Radiography on top of the world

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One would be hard pressed to find a medical imaging department in the Western world that does not now use digital or computed radiography. As a recent radiography graduate I must confess that I had not previously experienced the delight that is manual processing of film in chemical baths, but this was but one of the many differences I experienced when volunteering at Kanti Children’s Hospital in Kathmandu, Nepal.

Nepal is a small landlocked country situated between India and China. It is largely mountainous, boasting eight out of 10 of the world’s highest peaks, including the world’s highest, Mount Everest (8850 m). The Nepali people are culturally diverse, living in a peaceful religious blend of Hinduism and Buddhism. Despite its cultural richness, however, it remains one of the poorest and least developed countries in the world with almost one-third of its population living below the poverty line (Central Intelligence Agency [CIA], 2008).

I spent one month in the radiology department at Kanti Children’s Hospital, the only dedicated government paediatric hospital in Nepal, and also visited Tribhuvan University Teaching Hospital (TUTH). Kanti Childrens’ Hospital appeared grossly underfunded and therefore remarkably under facilitated. An initial tour of the hospital revealed abandoned babies with untreatable hydrocephalus, severely malnourished children whose parents couldn’t afford to feed them and, astonishingly, no visible gloves, hand washing facilities and other basic medical provisions.

The Himalayas are breathtaking

The difference in disease burden seen in a third world country and the limited working facilities, means that a day in the radiology department in Kanti Hospital varies greatly from that of a Western hospital. Examples of the procedures witnessed include barium swallows attempted to be performed on a six-month-old child in the absence of a fluoroscopy tube; intravenous urograms with no conventional tomography facilities and the injection of contrast media into an abscess behind the ear to perform a sinogram.

The morning ultrasound session demonstrated the appearance of abdominal tuberculosis and lymphoma; the difference in appearance of a teratoma and myelocele, and the abdominal appearance of malnutrition.

Patients presented with infected external haemangiomas and a psoas abscess that caused a child’s leg to be in constant flexion. The pathology and lesions that presented were often quite well developed due to the difficulty of poor patients, particularly from rural areas, in accessing adequate health services, therefore leading to delayed presentation.

The diagnostic imaging facilities at the hospital were limited to basic x-ray and ultrasound machines. Of the four x-ray units in the department, only two were operational. There was also one portable x-ray machine, which was very infrequently used.

The equipment had all been donated from overseas countries, some 15 years prior.
Only hard film was used and the breakdown of the automatic processor meant a manual developing technique was employed. The screens were old and damaged, resulting in poor image resolution and artefacts.

A lack of funding for consumable items meant developing chemicals were overused, resulting in a slow developing time, suboptimal image quality and a conscious increase in the exposure by the radiographers in an attempt to compensate and decrease developing time.

One DR unit from the Japanese government is currently being organised to be transported to Kanti Hospital, however it will be of limited use as they do not as yet have a film printer to print the images. Plain film will also still be used in addition to this, as one DR unit is not sufficient to cope with the workflow.

The radiology department was most active from 10 am until 2 pm. Approximately 100 patients were x-rayed within that time, between one or two x-ray rooms (dependant on the operational status of the x-ray machines, which were switched off at regular intervals to allow cooling of the tube).

Chest x-rays comprised the majority of the examinations completed, however abdomen, skull, paranasal sinuses and extremities were also occasionally performed. Most of the patients were referred from a busy outpatient department, which operates from 8 am until 1 pm.

The organisation of the patients appeared chaotic by Western standards and patients often flooded into the x-ray room while other patients were being x-rayed, anxious to have their examination completed.

The slow processing time involved with manual processing and drying of the films, means that it is impractical for the radiographers to assess their individual films, thus film critique is rare. Once the x-ray had been completed, patients were sent away without assessment of the film for quality. It was not uncommon for dark room technicians to develop and match the films with the requests and process them for reporting.

Most of the radiographers working at Kanti Hospital held a certificate level qualification. There is also a Bachelor’s Degree offered at two universities in Nepal, however only two students per university are accepted annually. Approximately 60 per cent of radiographers working in Nepal are thought to have no qualifications at all.

In Nepal there is no law relating to the use of radiation emitting equipment, no control over the import of x-ray machines and no record of radiation producing equipment.

Radiographers should register with the Nepal Para Medical Health Council – an organisation for health workers other than doctors and nurses – to allow them to obtain a license to work, but this requirement is not strictly enforced, nor are there any legal consequences of not registering, meaning that many radiographers are working unlicensed.

Radiography in Nepal holds many challenges for the future. Major political and systematic factors affect the quality of the diagnostic imaging service in Nepal and many other developing countries. Lack of funding and, unfortunately, undoubted corruption influencing the distribution of those funds means equipment is substandard, maintenance seemingly unheard of, and the purchase of consumable items such as developing chemicals and hygiene products simply not prioritised.

In the longer term, implementation of an accreditation programme and development of national standards and regulations regarding radiation equipment use is necessary, yet requires government cooperation.

Speaking to many of the students and younger radiographers at TUTH, frustration at the lack of opportunities and radiation regulations were expressed. They are determined to try and make a change to radiography in Nepal. The very fact that there is awareness amongst some of the Nepali radiographers (generally associated with the people who held qualifications), gives hope that in the future the concerns related to the radiographic practice in third world countries can be addressed. Hopefully, greater awareness amongst we radiographers in the Western world, who are privileged enough to have access to so many resources and opportunities, will also assist in positive change being brought about in developing countries such as Nepal.

Reference