ELECTIVE (SSC5b) REPORT (1200 words)

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

Hands-on experience working at a level one trauma center in conjunction with a literature review highlighted the core attributes imperative to optimal functioning of a trauma team. In this report I will specifically discuss the value of closed-loop communication, situational awareness, a shared mental model and regulation of environmental noise. (1) As a junior member of the resuscitation team, I am frequently involved in retrieval of diagnostic equipment or the manual handling of patients in trauma care. The implementation of closed-loop communication throughout this process enables the leader around me to be confident of task completion, facilitating maximal direction of their cognitive capacity towards patient care and a greater retention of situational awareness. El-Shafy et al, (2) evidenced the utility of closed-loop communication by demonstrating orders implementing closed-loop communication were completed 3.6 times faster than those with open loop. Considering my anecdotal experience in conjunction with compelling literature I will continue to develop and implement a closed-loop communication strategy when working as a member of the trauma team.

The necessity of resuscitation team leaders maintaining situational awareness is evidenced through the case report of Elaine Bromiley. (3) Albeit relating to anesthetic practice, the high-profile case report of Elaine Bromiley evidences the devastating consequences of fixation error. In this specific case, focus was inappropriately distributed towards less pertinent areas of patient care subsequently failing to appropriately respond to life-threatening hypoxia. (4) Throughout my experience at St Joseph's Hospital a clear challenge for trauma team leaders in maintaining their situational awareness is secondary to the requirement for their involvement in technically challenging surgical procedures during resuscitation. As the most technically proficient member of the team, the hands-on expertise of the attending doctor is often called upon during resuscitation. The unfortunate consequence of this is losing the 'big picture' view of the resuscitation process. Upon reflection, a strategy to mitigate against this inevitable challenge, is ensuring the decisive and clear establishment of an interim hands-off leader to ensure team situational awareness is retained. Another strategy I have recently learnt about to promote optimal situational awareness in the operating room is the utilization of the '10 seconds for 10 minutes' principle during emergency surgery. (5) The intention of this protocol is to provide the team with a concise 10 second handover every 10 minutes to facilitate sharing of clinically relevant information between the anesthesiologist and the surgeon. This protocol establishes a culture emphasizing the importance of optimizing the situational awareness of the surgical team. To gain further insight into the utility and practicalities of implementing this protocol I will engage in discussion with attending trauma surgeons. The '10 seconds for 10 minutes' handover protocol is summarized in Figure 1. (6)

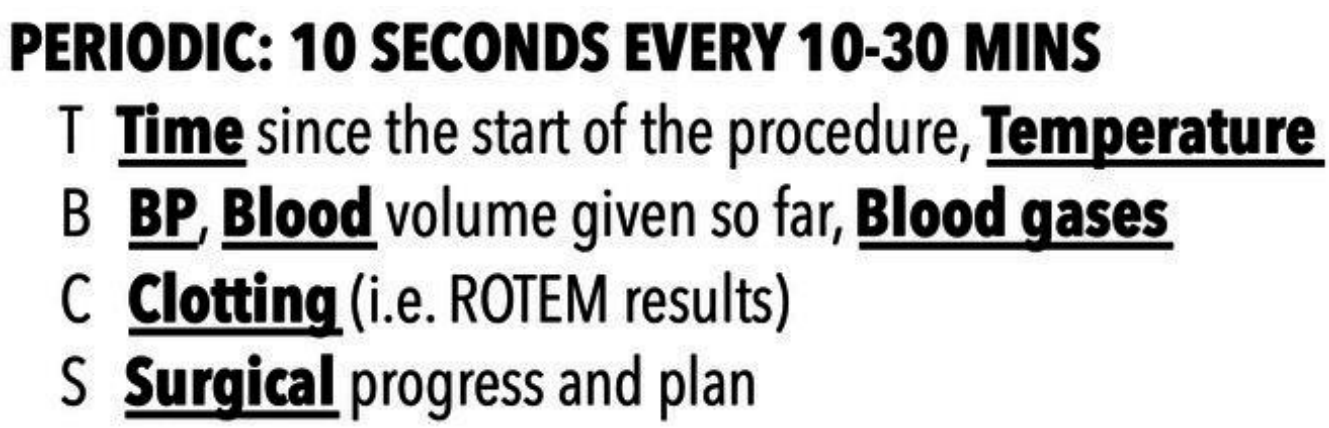

Figure 1: The '10 seconds for 10 Minutes' Protocol (6)

Upon activation of the trauma team at St Joseph's Hospital a shared mental model is established through discussion of individual roles and probable interventions that will be required in the resuscitation process. A key benefit of this process includes improved interprofessional collaboration which in turn has been demonstrated to improve the medical management of trauma teams. (7) Seeing this process in action and reflecting on the

underlying data evidencing its utility has inspired me to further research strategies for the optimization of establishing a shared team mental model to ensure maximal efficiency of the trauma team.

Whilst participating in a knowledge donor code blue simulation I learnt the necessity of adequate minimization of noise to ensure optimum team performance. The presence of ten external guests watching the code blue simulation resulted in a background noise level causing distraction and an impairment in team communication. This required the team leader to firmly raise their voice and ask for quiet in the room. The subsequent reduction in background noise facilitated an improvement in team communication and focus. The ability of a leader to adequately control the ''noise and chaos'' of the resuscitation environment is cited in the literature as a core quality attributable to the achievement trauma team excellence. (1) As such, as an aspiring trauma surgeon this is a core skill I will endeavor to implement and develop.

This rotation at St Joseph's Hospital has provided extensive experience in the development of my technical surgical skills. Prior to this rotation my only suturing experience was in performing simple interrupted sutures for the management of uncomplicated lacerations. I have been able to further develop my proficiency and efficiency in performing simple interrupted sutures through supervised closure of lacerations in the trauma bay. I have noticed an increase in my confidence in the technical aspects of suturing such as ensuring appropriate suture bite, depth and psychomotor control of the needle driver and forceps. This has in turn decreased the time taken to close such wounds and improved the cosmetic outcome for my patients. In addition to this, I have been able to expand my knowledge and technical proficiency through observing and practicing new suturing techniques such as deep dermal sutures and running subcuticular sutures. Specific opportunities that were paramount in the development of my technical skill in these new suturing techniques were closing laparoscopic port sites, thoracotomy incisions and surgical airway incisions. Furthermore, rotating at St Joseph's Hospital has provided opportunity to develop my competence in one and two-handed knot tying. Notable learning opportunities in this area included tying sutures to mesenteric vasculature in the knowledge donor simulations and during incision closure of a total thyroidectomy operation. Finally, upon engaging in discussion with attendings, residents and nurse practitioners, I now have a deeper knowledge of suture materials, the indications for their use and the required number of suture throws to prevent suture loosening. This is invaluable knowledge for future management planning and ultimate success of patients I suture throughout my career.

A further component of my educational development on this clinical rotation in the US is to learn about the opportunities for trauma surgeons to engage with public health initiatives to reduce the burden of traumatic injury. It has been inspiring to read about the commitment of the American College of Surgeons to empower regional trauma centers in reducing local inter-personal violence through hospital-based violence intervention programs (HVIPs). (8) I have been impacted by learning about the holistic assessment and care these programs provide for residual psychological trauma as well as their intentionality in addressing the societal risk factors that predict inter-personal violence. Researching HVIPs has given me a new perspective on the psychological and emotional turmoil many of our patients who have sustained traumatic injuries have experienced. It has highlighted the necessity of a holistic approach to the management of trauma patients and has challenged me to consider how I can improve my communication and management strategies considering the prevalence of psychological trauma in our patient population. As an aspiring trauma surgeon, I am excited at the prospect of engaging with HVIPs to advocate for the long-term holistic health and wellbeing of my patients beyond the confines of hospital walls. Finally, it has also been interesting to learn about the financial structure of the US healthcare system. Specifically, I have learnt about government funded healthcare through Medicare and Medicaid in addition to the role of private insurance policies in the US healthcare system. Notably, it has been valuable to learn how these financial systems facilitate the funding for the impoverished and marginalized patients we often manage on the trauma service.

In summation, this rotation at St Joseph's Hospital has been a formative experience for my personal and professional development as an aspiring surgeon. I am honored to have been given this opportunity and am immensely grateful to all the faculty at St Joseph's Hospital who have made this rotation so educationally rich and enjoyable.