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The Red-dot system in medical imaging: ethical, legal and human rights considerations

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Abstract

The Red-dot system, used extensively overseas, but sporadically in Australia, allows radiographers to bring abnormal images to the attention of the referring medical practitioner, prior to the issuance of a formal radiologist's report.

There is much discussion in the public arena as to the increasing workload of medical practitioners, and the role other health professionals may play in easing this burden. In addition, hospital emergency departments across Australia are under pressure to minimise ambulance bypass and patient waiting times, while maintaining optimal diagnostic and treatment standards.

The third component to this discussion is some radiographers' general hesitance regarding the Red-dot system because of legal issues. In addition, there is the issue of many medical practitioners not wanting to give up aspects of their practice, citing a potential decrease in the quality of the health service.

Analysis of the legal and human rights literature with respect to the provision of emergency medical services in particular, as well as detailed exploration of the various ethical issues involved with the Red-dot system indicate to the author that such a system has a significant role to play in the provision of healthcare, particularly where a radiologist's report may be delayed. Additionally, radiographers are able to accept the challenge of contributing to healthcare without fear of legal endangerment in particular, provided they are willing to maintain a level of excellence with respect to their image interpretation skills.

The Australian Institute of Radiography (AIR) is correct in listing the ability of radiographers to notify referring doctors of abnormal results and offering opinions on radiographic examinations within their expertise, when requested. It is the conclusion of this paper that use of the Red-dot system is best practice and as such should be implemented in all radiography departments associated with emergency medicine departments.

Keywords: ethics, human rights, legal, radiographer, Red-dot system, referring doctor

Background

The best known application of the Red-dot system in medical imaging exists in the United Kingdom. For those unfamiliar with the concept, the radiographer examines the images acquired for a particular patient, at the request of the referring medical practitioner, and, if an abnormality exists, they place a red dot prominently on the image to draw the medical practitioner's attention to the likelihood of an abnormality.

There are different forms of the system in use, however, in one study by Sonnex, Tasker and Coulden in Cambridge, the number of cases where pathological changes were not identified by the radiographer was 1%.[1] In another study, emergency department doctors were found to be only slightly better than radiographers in their image interpretation and the identification of pathological changes.[2] In their study, Berman, de Lacey and Twomey *et al.* describe the importance of the role radiographers can play in reducing the possibility of pathology being missed by emergency doctors. Indeed they go further, suggesting image screening by radiographers should be utilised as a standard practice.

While there are practices in Australia that utilise the Red-dot system, not much has been written about the use of such a system in Australia, in particular the ethical and legal considerations of applying the Red-dot system to the Australian health system.

Ethics

The main bio-ethical principle related to the Red-dot system is that of beneficence. The principle of beneficence holds that medical practitioners (including radiographers) act in accordance with the interests of the patient, namely to preserve life. Beneficence can also relate to the provision of a label by the radiographer highlighting an abnormal result and drawing the referring doctor's attention to it.

Clearly, if a radiographer prevents the misinterpretation of just one patient's images by the placement of a red label on a film, thus they have assisted both that patient and the community in general, satisfying most bio-ethicists and most patients.

A radiologist's report is the gold standard in most imaging diagnoses, so it fits that, wherever possible, attempts to gain a formal report on images should be the first priority. However, there are many circumstances in the Australian health system where a radiologist is not available and the 'next best' qualified interpreter could well be the radiographer or referring doctor. Of course, a combination of these two people has been proven to offer the

patient the closest thing to a radiologist's report.[2] A landmark Australian study by Hall, Kleemann and Egan in 1999, showed that radiographers with limited training in image interpretation displayed greater than 85% accuracy in determining abnormal images.[3] The authors of that paper suggest that, with training, radiographers could increase that level of accuracy to around 96%, consistent with radiologists' interpretations. Clearly, this would be ideal for maximising optimal outcomes for patients.

The principle of non-maleficence, or not causing harm through one's practice, is also central to this discussion. Interpretations of harm are wide and varied, however, this principle can be used to argue the clinical relevance of radiographic examinations and the avoidance of unnecessary examinations or the inappropriate discharge of patients with pathology requiring further care. Also, the misleading interpretation of radiographs by radiographers becomes unethical. For this reason, among others, radiographers applying red-dot principles to the daily practice should endeavour to maintain adequate skill levels. This will be further discussed later in this paper.

The importance of continuing professional development and maintenance of a professional standard for radiographers cannot be understated. It is clearly the responsibility of all radiographers to contribute to the upholding of good professional practice consistent with that of an independent profession.

At the same time, radiologists should be seeing themselves as a resource for assisting radiographers and referring doctors to maintain sufficient skill and knowledge in radiographic image interpretation.

Legal considerations

There are many pieces of federal and state legislation pertaining to the provision of medical imaging services. In 2001, the federal Government passed *The Australian Bill of Rights.* This Bill enacts the *International Covenants on Human Rights of the United Nations* (discussed later), but, importantly, is very specific with respect to the provision of emergency medical services to all in the population.[4] The number of patients attending emergency departments around Australia increased by almost 2% from 2001–2002 to 2003–2004, to over five million patients.[5] In addition, the availability of medical imaging means it is becoming more widely accepted as a preferred diagnostic tool to the medical history or physical examination. As a result, there is increased demand for imaging services.

The subject of litigation is an important one for radiographers. It is important to note that radiographers have a duty of care to their patients for the provision of a thorough radiographic examination (as evidenced by the provision of sufficient information for the radiologist to make a diagnosis, which is often regulated by departmental protocols). In addition, radiographers, as health professionals, have a duty not to cause harm to their patients[6] (either through the excess use of ionising radiation, or by worsening an injury through the process of positioning the patient for the examination).

At this time, radiographers have no legal diagnostic duty of care to their patients. That is to say, radiographers have no obligation to advise any particular medical practitioner of an abnormal examination and, as such, they cannot be held liable for withholding opinions regarding the examination findings. By the same token, the radiographer who provides an opinion to the referring doctor is protected, since in the absence of a radiologist's report, the referring doctor is legally responsible for the diagnosis and subsequent treatment.

Having said this, written communication between the radiographer and referring doctor such as the red dot on films may be subpoenaed to the court presiding in a potential medical negligence case resulting from radiologic misdiagnosis. The outcomes of this, however, are yet to be tested in an Australian court.[7]

The other main legal consideration is with respect to the standard of practice for radiographers and whether this includes the Red-dot system. The standard of practice is a level of practice consistent with the majority of practitioners in a given field. In addition, standards of practice can be regulated by professional bodies,[6] such as the Australian Institute of Radiography (AIR). As such, the AIR have regulated in the *Code of Practice for Radiographers*, that radiographers should alert referring doctors to abnormal findings and give opinions on radiographs, provided the examination and findings are within the radiographers expertise.[8]

A paper by Anderson, Brecht and Heron *et al.* gives the example of *The Community Care Act 1990* (UK) as a piece of legislation that works toward the role development of radiographers.[9] This form of legislation has obvious benefits for the radiography profession, formalising the ability of radiographers who have undergone training to provide reports on all manner of images. However, there is a catch: 'Radiographers are legally accountable for their professional actions and for any negligence, whether by act, omission or injury'. This legislation opens the door for radiographer involvement in sharing the responsibility for the diagnosis. Importantly, this legislation makes no distinction for the further education required to make these diagnoses. In short, first-year qualified radiographers may be expected to provide detailed opinion on films and, if incorrect, theoretically, could be prosecuted under criminal law. Formal legislative approaches to role expansion should be looked at carefully, there is potential to do the profession significant damage by acting too quickly.

Human rights considerations

The International Covenant on Economic, Social and Cultural Rights (ICESCR) was ratified by the General Assembly of the United Nations on December 16th, 1966. Article 12 section 2(d) of the covenant states that all persons should be given equal access to appropriate health care.[10]

Implications for Government policy mainly surround public access to hospitals and the ability of each individual to receive timely and appropriate care from a medical practitioner. The definition of appropriate health care has not yet been established, however in modern day Australia it is not inconceivable that this would include an accurate and timely diagnosis, and therefore appropriate access to imaging facilities is mandated.

There has been much public debate recently with regard to several sub-issues related to this topic that pose more relevance to the radiography profession. Of particular note is the notion of patients blocking emergency departments and delaying the care of others who are equally in need of emergency care. There are two main concerns tied up in this issue, these being the number of doctors in the population, and the procedures in place to facilitate patient movement throughout emergency departments and the expedition of patient transfer to inpatient facilities or discharge as appropriate. It should be said that general practice medical facilities are suffering a similar problem, but for the purposes of this paper, I shall focus on emergency departments. This area is of course of tremendous significance to radiographers as they would be instrumental in this process, by virtue of the Red-dot system.

In an article in *The Courier-Mail* newspaper in Brisbane, Renee Viellaris highlights the strain Queensland doctors are under in terms of their workloads, and the general shortfall in the number of registered medical practitioners in Queensland as predicted by the Queensland Government.[11] Viellaris goes on to describe the potential future for allied health professionals, based on a Government blueprint aimed at fast-tracking patient treatment by emergency departments. Increasingly, government departments see the evaluation of patients requiring imaging procedures followed by image evaluation by radiographers as potentially important in expediting this situation.

The Commonwealth Government is also pondering this issue, with specific reference to past improvements in the medical world as a result of doctors releasing skills to other health professionals where that profession is adequately skilled to undertake that task.

Julia Gillard, MP, gives the example of blood pressure monitoring, 'When we first worked out how to do blood pressure tests, only a doctor could take your blood pressure. Now in a world where blood pressure checks are routine, where the technology to do it is easy to use – I am sure we are all familiar with having the band wrapped around our arm and having our blood pressure taken – those sorts of checks can be done by nurses, for example.'[12]

Conclusions and recommendations

The underlying principles to the provision of healthcare are the patient's right to good quality care and maximising the benefit for the patient. For this reason the use of the Red-dot system should be considered best radiographic practice.

Development of the framework around which radiographers are trained in providing opinions on images are the responsibility of the professional body, however cooperation with university faculties and teaching departments is necessary to ensure newly graduated radiographers have the required skills to interpret their images accurately.

It is the author's belief that image interpretation should be a significant component of university assessment, such that on graduation these radiographers have the skills required of them in this area. Additionally, professional education bodies should be emphasising the importance of image interpretation skills through the programming of skills sessions in this area.

Continued quality control through the use of clinical audits should be implemented and areas of educational need should be addressed in the form of group tutorials or regional education sessions. The development of senior radiographer positions for specialists in image interpretation would demonstrate the importance of image interpretation confidence and competence. This would have a positive impact on the image interpretation skill level of radiographers, but also has been shown to improve outcomes for patients.

Managers of radiology departments not currently employing a Red-dot system are encouraged to establish a means by which radiographers can easily communicate abnormal findings to referring doctors in the absence of a radiologist's report. Pressure should also be applied to the developers of computed radiography systems for the development of means by which radiographers can flag images for the referring doctor prior to the radiologist's report being issued.

All radiographers should take it upon themselves to contemplate the ethical, legal and human rights perspectives behind this process, and evaluate their stance and preparedness to participate in a program aimed at improving not only the health systems in Australia, but also the general health of the community in general.

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