

Which conditions predominate in the population served by Barts and the London compared to other populations around the world?

Because of its proximity to the docks of the Thames, East London has historically been one of the first areas newly arrived immigrants to the UK settle. As a result of this East London continues to have some of the highest levels of poverty and deprivation in the country. Because of this ongoing immigration the local population is resultantly diverse with the mix of nationalities of the population changing as a reflection of the geopolitical realities of the day. Such poverty and deprivation and the subsequent health inequalities these lead to contribute to high rates of all those disease now so familiar in the Western world - heart disease, obesity, stroke, cancer etc.

The largest population in Tower Hamlets – the area principally served by Barts and the London – remains the Bangladeshi community. Tower Hamlets has the highest proportion of Bangladeshi people in the UK – 33% of the population here compared to 1% of the population for the rest of England. This close connection to Bangladesh, a country with disproportionately high rates of TB (225 per 100,000), combined with poor sanitation and overcrowding as a result of the poverty means that TB levels are significantly higher here than the rest of the UK – in excess of 150 cases per 100,000 compared to 13 per 100,000 for the UK as a whole. Neighbouring Newham has some of the highest rates in Europe and higher than many African countries such as Rwanda and Eritrea.

How do the radiological services offered in the UK, specifically in specialist tertiary centres, compare with those on offer in the rest of the world?

As tertiary centres, Barts and the Royal London have access to some of the most sophisticated imaging equipment and techniques available and the capacity to use them with relatively few limitations.

Compared with many parts of the developing world the availability of imaging at these hospitals is in a completely different league. Virtually every patient admitted to either Barts or the Royal London or attending A&E for anything but the most minor reasons can expect to receive some form of imaging during their stay. This is in sharp contrast to hospitals in developing countries that are likely to have access to basic X-ray and/or ultrasound at most.

In addition even compared with smaller hospitals in this the country the type of radiological studies available at Barts and the London are on a different level. For example, as a cancer centre, Barts enjoys relatively wide use of PET-CT. PET-CT combines image acquisition from PET (positron emission tomography – the detection of radioactive tracer linked to a biologically active molecule – a glucose analogue) paired with CT (computed Tomography) to give precise anatomical localization. PET-CT has therefore become an important part of surgical

planning and cancer staging. The nuclear medicine department also offers a range of scanning techniques including Sestamibi, MIBG and Octreotide scans

In addition Barts also has the capability and expertise to conduct interventional venous sampling diagnostically in the assessment of various endocrine conditions.

As home to the Barts heart centre, Barts also has three dedicated Cardiac MRI machines and one dedicated Cardiac CT machine. This allows such studies to be used in a relatively routine way that would be impossible in other parts of the country and completely unthinkable in other parts of the world.

In an attempt to raise radiological diagnostic accuracy, do formal systems exist between radiology departments and interventional departments (such as surgery or endoscopy) to enable direct feedback on the congruence between radiological findings and visual and/or pathological findings? If so how do such systems operate? If not, would they be useful and what would be required to set up such systems?

It occurred to me that a crucial part of the learning process with respect to diagnostic image interpretation must be feedback. Teaching of radiological image interpretation at medical school and beyond is based on attempting to interpret images with subsequent reference to the correct answer. In time our innate pattern recognition software learns to find the commonalities and apply them to new cases. However in working life there is no recourse to the 'correct' answer, at least one that is known, otherwise there would be no need for the imaging. Sometimes the pattern will be correctly recognised, sometimes not, and the only way for an individual to learn and improve is through feedback on this process.

I was curious to know therefore how such feedback was organised. There are, it seems to me, a number of sources from which such feedback might come: further radiological findings e.g. subsequent CT or MRI after more basic studies such as plain radiograph or ultrasound; from direct visualisation during surgery, endoscopy etc; or from pathological results - histology and cytology. As far I as could discover the only relatively formal way in which such feedback is delivered is through MDT meetings. During MDT meetings radiologists can acquire such feedback from colleagues and hence improve future interpretation. There is also apparently a discrepancy process for when significant findings have been missed, and have subsequently come to light. Apart from this it seems that most radiologists need to take it upon themselves to keep track personally of cases in which they have diagnostic uncertainty and to follow up when new information comes to light. While a more formal method of feedback might be desirable, it would also add to the workload of departments already inundated with work.

What is involved in the day-to-day work of a radiologist and in what ways does this differ from that of other hospital doctors?

I found it a shame that, through my time at medical school at least, as students we had very little exposure to radiology as a career compared to most other medical specialties. I suspect this means that it is not a career many students naturally consider until perhaps quite late on.

The job of a radiology trainee appears to be very varied especially in the early years with rotas structured to mean that there is a lot of day-to-day variation. One day could be ultrasound, the next fluoroscopy, perhaps followed by CT. In later years, more time is dedicated each week to a given subspecialty followed eventually by dedication to subspecialty with full qualification. Differences between sub-specialties have quite an impact on the day to day activities of the consultant – interventionalists for example spending the majority of the time in the cath labs compared to diagnosticians spending the majority of their time reporting or in meetings.

Compared to most other hospital doctors, radiologists (perhaps with the exception of interventionists), have significantly less direct patient contact. They also do not have direct responsibility for patient care in the same way as the majority of hospital doctors. This is not to say however that they have less responsibility. On the contrary, with the increasing reliance upon imaging in the diagnosis of most conditions the responsibility and accountability that lies with radiologists is arguably as much as any other doctor. In addition to which, the fact that images are recorded and stored in perpetuity means any omission or misinterpretation remains accessible in and relatively incontestable for the foreseeable future.