

Elective objectives

- 1) Describe the prevalence of Tuberculosis in the UK and contrast this with the rest of the world

Tuberculosis is an infectious disease caused by bacteria, most commonly *Mycobacterium Tuberculosis*. TB affects the lungs, but can also affect other areas of the body. TB is transmitted via the air; through coughs and sneezes in which saliva can be passed on. TB is the second most common cause of infectious death after HIV.

Roughly 1/3 of the population of the world has had a TB infection, but it can be asymptomatic. In 2007 there were 13.7 million chronic active cases. By 2010, there were 8.8 million new cases, and the mortality was at 1.45 million, with most of these occurring in developing countries.

Using the WHO most recent up to date statistics, we can compare the prevalence of TB in 2010 from the United Kingdom with other countries in the world:

Per 100,000 in the population:

UK: 15

USA: 4.8

France: 12

South Africa: 795

China: 108

Russian Federation: 136

There are plans in each country to try and stop the spread of TB. In the UK, in 2004, there was the Stopping Tuberculosis In England action plan, and in China, they have cut the rate down by 80%.

- 2) Briefly compare the NHS with the US health system

Due to the coming changes and reform in the NHS, it is in many ways impossible to predict the future of the NHS, and thus its comparison to the US health system. We have recently seen the how Virgin Care has won a £500 million contract to provide community services across Surrey, and we have also seen the media and public reaction to not just this, but the entire reform idea. In the media, we have seen allusions to whether this could move the NHS in to a similar model of insurance as the US health system. Much of the news stories are speculation at this time, and thus the comparison of the NHS here can only be made of the current/previous NHS.

As the NHS stands now, however, it is a publicly funded healthcare system, its finances provided by general taxation, which is different to the US model of insurance, in which people must have insurance which covers their healthcare, be it private funds or from an employer.

Comparing the NHS from 1979-2005 vs the US health system in terms of mortality rates from a study by the RSM, the conclusion drawn was that in terms of economic output versus clinical output, the US health system was ranked as one of the worst, and the UK/NHS was ranked as one of the better one.

In conclusion, the NHS and the US health system are very different entities, funded in different ways, and providing care in different ways. Both have their flaws, and yet both have their qualities too, in terms of providing the best care possible to the patient, whom at the end of the day is the most important person in the chain.

- 3) Discuss the relevance of MRI of body/limb; describe the process

Magnetic Resonance Imaging is an imaging technique for the internal structures of the body that works by placing the patient in a large magnet chamber where the magnetic field is used to align the atomic nuclei in the body. This is combined with the usage of radio frequency waves to adjust the

alignment. The magnetic field gradients cause the nuclei to rotate at different speeds, hence the imaging produced, allowing us to visualise the muscles, bone, organs within the body.

MRI is especially useful for visualising soft tissues in the body; the brain, heart and cancers are well visualised, along with muscles. MRI of the limbs provides us with information as to whether there is associated muscle/soft tissue involvement with fractures, it allows us to visualise the internal structures of the limbs, and look for pathology. MRI of the brain allows us to look for space occupying lesions, to look at the anatomy of the brain, to look for infarctions; giving us information as to whether there are underlying causes for symptoms patients' experience. MRI of the spine allows us to look for disc degeneration, for nerve compression, cauda equina, etc.

Thus MRI is very relevant to medical care. The ability to look for the pathology which MRI shows, and to see the internal anatomy in such detail is a great aid to physicians who need a clearer idea of what is going on with the patient 'under the skin', as such. MRI is also an excellent tool for learning, and I feel a lot more confident in terms of understanding of anatomy after looking at MRI than before.

- 4) To explore further the specialty of radiology as a future career, and to enhance radiology understanding for future jobs

During my initial 4 week SSC at Queens Hospital in radiology, I was exposed to a large number of different areas in radiology, and the specialties within a specialty. I was shown lots of different images and techniques, and I found this a very interesting placement, especially as it followed on from a previous SSC on ultrasound. I felt that whilst I was unsure about considering radiology as a career path, I was beginning to appreciate how it is one of the most important aspects of medicine.

When I returned to Queens Hospital for this second placement during my elective, I was hoping to achieve two things; I wanted to learn more about interpretation of imaging to help with my work as a doctor, and also to think more into whether radiology was a career path I would like to consider.

During this elective, I have been exposed to a lot of ultrasound, MRI and CT imaging, techniques discussed and interpreted during the course of medical school but not fully explored. I feel that I am coming away from the elective with a greater understanding of how to interpret each type of imaging, and this will be very helpful in future jobs, be it as an FY1 or later stages; but I also understand that I have a lot of reading to do in terms of anatomy!

I feel that after two placements in the field of radiology, I have a greater appreciation of the work radiologists do. I feel that this is definitely a career path which I would be interested in exploring further in the next few years; the work is both challenging and interesting to me, and I think this elective has been very worthwhile.

Sources:

Question 1)

World Health Organization (2009). "Epidemiology". *Global tuberculosis control: epidemiology, strategy, financing*. pp. 6–33. ISBN 9789241563802. Retrieved 12 November 2009.

http://www.who.int/tb/publications/global_report/en/index.html

<http://www.who.int/tb/country/data/profiles/en/index.html>

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Question 2)

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3147241/>