

## **ELECTIVE (SSC5c) REPORT (1200 words)**

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

The Homerton neonatal unit is a tertiary centre that looks after both babies born in the Hackney area and critically ill neonates, where Homerton is the nearest tertiary neonatal unit. A large proportion of the care given in the neonatal intensive care unit is to premature, low gestational weight or congenitally ill babies (Nuffield council on bioethics 2014a). The unit offers care from birth until well enough for discharge with resuscitation, ventilator, cardiac support to phototherapy and many more.

Within the unit various different conditions are treated from breathing difficulties, patent ductus arteriosus, sepsis to intracranial haemorrhage. From the different illnesses treated a large proportion relate to breathing difficulties and infection. This affects many of the neonates in the unit, due to prematurity of the babies' lungs. The underdevelopment combined with a lack of surfactant means the lungs are unable to expand properly which causes respiratory distress. While this is seen globally as it is a common effect of prematurity, there is a difference between countries in the ability to manage and support neonates who need additional respiratory support. This variation is greatly seen between the developed and developing world due to funding and advances in treatment. Basic treatments like surfactant are not being widely available in places like Africa (Seal 2010). Treatment available at the Homerton is vast from non invasive ventilation like CPAP to intubation, along with vapotherm and oscillating ventilation. Though ventilation is seen in other NICU across the country only a certain set of units can carry out ventilation over longer periods and with oscillation.

Infections can be treated quickly and effectively due to both access to effective antibiotics that are specific to the infection and the ease of laboratory to carry out diagnostic tests (Seale et al 2013). Also with the clean aseptic technique and protocols put in place to prevent infections developing like group B streptococcal septicaemia protocol which prevents the baby becoming extremely unwell and potentially in later life having neurodevelopmental problems (Seale et al 2013). In places like Sub-Saharan Africa, there is a higher mortality and morbidity rate (Seale et al 2013) caused by limited infrastructure, lack of expertise, and the use of first generation antibiotics (Seale et al 2013). Additionally the variation is the differences in diseases affecting the neonates with Sub-Saharan Africa having diseases like tetanus and malaria.

### **Developed world**

The mortality and morbidity rate of neonates born at low gestational age or low birth weight has improved in all developed countries over the recent decades with the best survival rates in Sweden. This is due to various factors: advances in medical treatment of neonates; changes in protocols to highlight babies at risk of preventable diseases; increases in neonatal services; and investigations. Some of the advances are the therapeutic hypothermia for of hypoxic injury (Azzopardi 2010), NO<sub>2</sub> to reduce pulmonary hypertension in newborns, all of which are seen in developed countries NICU.

Though Australia, USA and UK have similarities of treatment and care the difference is how the services are available. The UK the hospitals work separately and offer a mixture of care, with some centres being tertiary centres offering prolonged and specialised treatment (Hallsworth 2007; Blackmon 2009). The USA and Australia separate the level of care between hospitals, using a Level I-III

system (Hallsworth 2007; Blackmon 2009). All the hospitals must have level 1 care with maternity providing basic care, level II has higher dependency care for a short period and level III (like our tertiary centre) provide a whole range of neonatal medical services (Hallsworth 2007; Blackmon 2009).

There are also differences with funding. The USA is private healthcare system with variations between states due to societal and political differences (Hallsworth 2007). Australia is funded nationally with territorial funding enabling the same care across the country (Hallsworth 2007). The USA and Australia rely heavily on being able to transport patients between hospitals.

## UK vs India

In the UK funding for neonatal care enables advances in technology and treatments which in turn increase the survival and reduce developmental delay of premature babies or low birth weight babies. This is evidence by looking at babies born <1,500g in the UK: the survival rate in 1975 was 50%; in 2005 this was 88% for babies at 27/28 weeks (Hallsworth 2007). These survival statistics are not seen in the developing world with half of babies born <32 weeks dying (WHO 2014). This is due to major differences in treatments available, funding, infrastructure and care in rural areas. This is even just basic necessities of care from aseptic/ hand washing techniques. 25-30% of global neonatal deaths are in India (Neogi 2011). The death rate has been lowered by reducing infections, by making running water accessible at all times, providing basins, and the availability of soap (Neogi 2011).

Another major difference is the availability of services in the UK: testing can be easily carried out and equipment repaired quickly. In rural areas of India testing is limited and basic; testing is only carried out where families pay or in cases of extreme need. A further problem in rural areas of India, is the economical need to wait for large amount of equipment to need repairing before sending it to be repaired (Neogi 2011). However, this means that hospitals can, at any one time, have limited equipment, which reduces the level of care provided to the babies. Units in India are often overstretched with 2/3 babies per cot (Neogi 2011), which increases the risk of infection. Further differences are seen in admissions policies: only babies of less than 24 hours old can be admitted into the neonatal unit in India (Neogi 2011); babies of up to 10 days old can be admitted into this unit in the UK. This is due to over capacity of the neonatal units in India.

## Ethical and development

Ethical issues also need to be dealt with alongside treating the effects of prematurity and low gestational weight. Factors to be considered are: the degree of pain and suffering the baby is incurring; the likelihood of the babies' survival (Nuffield council on bioethics 2014b); and when the treatment should change to palliative care. This is a distressing and emotional time for the families. In addition to this, parents require explanations of the long-term effects on the child's development. The giving of bad news must be balanced with the giving of false hope. These are difficult areas to deal with but are a major part of treatment in the neonatal unit.

In this elective I have increased my understanding of the treatment of neonates: from the basic new born check to critical care to recognising an ill baby to the ethical issues that arise in treating neonates. I have furthered my understanding of illnesses that affect a neonate and how to treat them. I was able to relearn basic resuscitation of neonate. While being involved in the ward round I learnt

the importance of integrating different observations and clinical appearance of the neonate. I further increased my basic understanding of investigations like reading of X-rays. I worked on presenting patients in a ward round and the prioritising of illnesses list but also on management plans. I was also able to increase my understanding of why certain antibiotics were chosen in the treatments of infections. The MDT meeting and O&G team meeting helped me see the importance of communication and how these meeting can lead to direct change in care. It also allowed an environment in which people could get expert advice from other colleagues. This taught me the importance of clear communication and the importance of working in a team and asking advice. I have also been learning how an audit is run.

## References

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