

## **ELECTIVE (SSC5c) REPORT (1200 words)**

A report that addresses the above four objectives should be written below. Your Elective supervisor will assess this.

Trauma care in the US is highly structured and is delivered by a variety of institutions that operate within a framework introduced by the American College of Surgeons (ACS). Unlike in the UK where hospitals are opened and operated from a 'top-down' approach, hospitals in the US are generally opened in a 'grassroots' fashion where any entity (public or private) may open a new hospital if the local government issues a 'certificate of need.' Similarly, pre-hospital entities such as fire departments or private ambulance companies must also be awarded a 'certificate of need' before they are allowed to begin operations. Emergency calls are taken by an emergency call centre operated by the city or local authority and the nearest available unit is dispatched regardless of operator.

Hospitals in the US offering trauma care are assessed by the ACS and awarded a designation based on the level of care that they are able to provide. A 'Level I' trauma centre represents the highest level of trauma care available, and requires the immediate availability of surgeons, anaesthetists, and dedicated trauma nurses, plus the rapid availability of neurosurgeons, orthopaedic surgeons, plastic or oral/maxillofacial surgeons, radiologists, and intensivists. The requirements also specify that these centres must be running some form of a postgraduate training scheme for doctors in surgery and/or emergency medicine. By contrast, on the opposite end of the spectrum, a 'Level IV' trauma centre can offer limited care by emergency physicians and nursing staff only. Pre-hospital practitioners make decisions about transporting patients to different centres based on criteria published by the ACS, and may request a helicopter transfer if the transport time to an appropriate centre is deemed to be too long by ground.

One of the biggest advantages US is that the 'grassroots' organization of the healthcare system, fuelled by incentives for various institutions to profit on the provision of healthcare, means that trauma centres are abundant and always adequately staffed. In this sense, trauma care in the US is more resource-rich than it is in the UK, and centres are under substantially less staffing or bed pressures than they are in the UK. This is a double-edged sword, unfortunately, and this structure also has some significant disadvantages. The profit incentive has caused many hospitals to scramble towards meeting the criteria for designation as a 'Level I' trauma centre, which is often inappropriate at hospitals that have no experience providing trauma care. In Phoenix, for example, there is a hospital that was recently designated a 'Level I' trauma centre that has no surgical faculty with trauma experience, nor an adequate neurosurgical service. As such, it is evident that many centres are exploiting loopholes within the ACS criteria to claim that they are offering 'Level I' trauma care when in fact they are providing woefully inadequate care. Although most major trauma patients eventually end up at centres that are able to provide a higher degree of care (the example mentioned above transfers a significant proportion of patients to other hospitals), this represents a significant delay in care and likely an increase in mortality. The increased number of centres providing trauma care in cities like Phoenix also means that the volume of trauma being seen by the older, more established trauma centres is falling, and new doctors coming through postgraduate medical training are likely to have less experience dealing with trauma, which represents another disadvantage to this system.

Although the US and UK are demographically and culturally very similar, there are a few key differences that contribute to a significantly different trauma population. One of the most significant

differences is the widespread availability of firearms, which contributes to increased acuity (although not incidence) of penetrating trauma patients. Gunshot wounds, when compared to stabbings (which is the most common type of penetrating trauma in the UK) tend to cause a lot more damage thanks to the high velocity of the bullet, which generates a destructive shockwave that tears through body tissues. As much as I know that many people from the UK proudly proclaim that there are 'no guns in their country' (a naïve statement if I've ever heard one) I am aware that the major trauma centres in London are certainly no stranger to this type of injury. Nevertheless, what I have noticed is that the gunshot wounds that occur in the UK are almost always related to organized or 'white collar' crime, as these are the people who are able to illegally import firearms into the country. Additionally, it's worth noting that the firearm-related death rate in the US is upwards of 40x higher than it is in the UK, which certainly suggests to me that the gun control policies of the UK are very effective.

Another significant difference between trauma patterns in the US and UK is that there is a higher incidence of trauma from motor vehicle collisions in the US. This is a slightly more complex pattern to untangle, but I suspect the main factors that contribute to this are the following: firstly, in the US, virtually everyone over the age of 16 owns and drives a car. This is largely a matter of practicality as public transit is very poor in many cities across the US and even where it is good, it often does not extend into the suburban residential reasons, which makes it nearly impossible to get anywhere without a car. Nevertheless, there is likely to be a much higher proportion of people out on the roads at any given point in time, which would certainly have an effect on the incidence of motor vehicle collisions. Secondly, the average speed on urban UK roads is substantially lower than in the US, where urban roads often have a speed limit of 45 mph (compared to 30 mph in the UK). It is well documented in the literature that the morbidity and mortality rates for automobile crashes under 40 mph are much lower than those above 40 mph, so this unquestionably contributes to the lower rate of major trauma coming from motor vehicle crashes.

My involvement in the care of critically ill patients on the Trauma Intensive Care Unit has improved my understanding of respiratory physiology a great deal, especially as it pertains to ventilating patients with different pathologies. We have had patients with a wide array of pathology, and I have learned about how to manage these in conjunction with acute injuries. Working with other members of the multidisciplinary team has also given me a great deal of insight into how to appropriately assess nutrition status and prescribe diets for different types of patients, and how patients are rehabilitated from various injuries.

Additionally, my time at St. Joseph's has provided me with an abundance of clinical experience in excess of what I ever could have imagined. I've had the opportunity to run trauma calls, do rapid sequence inductions, place central/arterial lines, and suture a large number of complex wounds. I feel that these skills will be great to have as I start FY1, as it's given me a great deal of confidence to do things and take care of patients by myself.