

Too Many Images and Too Few Radiologists: The Consequent Effect on Patients' Health Due to the Non-Sustainable Radiology Services

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Abstract: Radiology is a rapidly expanding branch of medicine, which aids in the diagnosis and treatment of disease using X-rays and radioactive substances. With an increasing workload on radiologists, the national health system, commissioning organisations and consultant radiologists face major challenges. It appears that there are evidences to suggest that there are simply not enough radiologists to cope with reporting at the rate at which images are being requested. This paper investigates a prospective audit which looks at the time it takes for GPs from Southwick Health Care Centre to receive reports of the X-rays from their patient population and the consequent effect on the quality of patient care.

Keywords: Radiology Services, Non-Sustainable Radiology Services

1 Introduction

Radiology is a rapidly expanding branch of medicine, which aids in the diagnosis and treatment of disease using X-rays and radioactive substances. With an increasing workload on radiologists, the national health system, commissioning organisations and consultant radiologists pushed for the recent publication *How many radiologists do we need; A guide to planning hospital radiology services* from the Royal College of Radiologists. This was awaited with intent to assess and re-evaluate current services to develop a sustainable system.

Radiographs or X-rays are a useful diagnostic tool for general practitioners (GPs). They can help confirm diagnosis and allow the initiation of further treatment and referral to specialist hospital services if indicated. Waiting for weeks for your X-ray is now a thing of the past following council-led initiatives to widen access to healthcare services for deprived communities. In Sunderland, there has been a number of National Health Service (NHS) centres created, where amongst other services, patients can drop in at their convenience for an X-ray including weekday evenings and Saturdays. Sounds too good to be true? Unfortunately, there is one limiting factor: having promptly had their X-ray taken, they subsequently face many weeks awaiting the report by a radiologist.

With the current system of picture archiving and communication system, this allows radiologists to view the image and submit an electronic report from the comfort of their own desk only minutes after the X-ray has been taken. With all elements of requiring hard copies and transporting them to central services eliminated, why then does this process take so long? This brings us back to the recent document *How many radiologists do we need?* It becomes evident that there are simply not enough radiologists to cope with reporting at the rate at which images are being requested. Can this be a sustainable system?

This paper looks at a prospective audit investigating the time it takes for GPs from Southwick Health Care Centre to receive reports of the X-rays from their patient population and the consequent effect on the quality of patient care. There has been much debate between the primary health care trusts and Sunderland Royal Hospital (SRH) recently regarding delays in radiograph reporting in response to number of cases, where the excessive time to gain a report on images led to a significant delay in patients being diagnosed

with cancer and other fatalities. Following significant negotiations, the Radiology Department at SRH subsequently limited the maximum wait for a radiological report in primary care to 9 days.

2 Literature Review

Effective communication is a critical component of diagnostic imaging. Quality patient care can only be achieved when study results are conveyed in a timely fashion to those ultimately responsible for treatment decisions (Berlin, 2002). The United States of America has superseded Europe in placing increasing onus on radiologists to ensure radiology reports are delivered to the referring clinician. An American survey of radiologists in 1997 showed that communication was the fourth most common primary allegation in malpractice lawsuits against US radiologists and that 60% of communication-related claims resulted from failure to highlight an urgent or unexpected abnormal result. The Florida Radiological Society disclosed that 75% of claims against radiologists in 1997-1999 stemmed from communication errors. As a direct result, there have been frequent discussions and serial publications of guidance from the American College of Radiology for the communication of diagnostic imaging findings (Royal College of Radiologists, 1991, 2006, 2008).

Progress in the communication of imaging reports has been relatively sluggish in the United Kingdom. Our radiology reporting service was perhaps first shaken significantly following the publication of the *2004 Manual of Cancer Measures*. This identified the need for a robust system 'over and above the normal reporting mechanism' to ensure that patients with a new or unsuspected diagnosis of cancer following radiographic investigation are highlighted to the referring clinician. The Royal College of Radiologists in the United Kingdom recently produced guidelines in 2008 addressing *Standards for the Communication of Critical, Urgent and Unexpected Significant Radiological Findings* (Royal College of Radiologists, 2008).

3 Methodology

This prospective audit presents the results of 50 consecutive radiographs requested by doctors at Dr Cloak's GP practice in May 2009. The GP surgery is located within Southwick Health Centre in the city of Sunderland in the United Kingdom. Within this surgery, there are seven fully qualified GPs and two doctors in training, all of whom were briefed about the audit and given a form to complete for every plain radiograph requested (Table 1).

On identifying those patients having radiographs requested, further data were collected from the computer data bases at both the GP surgery Computer data base for the NHS system (EMIS) and Hospital Information Support system (HISS). This included the patient's choice of location, date of taking the radiograph and the date the report was available on the hospital computer in addition to the date the report became available to the GP.

4 Results and Discussion

The standards used for this paper originate from City Hospitals Sunderland NHS Foundation Trust Directorate of Pathology User Forum, which stated that any plain radiograph from primary care should take a 'maximum of 9 days from request to report available on "HISS"'.

A total of 38 routine and 12 urgent radiographs were requested. Four patients did not attend for routine radiographs, resulting in a total of 34 routine and 12 urgent radiograph reports available for analysis. Table 2 highlights basic demographics.

Table 1 Initial data collection

| | |
|------------------------|---|
| Patient number: | |
| Date of request: | |
| Radiograph requested: | Urgent (Phoned) <input type="checkbox"/> Routine <input type="checkbox"/> |
| Report anticipated to: | Confirm diagnosis – Continue treatment <input type="checkbox"/> Change current treatment <input type="checkbox"/> Refer to specialist service <input type="checkbox"/> Other |

Table 2 Basic data demographics

| | Number | |
|---------------------|--------------------------------|-----------|
| Age | Mean 54 (range 21-89) in years | |
| Gender | Female 28 | Male 22 |
| Urgent radiographs | Ankle | 1 |
| | Chest | 10 |
| | Hip | 1 |
| | Total | 12 |
| Routine radiographs | Ankle | 1 |
| | Cervical spine | 5 |
| | Chest | 16 |
| | Finger | 1 |
| | Foot | 2 |
| | Hip | 1 |
| | Humerus | 1 |
| | Knee | 2 |
| | Kidneys ureters bladder | 1 |
| | Lumbar sacral spine | 5 |
| | Pelvis | 1 |
| | Shoulder | 1 |
| | Tibia/fibula | 1 |
| | Total | 38 |

Only 43% of routine radiographs fulfil this standard with a range from 1 to 31 and a mean of 10 days for the availability of reports on HISS. Further analysis reveals that although reports are transcribed onto HISS within a mean of 10 days, it is not until a further 11 days when reports are available on EMIS for GPs. All urgent radiographs were reported within 9 days onto HISS. However, the reports were not available for GPs to view on EMIS for an average of a further 17 days with a range from 11 to 26. Delays in the

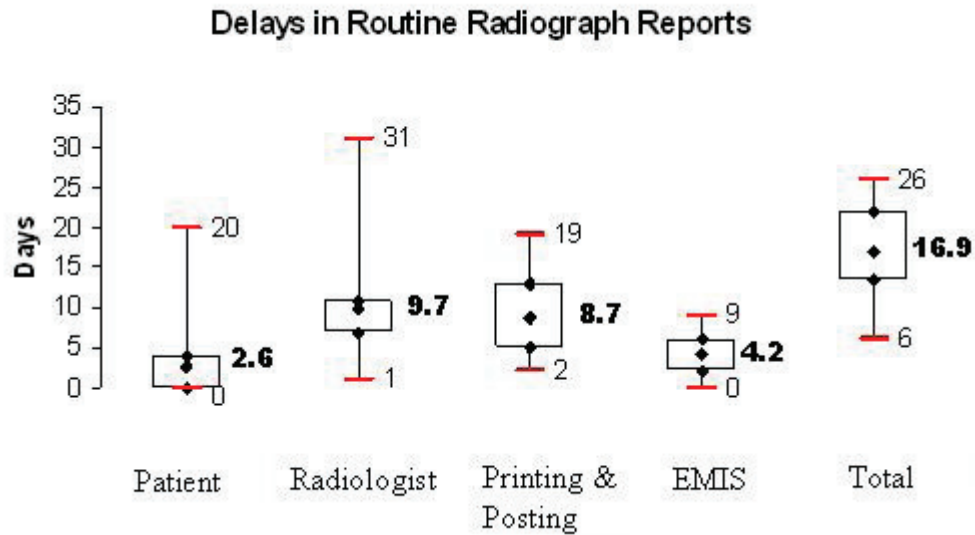


Figure 1 - Delays at each step in routine radiograph reporting

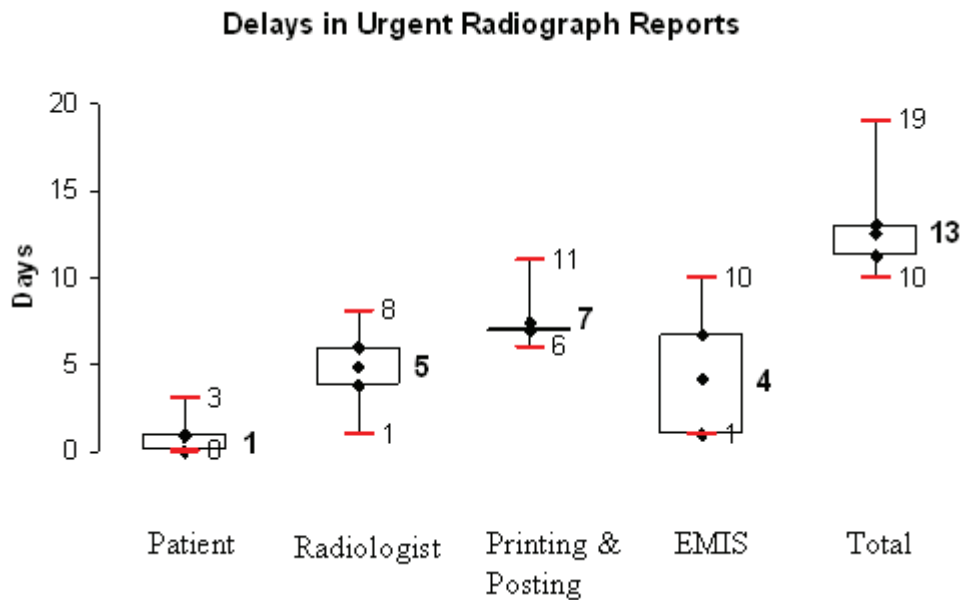


Figure 2 - Delays at each step in urgent radiograph reporting

availability for both routine and urgent radiographs onto the GP database EMIS can be accounted for by time for printing, postage and scanning reports onto the computer (Figures 1 and 2).

Even more concerning is that 32% of all routine reports were available on HISS but were not received by GPs even after a minimum follow-up of 38 days (Figure 3). This implies that reports are being lost within printing and postage. Failure to receive the report of a routine radiograph can often

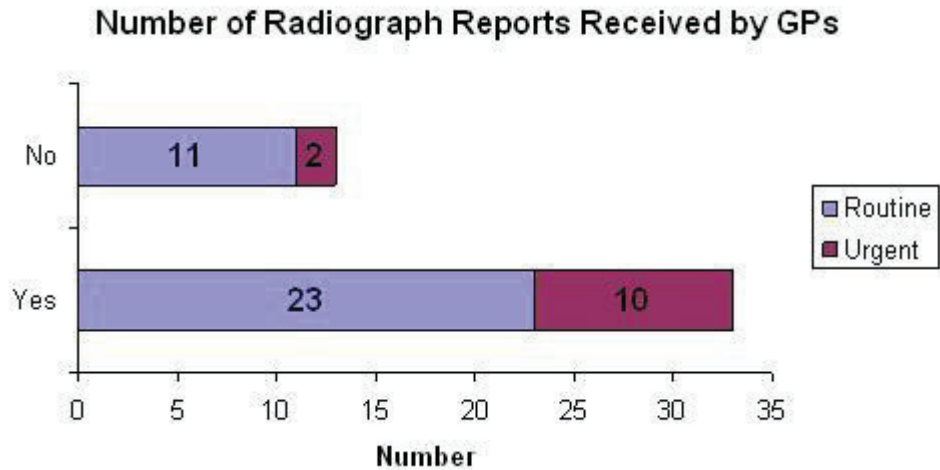


Figure 3 - Radiograph reports received by GPs

have infinitely greater consequence on patient care, as they are not awaited with as much intent as urgent reports. A GP often makes telephone enquiries to chase up urgent reports if it is not readily available. However, if a routine radiograph reveals an unexpected finding, this is often unidentified until the report is received by the GP.

It is clear that the communication of urgent radiological findings is of great importance; however, there are a number of pitfalls that may be encountered. The *2004 Manual of Cancer Measures* highlights the need for prompt liaison with the referring clinician to expedite the follow-up for those with new or unsuspected cancer. However, this can only be recognised once it has been reported. Although it is in a queue awaiting reporting, it would be impossible to predict those images with unexpected findings. In addition, this does not account for the worry of those patients who are eagerly awaiting test results which turn out not to have cancerous features.

It is worth highlighting that in both the United States of America and United Kingdom, there has never been a definitive time scale within which a written report must be provided. The Royal College of Radiologists guidance on Standards for the Reporting and Interpretation of Imaging Investigations merely states that 'there should be effective and timely communication of imaging reports'. Similarly, American guidance reports written reports should 'satisfy the need for timeliness'.

5 Conclusion

Every delay in the process of reports reaching GPs results in increasing suboptimal care to patients, including both physical and emotional. A routine report not received by the GP practice can lead to patients being misdiagnosed and subsequently not receiving optimal treatment. The Radiology Department at SRH has markedly improved its reporting targets in recent months; however, further action is still required to optimise this service. Furthermore, this audit demonstrates that there are additional administrative factors playing an equally detrimental role in the delay of radiograph reports. By addressing administrative factors, delays in GPs receiving radiograph reports can be tackled further.

In conclusion, both additional radiologists and administrative staff are required to ensure the sustainability of the radiology services at SRH.

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