

**INTERNATIONAL
DAY OF RADIOLOGY**

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**EMERGENCY
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**International Day of Radiology 2017
Interview on Emergency Radiology
United Kingdom/Dr. Elizabeth Dick**

A severe shortage of radiologists in the UK creates a growing demand for teleradiology services and forces hospitals to increasingly outsource their use after hours, according to Dr. Elizabeth Dick

***European Society of Radiology:** Could you please describe the role of the radiologist in a typical emergency department in your country?*

Elizabeth Dick: It varies. In many hospitals, traditional model remains; radiology and emergency departments are distant from each other. There may be one or two consultant radiologists with an interest in emergency imaging who are the 'go to' radiologists for the emergency team during the day. After hours, on-call radiologists will be the point of contact, but they are busy with many services, and increasingly may be remote from the hospital they cover. Teleradiology often is used to deliver after-hours care, with obvious advantages. The result is an inevitable loss of personal interaction between the radiology and emergency departments. However, set against this traditional model is the 'gold standard'. Since 2010, a network of major trauma centres was set up across the UK to deliver excellence in trauma care. In these centres, radiologists usually are an integral part of the trauma team, and the CT scanner is usually co-located in the emergency department. This has a ripple effect: Not only is trauma imaging improved, with resulting lower morbidity and mortality, but all emergency patients benefit from a closer relationship between radiologists and the emergency department team.

***ESR:** What does a typical day in the emergency department look like for a radiologist?*

ED: I start my day at 7am by checking all the reports from the night before so that I can speak to the emergency teams as they do their ward rounds at 8am. Our radiology registrars and residents do two, twelve-hour shifts (8am to 8pm), so this is a good opportunity for the on-call registrars to discuss cases they found particularly challenging. Like all hospitals, we perform more imaging examinations each year. On average, there are at least 25 patients who get imaging (mainly CT) overnight, which means a huge responsibility for the radiology registrars on call. Although they may reach out to the duty consultant during their call, for most scans, registrars issue a report based on their own findings. We regularly audit their reports, and the discrepancy rate is very low – probably due to the fact that they strive to work hard to learn. Also, they get a lot of training and support before, during and after being on call.

***ESR:** Teamwork is crucial in the emergency department. How is this accomplished in your department and who is involved?*

ED: We have three or four consultants with a special interest in emergency imaging with whom the emergency department and radiology registrars may consult. The most important attribute for emergency radiologists is to be approachable; I would never want a junior doctor to think twice before calling me to ask for help. The best way to achieve this is to hold regular meetings during the week. In our department, we meet every morning at 7am in acute imaging, where consultants meet juniors and informally review cases. Also, we meet during emergency physicians' training and at the major trauma multidisciplinary meeting, both of which occur weekly. I also make sure that I come down to the emergency department periodically, usually to

attend major-trauma calls. Most importantly, emergency imaging cannot be a one-person service. To ensure that as many emergency physicians and radiologists as possible have rapport with one another, I have senior registrars rotate their attendance at the emergency-radiology teaching. All the emergency physicians attend these sessions, where they discuss interesting cases from the week, and the radiologist leads a lively discussion of the imaging and clinical learning points. The meeting is informal, and it provides a great learning forum for both the emergency and radiology registrars. It also means that when members of the emergency or radiology team make contact, they already know each other.

ESR: *How satisfied are you with the workflow and your role in your department? How do you think it could be improved?*

ED: Workforce is our biggest constraint; we do not have enough radiologists in the department to ensure that all reporting is done quickly, particularly after hours. My ideal would be for the picture archiving and communication system (PACS) worklists for radiology-emergency imaging to be nearly empty (e.g. as soon as a case gets loaded on PACS, a radiologist jumps in to start the report). In an ideal world, all emergency imaging would be reported within an hour by a registrar (which does happen because registrars are on a dedicated emergency rotation) and then reviewed by a consultant within six hours (which doesn't happen). Currently, the scans are reviewed within 24 hours by a consultant, and, as I said, the discrepancy rate is low. A particular concern is that our arrangements for weekend coverage are piecemeal. Although many of us would like to introduce a seven-day work week (i.e. routine reporting lists for weekends), the hospital's financial constraints make this impossible. At the moment, individual consultants usually come in and check reports over the weekend, but the system is not formally established. Other hospitals across the UK have accepted that the concept of in-house radiologists reporting ALL emergency cases is unachievable because of the radiologist shortage. Therefore, outsourcing to private teleradiology companies is common in the UK. In fact, the majority of UK hospitals make use of teleradiology, and after-hours imaging is one area where outsourcing is most popular.

ESR: *Which modalities are used for different emergencies? Could you please give an overview sorted by modalities?*

ED: Plain x-rays remain the mainstay for emergency imaging, and it is important not to skip this step in the rush to perform more complex investigations. In the case of a patient with a twisted-ankle injury, subtle bony avulsions can be hard to identify on MR, even though the associated soft-tissue injuries are obvious. But matching the plain radiograph side by side with the MR makes it easy to appreciate where the bony avulsions have occurred.

Ultrasound is still an important modality in the UK. For example, appendicitis often will be diagnosed by ultrasound, but, of course, this requires expertise. All junior radiologists become accomplished at ultrasound and receive good, supervised training. So, I anticipate that ultrasound will continue to be a useful and important modality in the future of emergency radiology.

CT is of course the key investigation for many emergency patients, and, like the rest of the world, we are experiencing an annual increase in its usage. At my own institution, the number of CTs performed on call has quadrupled over the last six years, and I cannot see how the trend would reverse. Although some may say that we 'over image', I believe that we make a significant difference in most cases. Whereas 25 years ago, patients with an 'acute abdomen' would frequently be taken straight to surgery for an exploratory laparotomy, today patients rarely are taken to surgery without some form of imaging to ensure that surgery is warranted.

Our interventional radiology colleagues play an active role, particularly in trauma, and they work closely with the trauma surgeons. For example, a patient with active splenic bleeding may have the condition initially embolised in interventional radiology and then rushed to surgery for a splenectomy, which is easier to perform in the absence of active bleeding.

We run an MRI service around the clock for neurological emergencies, including cord compression and unstable cord injuries. This service inevitably requires significant

radiographer expertise. Like all hospitals, we have to think about education and training of our radiographers to retain expert staff.

ESR: *Is teleradiology an issue in emergency radiology? If yes, how so, and how often is it used?*

ED: Teleradiology is used frequently and increasingly in the UK because of the serious radiologist shortage I mentioned earlier. There are obvious advantages to teleradiology. However, the demand is huge, which can lead to problems for teleradiology companies similar to those in traditional hospital settings (e.g. not enough radiologists to do the reporting). Many radiologists who work in teleradiology also work in the public hospital system, so the pool of potential reporting radiologists is relatively limited. It is vitally important that teleradiologists not be disadvantaged in their work compared with on-site, hospital radiologists. Teleradiologists should have easy, immediate access to all the previous imaging studies and reports on every patient. Also, teleradiologists should be able to easily access patients' electronic records while reporting imaging studies to look up other relevant clinical data, such as blood test results and previous histopathology, if necessary. This requires a high standard of seamless information-technology connectivity.

ESR: *Are emergency radiologists active anywhere other than emergency departments? Do they have other non-emergency roles, or other emergency roles in other departments?*

ED: At major trauma centres, radiologists are an integral part of the trauma team; they attend trauma calls and take part in governance, education and planning. Good examples are the recent major-trauma events in London and Manchester. At my institution in London, we have a mass-casualty event, on-call rotation for terrorist attacks. During the recent London Grenfell Tower fire, at least seven radiologists attended immediately. The first radiologists on the scene were able to calculate the precise number of radiologists needed and quickly call upon additional or specialised colleagues over the following 24 hours.

ESR: *Do you have direct contact with patients and if yes, what does it entail?*

ED: Radiologists attend trauma calls to do focussed assessment with sonography for trauma (FAST) scans where needed, which is the first point of contact. This may be followed by interventional radiology or ultrasound examinations over the next few days. Trauma patients may have problems down the line. For example, they may develop pain due to fracture malunion or avascular necrosis. I particularly enjoy follow up with these trauma patients 6 or 12 months later, when they develop problems during rehabilitation. At this stage, I perform a musculoskeletal ultrasound, in combination with MRI or CT, and I work with the rehabilitation and orthopaedic consultants to help these patients return to normal life.

ESR: *How are radiologists in your country trained in emergency radiology? Is emergency radiology a recognised specialty in your country?*

ED: This is a project for the future! We do not have an emergency radiology subspecialty in the UK, but all registrars are extensively exposed to emergency radiology throughout their training, both on call and during their subspecialty training. There is obviously much interest in emergency radiology in the UK; whenever the British Society of Emergency Radiology (BSER) runs a course, it sells out quickly and more courses are added in response to the demand.

ESR: *Please feel free to add any information and thoughts on this topic you would like to share.*

ED: The BSER was set up in 2014 in response to the growth of emergency radiology as a formal discipline in the UK. This society runs annual meetings with workshop-based training in emergency radiology, which are popular with trainees and consultants alike, as well as contributing to the national imaging meetings. The BSER also advises the Royal College of Radiologists on all emergency imaging related topics and provides information on scanning protocols and imaging in special situations such as terrorist attacks.

Dr. Elizabeth Dick, BSc, MD has worked as a consultant radiologist and honorary senior lecturer at Imperial College London since 2002. She completed her radiology training in London at St. Bartholemew's, the Royal Free and Great Ormond Street Hospitals. She completed a two-year, body MRI fellowship at Imperial College, earning her doctorate in the process, followed by a musculoskeletal fellowship at Duke University in North Carolina, United States, with Professor Clyde Helms. As the trauma and emergency radiology lead, she set up Imperial College as a major trauma centre. She also set up an imaging primary-healthcare liaison service for the area. Dr. Dick is a director of medical education at Imperial College and leads the faculty development programme, as well as running a maternity mentorship scheme for the trust. She teaches, interviews, recruits and educates future doctors from school age onward. She was an examiner for the Royal College of Radiologists (RCR). She has set up numerous popular national courses including the Fellowship of Royal College of Radiology (FRCR) Royal Free course and a body MRI workshop. She has a keen interest in emerging technology, and set up the first-wave, training website for the RCR. She has published a CD, two books, several chapters and more than 50 peer-reviewed and non-peer-reviewed articles. Dr. Dick has a national and international profile, publishing and speaking worldwide. She is President of the British Society of Emergency Radiology, and President Elect of the European Society of Emergency Radiology (ESER). She developed the webinar programme for ESER, a key part of the new European Diploma in Emergency Radiology (EDiR).

