

ELECTIVE (SSC5b) REPORT (1200 words)

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

1. What are the reasons for ICU admission at GOSH? How does it differ from paediatric ICU admission in a general UK hospital?

Great Ormond Street Hospital provides the largest intensive care service for children in the UK and Europe. As it is a specialist children's hospital admission to intensive care differs from that of a general UK hospital. Patients are admitted by referred to GOSH from other hospitals because of the specialist services, some of which are only available at GOSH.

There are two distinct units, situated next to each other that offer intensive care at GOSH - the Neonatal Intensive Care Unit (NICU) and the Paediatric Intensive Care Unit (PICU), and they work closely together. The patients cared for in both units have a wide range of complex, life limiting or life threatening conditions. GOSH is the only UK centre for the treatment of children with Vein of Galen who often require intensive care services, and they are one of only two London centres for children requiring neurosurgery and intensive care in London. There is a separate Cardiology Intensive Care Unit (CICU) that treats only cardiac conditions.

Approximately 1,200 patients are admitted to the Paediatric Intensive Care Unit (PICU) each year. Patients are mainly admitted from the North East Thames area, but if needed they can be referred from any hospital in the UK, and even from abroad. Patients are admitted post-operatively that have had specialised surgery at GOSH. The PICU offers support and services for patients having spinal surgery, general surgery, cranio-facial surgery and ENT procedures, as well as support for neurology, oncology, renal, respiratory, endocrinology and metabolic medicine.

The Neonatal Intensive Care Unit (NICU) treats approximately 500 patients per year. There is no obstetric facility within GOSH which means the unit mainly looks after general surgical neonates that have been referred from other hospitals. Conditions that are commonly treated on NICU include necrotising enterocolitis, bowel obstruction, oesophageal atresia, trachea-oesophageal fistulae and other congenital anomalies. Currently, there is extensive research by both medical and surgical teams into the causes and management of necrotising enterocolitis in the neonate. Neonates with complex medical and surgical problems from other specialties are also admitted for treatment. For example neonates are admitted to NICU with complex breathing problems caused by laryngeal clefts, or for specialist neurological surgery to remove sacrococcygeal teratomas.

2. How are specialist paediatric services delivered at GOSH? How does this differ from paediatric services in a general UK hospital?

Operating from a single site in central London, Great Ormond Street Hospital for Children NHS Foundation Trust is one of four dedicated children's hospital trusts in the UK. There are fifty eight different clinical speciality services provided at GOSH, and it is the largest paediatric centre in the UK to specialise in cardiac abnormalities, neurological conditions, oncology, nephrology and intensive care.

Great Ormond Street Hospital receives more than 268,000 patient visits every year. The difference between GOSH and a general UK hospital is that the majority of children seen are referred to GOSH. Its status as a Specialist Children's Hospital means that most of the children treated are referred from other hospitals or overseas.

GOSH provides the UK's widest range of specialist health services for children, and is the largest paediatric centre in the UK for:

- paediatric intensive care
- cardiac surgery – it is one of the largest heart transplant centres for children in the world
- neurosurgery – GOSH carries out about 60 per cent of all UK operations for children with epilepsy
- paediatric cancer services including bone marrow transplants – with University College London Hospitals (UCLH), GOSH is one of the largest centres in Europe for children with cancer
- renal transplants
- children treated from overseas in the international and private patient wing

3. Describe the role of ventilation in the management of the critically ill child.

Mechanical ventilation is a lifesaving intervention that is often needed to treat and support the recovery of the critically ill child, and is the principal technology that justifies admission to an intensive care unit. Mechanical ventilation can be delivered either invasively or noninvasively and is utilised to facilitate oxygenation, clearance of carbon dioxide, decrease the work of breathing, or a combination of these issues.

Approximately 90% of the children admitted to PICU at GOSH are ventilated. Reasons for a child requiring ventilation may include a primary respiratory condition, poor cardiac function or multi-organ failure due to sepsis. Some of the children are admitted from home already on long-term ventilation. Within the PICU unit are a variety of ventilators that allow the medical team to provide individualised ventilator strategies according to the need of the child. The NICU at GOSH admit neonates who may need extracorporeal life support, a complex form of ventilation that is currently offered in only four centres across the UK.

It is obvious that without the support of mechanical ventilation, many of these children would not survive, but often ventilation is not without consequence. Methods and techniques of respiratory support are evolving, with a move away from routine intubation and ventilation where possible, and newer approaches of non-invasive ventilation being explored. The big challenge remains to support breathing in the critically ill child without causing damage to their lungs, or adversely affecting their long-term health.

4. Explore the field of paediatric intensive care as a potential future career.

I really enjoyed my paediatric placement during medical school and wanted to spend my elective further exploring various sub-specialities of paediatrics. There are multiple career paths available within the field of paediatrics, but one thing that struck me as being common throughout is the need for effective communication between children and their parents. From my time spent in the various departments it is clear that a career in paediatrics is extremely rewarding, and is definitely something I will consider in the future.