

ELECTIVE (SSC5c) REPORT (1200 words)

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

1) Compare and contrast the demographics of New Zealand and England and provide a brief overview of the variety of neurosurgical cases

Waikato district health board provides services to around 900,000 patients and is one of twenty district health boards in New Zealand. Neurological surgery is a tertiary service based at Waikato Hospital that contributes to the management of patients with major head trauma as well as pathological disorders from across the Waikato health district. The team consists of four consultants, four registrars and one SHO. Morning handover begins at 730am and theatre list begins at 8am. While in theatre, I observe surgeries (where a microscope is used) or assist/ scrub in operations. There are four theatre days and one day a fortnight reserved for interventional neuro radiology.

I undertook my elective placement in Neurosurgery at Waikato hospital, New Zealand. I witnessed various cranial and spinal cases. Tumours and aneurysms of various degree made up the majority of cerebral cases I encountered. In New Zealand, the most common primary intracranial tumour is meningioma. The presentation and management of depended on the type (one to fifteen), grade and location of the tumour. Simpson excision was used to describe the type of excision used. In the UK, 9365 cases of CNS and intracranial tumours. About a quarter to a third of these are meningiomas. In 2011, there were 285 patients diagnosed with brain tumours. This is quite low but the population of New Zealand is around 4 million (15 times less than UK).

The common cerebral tumour I encountered was glioblastoma. Glioblastoma has a higher recurrence rate and is associated with "median" survival. The prognosis is quite poor. Glioblastoma represents 15% of all primary brain tumours.

Cerebral aneurysms involved various different arteries in the brain. The most common acute presentation was caused by sub arachnoid haemorrhage. This is most commonly as a result of Berry aneurysm or trauma. In children, it is associated with AVM. The management for unruptured aneurysms involved coiling or clipping. In Australia and New Zealand, more than 1500 patients (2-6% of the population) suffer from an aneurysm and at least 30 a year die.

The most common spinal operation performed was laminectomy in various locations along the spine (lumbar spine was the most common I witnessed). This would help relieve compressive symptoms.

The aim of any surgical specialty is to reduce post op complications. The three categories focused by the neurosurgical department were infections, dvts and post op csf leaks. As a result, I undertook an audit that investigated the rates of post op csf leaks in Waikato hospital since the department opened in 2006. I found 21 cases excluding traumatic cases and compared to other district boards in New Zealand.

2) Compare and contrast the difference in Neurological services within the public health system in New Zealand and England (NHS)

The health provision in New Zealand is very similar to that in the UK (NHS). There is a free secondary health care system. The main difference is the privatisation/ cost to visit their general practitioner (GP). The cost varies with each practise. Therefore, some patients of lower socioeconomic group might delay their visit to the GP due to cost regardless of the symptoms. As presentation can be delayed, the severity of the disease might increase.

However, accident and emergency/ emergency department does not involve any cost. Therefore, rather than presenting to their GP due to cost, patients could present to A&E which will increase the burden and strain on A&E. In order to reduce this impact, patients are reviewed by an ED doctor and if the presentation can be managed their general practitioner, they are provided with a voucher that can be taken to their GP and the patients cost of consult will be covered. In my opinion, this is a brilliant scheme to compensate for the cost of primary care but the question remains: is it necessary.

Due to the population size, compared to London, the waiting list is much shorter in Waikato hospital. Patients are usually operated within a week of presentation.

I spent the majority of my time in theatre and the format, structure and equipment used are identical to the NHS. New Zealand and especially Hamilton/ Waikato, is very spread out. Access to public transport is limited and therefore, the need to drive is immense. This places great strain on patients who have suffered a seizure, for example, from their tumour. The law is similar to the UK- ability to reapply for license after a seizure free year.

3) Describe the role of interventional radiology in the treatment of aneurysms

I witnessed interventional radiology in the treatment of aneurysms- stents and coils. The aim of endovascular coiling is to reduce blood flow into the aneurysm. Its aim is to prevent rupture of an aneurysm. It is a minimally invasive technique where a catheter is passed through the groin into the artery containing the aneurysm. The coil is attached to a microcatheter which is then inserted through the catheter. When the coil has reached the aneurysm, an electrical current is used to separate the coil from the microcatheter. The coils block the aneurysm and can also induce embolization. There is risk of stroke and the procedure can be unsuccessful at times resulting in re coiling.

A stent is a tube of various lengths and diameters usually made from nickel-titanium alloy. This was used to treat aneurysms. The doctor inserts a catheter in the groin and threads to the arteries in the brain via the aorta and carotid arteries. The stent is delivered via the same path and carries the stent to the site. The whole process is performed under angiography. As mentioned above, aneurysms are either clipped, coiled or stented. The risks associated with stenting are bleeding, artery dissection, and bleeding into the brain.

Interventional radiology can also be used to treat dural arteriovenous fistulas (DAVF). This is a fistula between the dural artery and dural vein. DAVF can occur anywhere in the intracranial dural matter. They are most commonly in the transverse and cavernous sinus. Glue (Onyx) was deposited in the arteries. This reduces flow through the fistula. Onyx is a non adhesive liquid agent which prevents the blood vessels from adhering to the micro catheter. Stent and coiling can also be used to treat DAVF.

4) I hope to improve my understanding of imaging (CT and MRI) used in Neurology and use the skills I gain in future practice

My personal objective was to improve my ability to interpret brain imaging. Throughout medical school, I was advised to improve my data interpretation skills especially imagining. Most feedback I received on MSF had highlighted this to be my greatest weakness. I thought I would use my elective as an opportunity to improve my knowledge of neuroanatomy and neuro imaging, focussing on CT head and MRI. The registrars were very helpful with this. During handover, I was asked to interpret various CT heads and provide a list of differentials. My knowledge of various cranial and spinal diseases has improved greatly.