

ELECTIVE (SSC5b) REPORT (1200 words)

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

LO1: To discover the incidence and pattern of spinal disease in the UK

Spinal disease encompasses spinal infections, structural deformities, degenerative disease and inflammatory autoimmune conditions such as ankylosing spondylitis.

Spinal disease presents typically with back pain. However other symptoms can include fever, weight loss and night sweats depending on the aetiology.

Lower back pain is one of the most common presenting symptoms and can occur in up to 80% of persons¹ which may develop into chronic back pain in a significant portion of these patients.

Spinal vertebral fractures are associated with skeletal fragility and are cause of severe morbidity. There are approximately 120,000 vertebral fractures each year in the UK². This is likely to increase due to an ageing population and current UK trends in assessing spinal fractures are through high-risk patient identification. The FRAX score and DEXA scans have revolutionised management of osteopenic and osteoporotic patients to prevent them from progressing further or suffering a debilitating spinal fracture³.

Injury to the spinal cord is a serious sequelae of spinal fractures. There is no clear epidemiological data on the prevalence or incidence of spinal cord injury in UK, however the reported annual incidence of traumatic spinal cord injury in Canada is 2.3 per million and 83 per million in the US⁴. A US study showed that there is a reduction in mortality attributable to spinal injury over the past 15 years⁵. This is due to a number of factors including technological and surgical advancements and creation of Major Trauma Centres.

LO2: Describe the pattern of health provision in the UK compared to developing world and how this is organised.

The National Health Service (NHS) provides healthcare in the UK. The NHS provides healthcare to all residents and is paid directly from general taxation. There are also other provisions of healthcare in the UK including private health care and complementary treatments for those able to pay.

The NHS was established in 1948 and since its inception has undergone major structural and organisational changes. Most recently, in 2013, the Health and Social Care Act 2012 reorganised the NHS. Primary care trusts (PCTs) were abolished and replaced by clinical commissioning groups (CCG). These CCGs are ultimately responsible to NHS England, which is the executive public body. NHS England is also responsible for overseeing primary care services as well as other important hospital services.

The National Institute for Health and Clinical Excellence (NICE) produces guidelines for various medical conditions, which help guide frontline clinicians.

Due to the combination of reduced NHS funding and an ageing population, there has been increasingly a shift towards greater privatisation as a means to resolve this crisis. Currently outsourcing of various services and equipment such as dentistry, pharmacy and primary care services is on the increase.

LO3: To understand spinal TB disease management and how education is being used to implement this in the local and wider community

Spinal TB (Potts disease) is when Tuberculosis infection is seen in the vertebrae. The upper lumbar and lower thoracic vertebrae are the most commonly affected. Classically the infection spreads from two adjacent vertebrae into the adjoining intervertebral disc space. Diagnosis of Spinal TB can be challenging often due to the non-specific presentation of the disease. Blood tests include inflammatory markers such as ESR and CRP, which are often raised. Tuberculin skin test may also be used particularly in those who do not have HIV. There are a number of classical radiographic signs including: lytic destruction of vertebral body increased wedging and enlarged psoas shadow. Bone scan will also highlight the area of infectivity on the spine. CT and MRI of the spine are also utilised to assess the Tuberculosis.

As spinal TB can progress from pulmonary TB as an extra pulmonary manifestation, prevention of this progression is key. This is done via patient education and ensuring that patients who have a positive tuberculin test complete their course of medication to reduce the risk of this progression.

The mainstay management of spinal TB is antituberculous drugs, and adequate analgesia. Spinal brace or collars maybe required to immobilise the affected spinal region. Surgery is rarely done however spinal abscess drainage is often required. When surgery is required thoracic spinal fusion would be the procedure of choice.

Finally, physical therapy is an important mainstay to assist in posture and spinal strength and flexibility.

LO4: To appreciate the different surgical approaches to spinal fractures

Surgical approaches in spinal surgery are incredibly complex and varied. Depending on the needs of the patient and surgeons preference, there are both minimally invasive approaches and open spinal approaches.

Some of the more common surgeries for spinal compression fractures include spinal fusion and vertebroplasty/kyphoplasty.

Spinal fusion joins the bones in the lower back together so that there is no longer any movement between them. It is possible to correct deformity, repair the fracture and reduce spinal pressure through spinal fusion surgery. Most patients require bone or synthetic grafts from a bone bank or the patient's hip. Typically titanium instrumentation is used. This involves using pedicle screws into the bone and connecting these with a rod.

Vertebroplasty and kyphoplasty allow surgeons to reconstruct compressed vertebral bone and relieve nerve pressure. This is done under image-guided procedures and the surgeon subsequently injects cement into the fractured vertebra through the skin in the back. Kyphoplasty uses a balloon that corrects the abnormal structural deformity of the broken vertebra.

References:

1. Patrick N, Emanski E, Knaub MA. Acute and chronic low back pain. *The Medical clinics of North America* 2014; 98:777-789, xii.
2. Schousboe JT. Epidemiology of Vertebral Fractures. *Journal of clinical densitometry : the official journal of the International Society for Clinical Densitometry* 2016; 19:8-22.
3. Maricic M. Use of DXA-based technology for detection and assessment of risk of vertebral fracture in rheumatology practice. *Current rheumatology reports* 2014; 16:436.
4. Hagen EM, Rekand T, Gilhus NE, Gronning M. Traumatic spinal cord injuries--incidence, mechanisms and course. *Tidsskrift for den Norske laegeforening : tidsskrift for praktisk medicin, ny raekke* 2012; 132:831-837.
5. Oliver M, Inaba K, Tang A et al. The changing epidemiology of spinal trauma: a 13-year review from a Level I trauma centre. *Injury* 2012; 43:1296-1300.