Managing the capacity gap in radiology reporting

Radiology is central to many aspects of modern medical care. Demand for medical imaging has increased rapidly over the past 20 years and this trend looks set to continue as the UK is still a relatively low user of imaging compared with other western economies (Organisation for Economic Co-operation and Development, 2018). The interpretation of medical images – X-rays and scans – requires specialist expertise, and for most studies that expert interpretation needs to be presented in the form of a report. For some time radiology services have coped reasonably well with the increased demand thanks to a gradual increase in workforce, a series of one-off productivity gains such as that provided by the introduction of digital imaging systems, and latterly the advent of teleradiology technology meaning that images can be reported at a location remote from their acquisition.

In recent times, however, there is compelling evidence that services are no longer coping (Care Quality Commission, 2018). The reasons are not hard to fathom. There has been a failure to train enough radiologists to meet the increasing demand, which is disproportionately weighted towards the most complex and time-consuming studies. A range of policy objectives such as earlier diagnosis of cancer and the move to personalized medicine have all added to the pressure, as have a raft of national guidelines including National Institute for Health and Care Excellence guidance on trauma, stroke and heart disease (Dreisbach et al, 2018).

Warning bells were first sounded by the Royal College of Radiologists in 2014 which identified large backlogs of studies awaiting a report (Royal College of Radiologists, 2014). In 2018 the Care Quality Commission found widespread reporting backlogs across acute care providers and a number of unsafe practices such as the delegation of reporting to staff without specific training. At the same time there has been a dramatic increase in spending on the procurement of additional reporting capacity in the last 3 years (Royal College of Radiologists, 2018), with the annual UK spend now exceeding £115 million, a figure which has doubled in 3 years.

While a longer term solution will likely require workforce expansion and will also involve a potentially significant contribution from the application of artificial intelligence to medical image analysis, in the short term trusts are faced with a significant shortfall in radiology reporting capacity and a high level of associated clinical risk. What solutions are currently available?

There are three basic options available to organizations looking to manage their radiology reporting capacity:

1. Optimization of in-hours productivity
2. 'Insourcing' – the commissioning of additional work from contracted staff
3. 'Outsourcing' to independent sector teleradiology companies.

These options are not mutually exclusive and indeed most trusts will need to use elements of all three to produce an effective solution.

Optimize in-hours productivity

The first available strategy is to optimize the reporting which can be done by in-house staff within their contracted hours. This will usually include specially trained advanced practice radiographers as well as radiologists. Ensuring that staff have protected time for reporting within their job plans as well as an environment conducive to productive use of that time is essential. Proper attention is required to ergonomic factors as well as ambient lighting and temperature. Adequate IT support, ideally based within the radiology department, is essential to a smooth-running service. Communal reporting areas have gained favour in recent years, partly to achieve optimal utilization of expensive reporting workstations but also to foster a collaborative atmosphere within a department. Reporting of some work from home has also gained in popularity with the potential for reducing or eliminating clinical interruptions, although evidence for an associated increase in overall productivity is currently limited.

Insourcing with safeguards

The second option involves commissioning additional work from an organization's own staff to be performed outside their contracted hours, which is usually known as insourcing. This has the advantage that reports are issued by local reporters who are known to the referring clinicians and who have optimal access to previous images, laboratory tests and additional clinical information which can all be needed for the production of a high quality radiology report.

With this option, there is a risk that additional work might have a negative impact on in-hours productivity. Safeguards are required in order to ensure that the organization receives value for money and also to prevent any perception of impropriety on the part of the reporter. These concerns can largely be overcome by implementing a few simple rules:

- All such additional work should be reported using a separate reporter code on the radiology information system and outside contracted hours, allowing routine audit
- Studies to be reported should be identified by managers and reported from a specific worklist – it should not be left to the reporter to choose which studies to report as 'extra'
- There should be a limit to the volume of extra reporting commissioned from any individual. Some organizations use a system of matching this to in-hours reporting productivity but the best solution is likely to vary between departments.

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Smart outsourcing

The third available option is the use of teleradiology to outsource reporting to the independent sector. This is already used to a certain extent by most English NHS trusts (Royal College of Radiologists, 2018). One model is to outsource overnight computed tomography scans, potentially freeing up local radiologists to do more daytime reporting.

Some general guidelines for making the best use of outsourcing include:

- Plan ahead – do not wait for a backlog to build up. The demand for reporting is broadly predictable based on historical patterns of department activity and anticipated growth. The periods of greatest pressure are likely to be similar from year to year and the need for extra capacity can therefore be anticipated
- Open and continue a dialogue with more than one company – in-house reporting capacity can fluctuate considerably depending on the availability of particular individuals and other local factors. The capacity of the outsourcing companies can also vary and a shared understanding of factors such as case-mix and specialization is essential to finding a robust solution
- Entering into long-term contracts with companies with guaranteed volumes of activity may provide good value for some departments with multiple radiologist vacancies but is not always the best solution
- If possible avoid outsourcing the reporting of studies which will inevitably require local review, for example at cancer multidisciplinary team meetings.

Active management

Whatever strategy or combination of strategies is employed, radiology reporting requires active management – it cannot be left to chance. There will be some studies for which specific expertise is required and which only one or two individuals within a department may be competent to report. Reporting networks may help to provide more equitable access to specialist expertise in the future but are currently poorly developed in most areas.

Ensuring that all reporting is achieved in a timely fashion requires constant monitoring of worklists, at least on a daily basis, by staff with the knowledge to be able to redirect studies appropriately as necessary. The best services use a proactive approach – looking ahead to identify periods of capacity shortage and prospectively arranging additional capacity as required, rather than waiting for backlogs to build up and then having to address them. This will become increasingly important with the anticipated introduction of tougher targets for turnaround times in response to the Care Quality Commission (2018) report. **BJHM**

KEY POINTS

- Radiology reporting capacity is severely stretched across the NHS.
- Tighter targets for report turnaround times are expected following Care Quality Commission recommendations.
- Proactive management using a range of available strategies is required.

Care Quality Commission. 2018. Radiology review. (accessed 22 February 2019) https://www.cqc.org.uk/sites/default/files/20180718-radiology-reporting-review-report-final-for-web.pdf

Dreisbach JG, Nicol ED, Roobottom CA, Padley S, Roditi G. Challenges in delivering computed tomography coronary angiography as the first-line test for stable chest pain. Heart. 2018 Jun;104(11):921-927. https://doi.org/10.1136/heartjnl-2017-311846

Organisation for Economic Co-operation and Development. 2018. Computed tomography (CT) exams. (accessed 22 February 2019) https://data.oecd.org/healthcare/computed-tomography-ct-exams.htm

Royal College of Radiologists. 2014. Patients waiting too long for test results. (accessed 1 April 2019) https://www.rcr.ac.uk/posts/patients-waiting-too-long-test-results

Royal College of Radiologists. 2018. Clinical radiology UK workforce census 2017 report. (accessed 1 April 2019) https://www.rcr.ac.uk/system/files/publication/field_publication_files/bfcr185_cr_census_2017.pdf