

# Elective report

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**Dates of elective:** 21<sup>st</sup> April – 30<sup>th</sup> May 2014

**Location:** Department of Paediatric Neurosurgery, Royal Manchester Children's Hospital, Manchester, UK.

## **Objective 1: What are the prevalent paediatric neurosurgical conditions in England?**

There are estimated to be around 4200 paediatric neurosurgical operations undertaken annually in England, with the majority (70%) of these being elective operations. The most common paediatric neurosurgical condition is hydrocephalus, accounting for about 40.5% of all cases. Central nervous system tumours, craniofacial disorders and epilepsy all account for around 10% each, and are often treated in specialist centres. The remaining operations include vascular abnormalities such as arterio-venous malformations, traumatic head injury and spinal dysraphism.

## **Objective 2: Explain the role of the Royal Manchester Children's Hospital in the management of traumatic head injury.**

The Royal Manchester Children's Hospital is the largest paediatric hospital in Europe with 371 beds, and it sees 200,000 patients a year across a large number of specialist disciplines including neurosurgery, oncology, genetics, bone marrow transplants and orthopaedics. It provides treatment for local patients, as well as providing treatment both nationally and internationally. It is also a Major Trauma Centre and manages children with acute trauma, including traumatic brain injury.

According to recent Children's Neurosurgical Specification Standards and NICE guidelines, the seriously injured child is now to be directly transferred to a Major Trauma Centre in the North Western deanery trauma network, bypassing the nearest emergency department. This means that children with acute traumatic brain injuries are being directed straight to the Royal Manchester Children's Hospital if they are injured within this region. Upon arrival at the hospital, they receive swift assessment by a Paediatric Neurosurgeon and a management plan is determined and executed.

**Objective 3: Describe the treatments available for common paediatric neurosurgical problems.**

Paediatric neurosurgery is a specialist area of neurosurgery and involves a number of different treatment options, both surgical and non-surgical.

Hydrocephalus is the most prevalent paediatric neurosurgical condition, and it is commonly treated through the insertion of a ventriculo-peritoneal shunt. This shunt contains a valve system which regulates unidirectional flow and creates a reservoir of cerebro-spinal fluid, relieving the raised hydrostatic pressure within the skull. Endoscopic third ventriculostomy procedures are an alternative treatment option for hydrocephalus, where a small hole is made in the third ventricle to recreate the flow of cerebrospinal fluid and avoid any potential flow blockage.

Paediatric brain tumours can be treated through surgical resection, but radiotherapy and chemotherapy can also provide very useful depending on the clinical scenario.

Craniofacial disorders can be treated surgically in two main ways. Calvarian vault remodelling is the traditional method which tends to be used in older infants, where an incision is made in the scalp and the skull is moved and reshaped. Endoscopic surgery however can be performed at a younger age and the surgeon creates open sutures inside and outside the skull using an endoscope. These sutures allow for cranial expansion in the desired plane and this encourages normal brain development. This is then followed by a period of time using a molding helmet.

Paediatric neurosurgical conditions can also be treated conservatively by a multi-disciplinary team. Rehabilitation has an important role in the care of many of the patients, especially in those with long-term disease and severe injuries. Patients are offered specialist assessment if they have suffered directly as a result of traumatic brain injury, stroke or other forms of acquired brain injury. This can involve care from a number of different disciplines. Physiotherapy can improve functional ability through repetitive tasks which build on fine and gross motor control, and speech and language therapists can assess and manage patients with communication impairments and swallowing difficulties. Psychologists can also have an important role in the management of patient anxiety or post-traumatic stress after certain injuries, and occupational therapists allow patients to continue their rehabilitation management once they return home after discharge.

**Objective 4: Write an overall reflection on my elective placement and the completion of my personal goals.**

I have thoroughly enjoyed my placement in paediatric neurosurgery at the Royal Manchester Children's Hospital. I shadowed a team of very enthusiastic neurosurgeons who

provided me with vast amounts of teaching. I had the opportunity to observe operations, ward work, clinics and I attended weekly multi-disciplinary team meetings.

Despite a number of operations being cancelled towards the start of my placement, a number of extra operative lists were incorporated into the timetable during the later weeks, which allowed me to still observe a wide variety of surgical cases, including both elective and emergency procedures. The surgeons were very encouraging and enthusiastic, providing teaching throughout my placement.

My personal goals for this placement included building on my surgical knowledge and to increase my operative exposure. Throughout my placement I assisted in a number of operations and I have learned a great deal about surgical technique and precision. I was also given many opportunities to practice suturing and knot tying. I was also very keen to get involved in research, and I also managed to do this during my placement.