TRAUMA

When deciding the destination of my elective the prerequisite was that I wanted a hospital which would push me beyond my comfort zone and experience healthcare from an alternative perspective. Chris Hani Baragwaneth Hospital in Johannesburg, South Africa surpassed all expectations and preconceptions, and offered me an experience which left me both inspired and confident. The experience was also very humbling as deprivation and HIV in what is considered by the World Health Organisation to be one of the strongest economies in Africa, was extremely evident. The current state of South Africa can only really be understood by trying to unravel its history, and although the apartheid has ceased to exist as such there is still an evident socio-economic disparity in South Africa which is also reflected in the health care system.

This was a unique opportunity to gain an insight into emergency and trauma medicine at the world's largest acute hospital. This centre of excellence is located on the southern border of Soweto, the cities largest township, and provides care to 4 million people. The hospital not only attracts patients from around South Africa, but also accommodates patients from neighbouring African nations.

Although this hospital houses modern facilities it serves a deprived community riddled by political and social unrest. Given that 50% of patient admissions are either gun shot or stab wounds with the surgical pit renowned for its hands on experience; my role was not an observational one; the unit was also reliant on a constant flow of students. Below is a list of some of the skills and competencies achieved through the duration of my placement:

1) Sutured a variety of wounds including: facial lacerations both deep and superficial (lips, nasal labial folds and ears), hands, stab wounds to chest head, back and leg.
2) Assessed paediatric and adult burns (both accidental and non accidental) and managed them
3) Assessed the critically ill patient using ABCD, and stratified them as urgent or non-urgent
4) Used fast scans i.e. lodox full body scan and ultrasound and interpreted
5) Diagnosis of chest trauma and insertion of chest drains (and safe removal)
6) Dealt with poly-trauma from road traffic accidents
7) Organised a trauma call and directed colleagues
8) Stabilised critically ill patients
9) dealt with crush injuries (post sjambok[1])
10) Learnt to manage a variety of fractures

The scale of trauma seen in Johannesburg surpasses that seen in London, both in the volume but also the severity of the injury. London however has seen an increase in recent years in knife related injuries and their severity, as outlined by (Crewdson et al., 2009). There was a clear pattern to the mechanism and timing of injury at Baragwaneth, the highest volume of patients were seen from Friday evening and the weekend, many of the injuries were alcohol related. The influx of muggings (assault), stabbings, and gun shot related injuries were highest during pay day weekends and bank holidays which were also related to alcohol consumption and availability of funding.

[1] Whip like weapon

The injuries seen could mostly be stratified into the following mechanisms:

1. Assaults: stabbings (knives and bottles), gunshot (close range injuries), sjambok (crush injuries)

2. Road traffic accidents

3. Burns (accidental and non-accidental)

4. Domestic abuse

Fig.1 below shows the percentage of Injury deaths by cause in South Africa (Year 2000) for both men and women.

	Males*n* = 45 237		Females*n* = 14 698		Persons*n* = 59 935	
Rank	Cause of injury death	%	Cause of injury death	%	Cause of injury death	%
1	Homicide/interpersonal violence[a]	50.9	Road traffic injuries	32.6	Homicide/interpersonal violence[a]	46.0
2	Road traffic injuries	24.8	Homicide/interpersonal violence[a]	30.8	Road traffic injuries	26.7
3	Suicide/self-inflicted violence	9.3	Fire[b]	12.5	Suicide/self-inflicted violence	9.1
4	Fire[b]	5.1	Suicide/self-inflicted violence	8.6	Fire[b]	6.9
5	Drowning	2.4	Surgical/medical misadventure	4.3	Drowning	2.3
6	Other transport injuries	1.7	Falls	2.6	Surgical/medical misadventure	2.0
7	Falls	1.4	Drowning	2.2	Falls	1.7
8	Other unintentional injuries	1.3	Other unintentional injuries	1.7	Other transport injuries	1.7
9	Surgical/medical misadventure	1.2	Poisoning	1.7	Other unintentional injuries	1.4
10	Poisoning	0.8	Other transport injuries	1.5	Poisoning	1.1
11	Mining injuries	0.5	Suffocation and foreign bodies	0.9	Suffocation and foreign bodies	0.4
12	Suffocation and foreign bodies	0.3	Natural and environmental factors	0.4	Mining injuries	0.4
13	Natural and environmental factors	0.3	Mining injuries	0.0	Natural and environmental factors	0.3
14	War[c]	0.0	War[c]	0.0	War[c]	0.0
	All injuries	100.0	All injuries	100.0	All injuries	100.0

Fig. 1 percentage of Injury deaths by cause in South Africa 2000 (WHO, 2007)

Typically the Demographic of patients affected by trauma are similar in South Africa as they are in London, as it is mainly a speciality of the young. However the degree of trauma affecting infants whether it be from accidental or non accidental injury, objectively was more common in South Africa compared to my experience at the Royal London hospital. The most common of these infant injuries were burns and fractures.

The Trauma pathway in South Africa varies slightly from that found in England. The pre-hospital care pathway is based on both a public and private system, and hence the skill base of the paramedics

varied dependent on the ambulance service. The private companies tended to have faster response times and more funding when compared to the government run services. Patients once in the trauma department were stratified into three categories dependent on the severity of their injuries P1, P2 and P3. It was possible that patients often waited greater than 24 hours to be seen during busy times, and once seen, to be reviewed again could take many more hours.

The system implemented in South Africa was dependent on the urgency of each case and patients were prioritised accordingly, the patient queuing system was poor which often meant that people were left waiting longer when they had attended the department earlier than others. Although this system of prioritising urgent patient is used to a certain degree in the UK there was most definitely a heavier emphasis in South Africa. Despite this, urgent patients were seen with the highest priority and were taken directly to the fully equipped resus. The resus facilities at the Baragwaneth hospital were by far the best that I have encountered both in terms of facilities and the number of active resuscitations that could simultaneously occur under the supervision of the highly trained nursing staff. Eighteen active resuscitations with monitoring and the option of invasive ventilation could take place in the resuscitation room (Fig. 2); in view of the World Cup in 2010 facilities could be stretched to accommodate 40 people in a critical incident.

One of the main differences highlighted at an early stage on my elective was the patient interaction and relationship with the doctor. The importance of communication skills has been at the forefront of our medical training since starting our degree, the approach implemented in South Africa would be deemed by many as more forward and straight taking with very little room for pleasantries and dialogue and more often then not care was solely dependent on patients putting their complete trust in the doctor asking very few questions. The system implemented in the the UK can often go to the other extreme; there are clearly both positives and negative aspects of each approach both dependent on cultural and social beliefs.

Fig.2 Resuscitation facilities at the Baragwaneth hospital

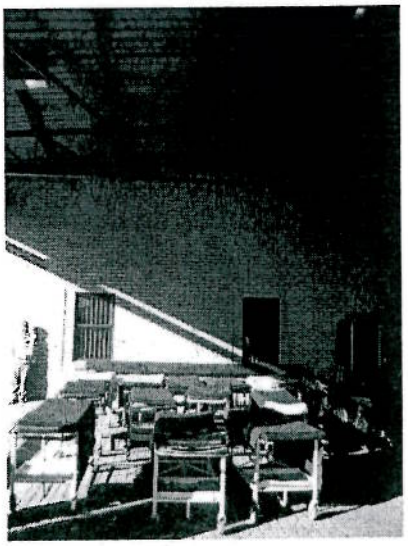
The Baragwaneth hospital is unique in the sense that it sees one of the highest influx of trauma patients worldwide, and hence research can be conducted at this centre which can be utilised by smaller hospitals around the world that see fewer cases. The Prognostic outcomes for trauma are very much dependent on the mechanism of injury and the trauma type, for example currently there seems to be much research around the prognostic indicators in crush injuries in the young. Less emphasis in South Africa is placed on conducting blood test in order to diagnose patients although the facilities are readily available to do so, more emphasis is placed on using clinical acumen, and then supporting that diagnosis with the relevant investigation (hence treating the patients and not the results). In the UK I feel that we as clinicians have become too dependent on the resources available to us and we depend less on what we have been trained to do and in a sense developed a wasteful mentality. It was very rewarding to be in a

system were by you could make a diagnosis and treat something with very little intervention that had a large impact on the patients life.

The trauma that I witnessed was sometimes on an unrealistic scale and difficult to understand how one human could inflict such an injury on another, but this is not a reflection of the South African people just the social and economic burden that a large number of people find themselves in.

Many of the young patients that I encountered would never make a full recovery to their pre-morbid state, whether it be a life-long stoma from a gunshot wound, or residual neurological deficit from sustaining a head injury. The services and follow-up that exist in the UK post trauma are non-existent in South Africa, with only medical issues addressed, rather than any intervention to provide social support. Teenagers that had been shot or stabbed more often than not had scars from previous injuries and operations, highlighting a window of opportunity. These were not capitalised on and hence they readmitted with either similar injuries or subsequently died. Intervention in every traumatic case may be an idealistic approach due to the influx of patients but intervention clearly has to occur.

This elective has widened my horizons immensely and opened my eyes to a completely different health care system. I feel more confident in my clinical ability as it has given me an opportunity to implement my theoretical knowledge practically. Realistically I performed procedures that ordinary in England I would not have had the opportunity conduct. I hope to integrate the positive aspects that I learnt in South Africa to improve the clinical care that I provide to my patients in the UK.



Objectives:

1. Determine the pattern of trauma in Johannesburg (including the type of trauma and demographic) and compare this to the trauma seen in the UK and globally.
2. Determine the trauma care pathway, from pre-hospital care to management within the hospital, to the services provided in the UK.
3. What are the prognostic outcomes for severe trauma to young adults at the Chris Hani Baragwaneth, and can anything be learnt or implemented in the UK.
4. Reflect on the effects of trauma on the quality of life of young adults and the provision of support to enable re-integration.

References:

Crewdson, K., Lockey, D., Weaver, A., and Davies, G. E. (2009). Is the prevalence of deliberate penetrating trauma increasing in London? Experiences of an urban pre-hospital trauma service. Injury *40*, 560-563.

WHO (2007). The high burden of injuries in South Africa. In Bulletin of the World Health Organization pp. 649-732.