazards or difficult extrication of patients from the scene.

Whilst these services are not unique to London, the volume of cases seen and the rigorous audit and development process have led these teams to the forefront of trauma care in the UK, such as pre-hospital blood transfusion and use of REBOA, as I saw from attendance at HEMS governance days and teaching sessions at RLH.

3. Observe and describe the application of different imaging modalities in relation to patient assessment in trauma (XR, US, CT, MRI).

The majority of the trauma patients that I saw were treated in resus. Resus at RLH has been specifically designed with trauma cases in mind, so imaging is readily available. Portable x-ray equipment is built in and a dedicated CT scanner is positioned immediately off the resus area with a CT radiographer available at all times. Resus is also equipped with up-to-date ultrasound machines. Most cases I saw underwent investigation with at least one imaging modality. X-rays are commonly used to assess for skeletal trauma and chest pathology, but given the easy availability of other modalities they were sometimes skipped in favour of getting an early CT. I learnt that ultrasound has become an essential investigation in trauma, where eFAST scans are used in both blunt and penetrating mechanisms to detect free fluid in body cavities and between pleural surfaces as a 'rule in' investigation which can alert to the need for early surgical intervention. It can also be used to assess for aortic aneurysm and used to position vascular lines. However, given the facilities, the majority of patients with suspected pathology underwent CT scan and I saw some very interesting cases. Due to the willingness of the consultants to teach and later correlation of scans with radiology reports, I feel my confidence in spotting abnormalities on CT has increased a little.

Whilst not directly relating to patient assessment, I undertook a presentation in the use of ultrasound to guide nerve blocks for regional analgesia in the emergency setting. This was very interesting as I was not previously aware of this application.

4. Improve history, examination and management of acutely unwell patients and practise practical procedures where appropriate.

Whilst I did spend a lot of time in resus, I also spent time in EA/majors and minor injuries. The time in EA and cubicles helped me refine my history taking and examination skills, and discussion with the registrars and SHOs helped me think more systematically about the most appropriate investigations and management. Despite having just sat finals, the knowledge sticks better when applied practically rather than theoretically, and it was helpful to see several 'textbook' cases of conditions such as upper GI bleeding, pancreatitis, and appendicitis. I definitely felt a bit rusty on practical skills such as cannulation and catheterisation as my previous placement before study leave had been a GP placement, however, I got plenty of opportunity to practise these. Attending the InfoMed Level 1 Ultrasound Course helped me understand how to use ultrasound to assess patients with a FAST scan which was both interesting and relevant to my future career aspirations, and I was later able to scan a patient under supervision. One other particular aim was to improve my suturing skills, which I was able in minor injuries and I now feel much more confident in this.