

Changing out-of-hours radiology practice: a response by The Royal College of Radiologists to five NCEPOD reports

The National Confidential Enquiry into Patient Outcome and Death (NCEPOD) states that its remit is to assist in maintaining and improving the standards of medical and surgical care for the benefit of the public. It does this by reviewing the management of patients and by undertaking confidential surveys and research. It publishes its findings, which are available to all. Its work is neither research (it does not study new therapies or randomise patients) nor audit (there are often no agreed standards). Rather it states what standards services achieve during the period of their survey. It selects the studies it performs after consultation with organisations and individuals who submit templates for possible studies.

Purpose

After five NCEPOD reports¹⁻⁵ in four years which have highlighted poor provision of both diagnostic and interventional radiology services out of hours, The Royal College of Radiologists (RCR) wishes to respond by pointing out what it has done, what others have done and what still needs to be done to overcome the barriers to appropriate out-of-hours radiology services.

Commentary on relevant NCEPOD reports

In 2000, NCEPOD published a report entitled *Interventional Vascular Radiology and Interventional Neurovascular Radiology*.⁶ Prior to this, between 1987 and 2000 NCEPOD had not studied any aspect of radiology services that contributed to patient care both in hours and out of hours. The report in 2000 was highly focused on aspects of angiography, angioplasty and the then newly developed method of treating cerebral aneurysms by endovascular coiling. It is the opinion of the RCR that this document is out of date, although it still contains some important recommendations.

Since its publication, there have been 17 further NCEPOD reports up to November 2009. Between 2000 and 2005 at least three reports might have contained an assessment of in-hours and out-of-hours radiology services. The fact that they did not suggests that NCEPOD had not recognised the increasing importance of radiology in the investigation and treatment of patients.

In *Changing the Way We Operate* (2001),⁷ NCEPOD noted that 'the service provision for cancer patients, presenting either as an emergency or urgently, requires review. The current system is failing patients, despite the best efforts of clinical staff'.

In *Who Operates When? II* (2003),⁸ there is a chapter on out-of-hours investigations and their poor provision but no significant mention of radiology or anything that relates to diagnostic imaging or intervention.

In *An Acute Problem?* (2005),⁹ the report notes that its most worrying domains concerned the inability of surgeons and anaesthetists to appreciate the clinical urgency of patients who had poor outcome or death. Again, no significant mention of radiology and its role in diagnosis is contained in the report.

It was not until the publication of *Abdominal Aortic Aneurysms: A service in need of surgery?* (2005)¹ that NCEPOD actually studied the provision of both diagnostic and interventional

radiology services in large, medium and small hospitals. It concluded that while provision between 9.00 am and 5.00 pm, Monday to Friday was good, out-of-hours provision left a great deal to be desired and had to be improved.

This was followed by *Emergency Admissions: A journey in the right direction?* (2007)² where again the poor out-of-hours provision of diagnostic and interventional radiology services was noted and the report concluded that, 'Hospitals which admit patients as an emergency must have access to both conventional radiology and CT scanning 24 hours a day, with immediate reporting'.

The poor provision of out-of-hours CT and interventional radiology was again highlighted in *Trauma: Who Cares?* (2007).³ In *Acute Kidney Injury: Adding Insult to Injury* (2009),⁴ the poor provision of out-of-hours ultrasound and, in particular, percutaneous kidney drainage (nephrostomy) – an interventional radiology procedure – were cited as causes of poor outcome.

In November 2009, NCEPOD published a report *Deaths in Acute Hospitals: Caring to the End?* (2009).⁵ In this report, radiology services merit a chapter to themselves (although the chapter is titled 'Other Clinical Issues'). The findings of this report suggest that remarkably in 10% of hospitals admitting acute patients, plain X-rays of the chest and abdomen are not available 24 hours per day, seven days per week. Potentially more worrying is the finding that 30% of hospitals admitting acute patients have no 24-hour access to CT scanning and in the 70% that do, the type of scan is often limited. Although the report does not go into details of why such scans are limited, the RCR believes that they are probably limited to head scans rather than body scans. The report confuses angiography (a diagnostic test which in effect no longer exists) with interventional radiology. However, its finding that only 46% of hospitals admitting acute patients have access to interventional radiology and only 28% have access on a 24/7 basis is of concern. A cause for further anxiety was the statement made at the study's launch on 5 November by the NCEPOD Clinical Co-ordinator, Dr G Finlay, that many of the 28% providing 24-hour interventional services were staffed on a goodwill rather than a formal basis.

A further observation relevant to radiology was that in nearly 60% of cases the report provided on those acute patients who had died within four days of admission was provisional. In only 40% of cases was a final report given by a consultant radiologist. Here, the final report did not alter the provisional report in 60% of cases. In those patients who had a diagnostic radiology investigation, management was changed in 30% of cases. Of importance is the fact that a very high number of moribund patients (*sic*) underwent a radiological investigation and that referral is all too often by junior staff.

Summary of NCEPOD reports concerning radiology

Of the 27 NCEPOD reports since 1987, five have highlighted the poor provision of both diagnostic and interventional radiology services. All five critiques have been contained within reports since 2005. The findings of the latest report suggest that there has been no improvement in service since the problems were first highlighted in 2005.

Barriers to improvement in diagnostic and interventional radiology services

- **Equipment availability:** There has been a very significant improvement in the availability of ultrasound, CT, MRI, digital radiography and teleradiology equipment over the last ten years. The RCR does not consider that equipment shortages contribute to the poor provision of diagnostic imaging and interventional radiology services out of hours. However, it should not be forgotten that according to statistics from the Organisation for Economic Co-operation and Development (OECD), the UK still lags behind other European and North American countries in terms of radiology equipment provision.
- **NHS IT strategy:** The NHS IT initiative has revolutionised the speed and safety of imaging but has yet to achieve its full potential. Data sharing between hospitals and

the greater use of appropriate teleradiology services to consultant radiologist homes is considered essential to improved provision of diagnostic radiology services out of hours.¹⁰ The RCR has also produced a standard for the delivery of 24-hour diagnostic services which models how this can be achieved.¹¹

- **National shortage of trained radiographers:** The RCR and the Society and College of Radiographers have previously highlighted the national shortage of trained radiographers in NHS hospitals. This has led to great difficulties in providing both in-hours but particularly out-of-hours services. Without radiographers to operate complex equipment, neither diagnostic nor interventional radiology services can be delivered. In some part, this is due to incremental Cost Improvement Plans over the last ten years in hospital trusts who have found the radiography staff an easy target for non-replacement. In addition, the Society and College of Radiographers has suggested that 30% of undergraduate radiographers leave radiography before completing their degree.¹² The reasons for this appear complex and may have something to do with current career structures in radiography since it became a degree paramedical profession. This high drop-out rate is compounded by the loss of NHS trained radiographers to the independent sector and other non-NHS practice (see below).
- **Shortage of interventional radiology nurses:** Nurses in radiology have never been given a high profile by their own College or by the NHS. However, well-trained nursing staff are vital to the delivery of interventional radiology services. Their role and responsibilities are outlined in *Guidelines for Nursing Care in Interventional Radiology*.¹³
- **Shortage of radiologists:** The expansion in the number of trainee radiologists has not yet been fully realised in the consultant workforce, although numbers have risen since 2002 (30 radiologists per million population)¹⁴ to 2008 (38 per million).¹⁵ The current figure still falls well short of many European countries, Australia, New Zealand and the United States of America (Europe and Australasia 67 radiologists per million population, USA 100 radiologists per million population, UK 38 radiologists per million population).

The first RCR workforce census also suggested that there were 1,669 full-time radiologists working in the NHS, but there were significant regional variations in the number of radiologists per million population and that the majority of these work in small- to medium-sized departments of between five and 15 radiologists which might not be sufficient to provide sustainable specialist on call. This is certainly the case in interventional radiology. The RCR together with the National Imaging Board (NIB) is seeking to improve service provision in interventional radiology and have produced a précis of what needs to be done to improve interventional radiology services.¹⁶ The RCR has published a Standard for 24-hour interventional radiology provision which models what a robust service might look like.¹⁷ The RCR has also applied to Postgraduate Medical Education and Training Board (PMETB) for subspecialty status for interventional radiology and has received positive news from NHS workforce directorates about increasing training numbers for interventional radiology.

- **Targets:** While the RCR supports initiatives that have undoubtedly improved the provision of elective diagnostic services, particularly in oncology, the emphasis on them has detracted considerably from the provision of emergency services. The target agenda has improved provision of equipment, but has not had a dramatic effect on the provision of radiographers, nurses or radiologists in the NHS at the present time. The workforce is undoubtedly better organised and working hard between 9.00 am and 5.00 pm to provide improvements in diagnostic provision, but no real consideration has been given to how staff can provide a robust, sustainable and safe out-of-hours service. The European Working Time Directive also has a significant effect on the number of staff available to populate out-of-hours services.

In addition to achieve targets for diagnostic services, the government has invested a considerable amount of the diagnostic imaging budget into independent service contracts. While this has undoubtedly worked in terms of improving timely access to diagnostics, the loss of radiographers to the independent sector as well as radiologists out of hours has depleted the NHS radiology workforce. Money invested in the independent sector might be better spent in the development of extended working days in NHS departments to deliver both elective and emergency services (see below). The RCR would advise future governments to invest available resources in NHS departments rather than funding independent healthcare organisations.

- **9 am–5 pm radiology departments:** Extending departmental opening times would improve service provision by shortening the duration of 'out of hours', allowing more elective and emergency services to be delivered in the new 'in hours'. The RCR sees this as consistent with the current quality, innovation, productivity and prevention (QIPP) agenda but there are no studies of cost-effectiveness. There is a fear that extended working hours would lead to the overuse of diagnostic imaging which has no impact on patient care. This view was reinforced by *Deaths in Acute Hospitals: Caring to the End?*,⁵ which found that a significant number of patients admitted 'moribund' underwent imaging investigations. The introduction of decision support as part of electronic requesting would have a major role to play in preventing this (see below). The RCR has asked the NIB to develop a plan for piloting extended opening hours, although this would take several years to achieve.
- **Right diagnostic test and intervention at the right time in the right place:** The introduction of decision support systems into NHS hospitals could be an answer to reducing the number of inappropriate requests for radiological investigations as highlighted by the latest NCEPOD report.⁵ Such systems, already operating successfully in other countries, have currently stalled in England and Wales because of issues beyond the control of the RCR (finance and a perception that such systems are used for rationing rather than quality may be at the heart of problem). The RCR is urging the NIB to progress their implementation with the Department of Health.
- **Organisation:** The NHS has a poor infrastructure in the organisation of emergency care. Many acute patients who are admitted to hospitals which do not have appropriate services are managed inappropriately or transferred to other hospitals which do have such services. There are very few formal arrangements (networks) which allow the right financial resource to follow the patient and as the most recent NCEPOD report shows, this can result in inappropriate gate keeping on the part of junior doctors in the referral hospitals. The RCR in its advice to its members and Fellows has suggested models by which such services can be provided out of hours.^{11,17}
- **Emergency physicians and surgeons:** The publication of *Deaths in Acute Hospitals: Caring to the End?*⁵ suggests that there is still a failure on the part of physicians and surgeons to understand the place of imaging in acutely ill patients. The report suggests that some of the patients who died unnecessarily would have had their management altered if an earlier diagnosis had been made. Indeed in those who had appropriate and timely imaging, management was altered in 30%. An elderly patient with non-specific abdominal pain needs a rapid early CT whether it is 3.00 am or 3.00 pm. Clinical examination has an important role in the assessment of such patients but definitive diagnosis comes through imaging. Despite persistent lack of consultant physician or surgeon input into acute patient care in the first 12 hours of admission, there appears to be a reluctance to develop protocol-driven guidance for trainee doctors and an over-reliance on their still developing clinical skills. Such protocols should place diagnostic imaging and intervention high on the care algorithm. The RCR is working with medical school Deans to develop an undergraduate radiology curriculum which is sadly lacking in many universities,

resulting in junior staff that knows little about imaging or intervention. The RCR has formed a Special Interest Group of 70 radiology educators to advise and help develop the curriculum for undergraduates which is available on the RCR website. We are also developing an appraisal and assessment system for undergraduates to support curriculum development.

The RCR thanks NCEPOD for continuing to highlight important issues of patient safety due to deficiencies in service organisation and delivery in our National Health Service. We hope it continues its work and we look forward over the next few years to seeing the initiatives it has stimulated being translated into real improvements in radiology service delivery.

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