Radiographers focus on improving patient safety

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By Stefano Braico [1]

Safety is a topic that should be at the forefront of the minds of all those who work in healthcare. Accidents can affect both healthcare workers and patients.

As a council member of the International Society of Radiographers and Radiological Technologists (ISSRT) and an international relationships officer of the National Federation of Italian Radiographers, I have been involved in an initiative designed to foster cooperation between radiographers and a major medical imaging manufacturer, with a view to improving safety. Direct communication with healthcare providers can help vendors provide the best possible product for the operator and the patient.

The foundations for this venture were laid in August 2005 at a meeting in Prague that brought together European member societies of the ISSRT with representatives of GE Healthcare. The initiative has engendered a great deal of enthusiasm.

Some of the work now being done in Italy focuses on safety in emergency situations. Managing an emergency is a challenge, not least because of the situation's unpredictability. Radiographers who work in such environments need to be able to deal with complex and diverse situations, sometimes having to invent new ways of working without warning. The speed at which an examination is done can be critical as well (Figure 1). Accurate, detailed, and high-quality information is generally needed in the shortest time possible. A good level of self-control, concentration, and knowledge of the job is essential.

Radiographers must be able to collaborate well with other emergency room staff who accompany and assist the patient during imaging. These individuals are often not used to the radiology environment, making two-way communication very important. Radiographers must be aware of their needs and also be confident in giving instructions on how to manipulate the patient to obtain the most effective image. The ability to work as part of a team is paramount.

CAUSES OF ERROR

The factors that cause or contribute to errors or safety issues in the emergency working environment are numerous. A small oversight when managing an emergency situation can have serious consequences.

Radiographers' workloads are increasing significantly for many reasons. The population's average age has risen, higher traffic density is causing more road traffic-associated injuries, and the range of diagnostic imaging modalities available has increased. Furthermore, in general, there are fewer radiographers in most of Europe than a few years ago.

Growing workloads mean that the frequency of night shifts and periods of on-call duty are also increasing. Radiographers are often working without adequate rest intervals. These factors result in operators being overtired and subject to increasing levels of stress. Irritability, a drop in awareness, dangerously low attention levels, and high risk of distraction are inevitable. These can be extremely dangerous in an environment where concentration levels must be at their peak.

Factors related directly to the imaging equipment can cause problems as well. Maneuvering a patient into a scanner, for example, requires particular care if that patient is critically ill. The lines and cables associated with monitoring devices, drips, and breathing apparatus must be kept clear of the scanner's rails.

Another potentially dangerous situation can arise when an ill patient whose head has been immobilized owing to the nature of his or her injury needs to be moved; for instance, if the patient begins to vomit and is in danger of suffocation.

The strong magnetic field associated with MRI can also lead to situations affecting the safety of patients and workers. Hospital staff who are not used to working in the MRI environment must be
reminded to remove all metallic objects from their pockets. The layout of the radiology suite can cause additional problems. Rooms are becoming increasingly crowded with technology as new machines and other apparatus are introduced to aid the imaging process. Cramped working environments become dangerous if they are not organized appropriately and the movement of personnel is not choreographed.

SITE ISSUES

Radiology departments are often set apart from the emergency room. Difficulties then arise when equipment is not available immediately. CT and MRI units are often located outside of the emergency area, necessitating transfer of patients. The greatest obstacle to effective collaboration between the emergency room and radiology staff is a lack of basic understanding of the respective working environments and aims of the individuals. A medic who walks into a radiology suite, for instance, may not be aware of the safety issues. The main priority on the emergency ward is assisting patients, whereas in the radiology department, radiation protection is paramount.

It is important to remember how emergency imaging can benefit patients (Figure 2). In one instance, a 40-year-old man presented to casualty after having fallen in his bathroom when drunk. He had an apparently uncomplicated skull trauma. Casualty staff asked for a head CT, just to be on the safe side. The scan showed small air bubbles around the base of the skull (Figure 3A), indicating further investigation of the neck and chest was required on CT. This second CT scan showed a dangerous pneumomediastinum (Figure 3B). The patient was then sent to the otorhinolaryngology department and treated successfully (Figure 3C). The use of contrast media in diagnostic imaging examinations has a number of associated risks. For radiographers, the main safety issues concern the manipulation of the flasks and the preparation of the injection pump for injection. The risks associated with the hurried opening of ampoules of contrast are relatively small. A dropped and broken ampoule is unlikely to injure the operator, for whom protective footwear is obligatory. The distraction can draw attention away from the patient, however, with potential life-threatening consequences. Care should also be taken not to mix up the ampoules of saline and potassium, which are visually similar. Injection of potassium instead of saline can result in death.

ERROR AVOIDANCE

Courses for new radiographers should include modules on the safety aspects of imaging and hands-on training. Continued professional development, providing updates on technology and details of improved working practices, is also essential. The working group that we have set up in Italy, in collaboration with GE, has an important part to play in the new and continued education of radiographers through the sharing of experiences. Lectures from seasoned radiology professionals, for example, provide great educational value. We also actively encourage offers from other organizations to share experience and protocols. A forum on the Internet for colleagues to swap suggestions for improving the safety of emergency working environments could be extremely valuable as well. The importance of sharing experiences as a means of learning should not be underestimated, and it should be encouraged, both nationally and internationally.

I have exchanged ideas and discussed examination protocols, room layout issues, and working practices with colleagues in the U.K. This exchange of information will no doubt be of mutual benefit for both British and Italian patients and healthcare workers. Our working group is a multidisciplinary one. Its membership includes radiology personnel, emergency room operators, hospital administrators, psychologists, and lawyers. The development of relationships between radiographers and psychologists is intended to identify ways of monitoring operators’ psychological states, and to help prevent burnout. Lawyers can provide useful information and opinions on legal matters, and avoiding the risk of legal proceedings.

We have two hospitals in our local health area, Gorizia Hospital and Monfalcone Hospital. Representatives from both radiology departments have met to discuss the importance of safe working procedures in the emergency environment. This meeting was triggered by concerns over allergic reactions to imaging contrast. We subsequently set up a multidisciplinary working group of radiologists, radiographers, nurses, and others to increase collaboration between the radiology and emergency departments. The charge of this group is to check current procedures and to establish new procedures where necessary. Staff from both departments must be involved. The next step will be to create an internal
ongoing professional training procedure to share and spread the knowledge of the working group to all personnel involved in contrast-enhanced imaging in an emergency setting.

ERGONOMICS AND MATERIALS

Workplace ambience and ergonomics also need to be assessed and optimum workload levels identified. Ergonomic assessments should ideally involve consultation with the main users, though this does not always happen. Radiographers are now involved in the consultation process in our department, and their comments on equipment choice and its placement within the radiology room is considered. This process not only results in an efficient and effective work space but also helps to foster team spirit and motivate staff.

The production of contrast ampoules that are less fragile, easier to open, and immediately recognizable is another step that could be taken. A color coding system seems to be a sensible solution to the danger of confusing medication. In fact, the Italian Ministry of Health has asked that all medicines be made more immediately recognizable.

PROGRESS SO FAR

Support for this initiative has been positive. Colleagues I have worked with in radiology have readily accepted the need for ways to improve safety in the emergency working environment. The local department of health has provided the necessary backup for the development of training courses, congresses, and workshops for continued professional development. The National Federation of Radiographers, which has always expressed great enthusiasm for improving the workplace, has guaranteed collaboration with provincial administrations.

While the advances made represent great progress, more work is needed. We plan to begin a broad research program, focusing initially on one reference hospital in Italy. Other Italian centers will be drawn in at a later date. Our objective is clear: to work as a team to enhance safety in radiology to the highest possible level.

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FURTHER READING

Anon. Donna morta dopo la risonanza indagate tre persone. [Italian]


Ministero della Salute. L'errore terapeutico: quando umano e quando diabolico. Bollettino d'Informazione sui Farmaci 2005;4:162-166. [Italian]


Tromba C. Sicuri dietro le sbarre. [Italian]

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