

Unreported X-rays, computed tomography (CT) and magnetic resonance imaging (MRI) scans: Results of a snapshot survey of English National Health Service (NHS) trusts

Introduction

In February 2015, a survey was undertaken amongst NHS trusts in England to understand the full extent of reporting delays in radiology departments and how long patients are waiting for results of their X-rays and scans. The survey forms part of a larger area of work by The Royal College of Radiologists (RCR) in workforce planning and policy and is also important for reasons of clinical practice and patient safety. Most X-rays and scans should receive a formal interpretation (report) within two days. The RCR is aware that this is not being achieved and patients are waiting far too long for test results. It must be remembered that each unreported radiology study potentially equates to one patient waiting for results of their test. A delay in reporting plain film X-rays, CT and MRI scans by a radiologist potentially causes delays in diagnosing cancer and other serious illnesses. There is a need to understand the full extent of this problem and feed this back to NHS England, the Government and regulatory bodies.

An earlier snapshot survey was undertaken by the RCR in October 2014 involving 25% of NHS radiology departments in England. This suggested that around 300,000 patients might be waiting more than a month for the results of their tests at that time. The February 2015 survey was more extensive in sample coverage with data submissions received from 78% (121 out of 155) of NHS trusts in England. This allows for greater confidence in determining projected numbers of unreported studies across the country.

Key findings

The findings from the February 2015 are outlined below.

- Around seven in ten (71% or 86 out of 121) NHS trusts submitting data for this survey had some patients waiting more than 30 days for the results of their imaging tests. These trusts account for 202 hospitals and medical sites (including specialist cancer centres) where imaging services are provided.
- The identified total numbers of imaging studies (and therefore patients) waiting for a result in these NHS trusts were: 257,158 for X-rays, 2,883 for CT scans and 3,277 for MRI scans.
- If these figures are representative of England as a whole then nearly 330,000 patients are waiting more than a month for results of their X-rays, and 8,000 for their CT and MRI scans across the country. These figures are slightly worse than those suggested by the previous snapshot survey in October 2014.
- There is considerable variation between organisations. Of the NHS trusts that responded, 35 indicated that they have no patients waiting longer than 30 days. However, in some trusts there were tens of thousands of X-rays and hundreds of CT and MRI studies waiting more than 30 days for a report.
- Radiology departments are under considerable pressure to minimise the number of unreported studies while facing additional challenges including shortages of consultant radiologists, other resourcing issues and ever increasing demand.

Method

Survey question

The following survey question was used to collect data from radiology departments: *On Thursday 26 February 2015, how many studies (plain film, CT and MRI) are unreported on your picture archive and communication system (PACS) and have been waiting more than 30 days for a report?*

To help with the data collection process, guidance was issued containing precise details about the information that was required. In particular:

- Departments were asked to submit data on all studies on their PACS system, generated up to the midnight of 26 January 2015, that were yet to be reported on when compiling their data on 26 February 2015.
- Reports needed to be typed and verified/authorised for a study to be defined as being reported. A dictation by a radiologist but not yet typed-up and verified was considered as being unreported.
- A study is defined as a single examination. A patient booked in for a CT scan of chest, abdomen and pelvis would therefore count as one study (not three).
- Studies on the PACS system reported on by non-radiologists, such as bone densitometry scans reported on by rheumatologists, were excluded from the survey.

Data collection

The clinical director or lead for radiology in each of the 155 acute trusts in England (as listed by the NHS Choices website) was emailed in early February to introduce the survey.¹ A template data submission form and the guidance were issued shortly in advance of the survey date of 26 February 2015. A reminder was issued together with a closing date of 6 March 2015. Regional Chairs, local representatives of the RCR, were also asked to promote the survey via their communication channels with clinical directors and leads.

Response rate

Of the 155 NHS trusts invited to participate, 121 submitted data, giving an overall national response rate of 78%. The response rate varied by region, with the lowest being 67 and the highest 94%. Those responding represent, in total, 268 hospitals (from large teaching institutions to small community and district general facilities) and medical service sites (such as specialist cancer centres, minor injury facilities, treatment units and so on) where imaging services are provided.

Table 1. Number of trusts submitting data by region

Region	Number of trusts in region	Number submitting data	Response rate (%)
England	155	121	78
East of England	18	17	94
South West	17	16	94
East Midlands	8	7	88
South East	12	10	83
South Central	8	6	75
North West	27	20	74
Yorkshire and The Humber	14	10	71
London	24	17	71
North East	9	6	67
West Midlands	18	12	67

Results

A summary of the survey results can be found in Table 2 (page 4).

Status of trusts

Nationally, 71% of trusts (85 out of 121) taking part in the survey indicated that they had a reporting backlog to some extent, as defined by having one or more plain film X-ray, CT or MRI study waiting more than 30 days for a report. Results showed that all trusts (100%) submitting survey data from the South Central and Yorkshire and The Humber regions had a backlog, whereas this was the case with only 33% of trusts in the North East.

Extent of reporting delays

Across the 121 NHS trusts, the survey identified the following numbers of imaging studies waiting more than 30 days for a radiology report on 26 February 2015:

- Plain films: 257,158
- CT: 2,883
- MRI: 3,277

In total, the number of identified unreported radiology studies in England was 263,318.

Distribution of unreported studies

By region

The number of identified unreported radiology studies varied considerably across regions. For all three modalities, the majority of unreported studies can be attributed to three of the ten regions. For example:

- Unreported plain films – 71% (181,620 out of 257,158) can be found in the South East, London and East of England regions.
- Unreported CT studies – 67% (1,934 out of 2,883) can be found in the same three regions: South East, East of England and London.
- Unreported MRI studies – 55% (1,816 out of 3,277) came from the West Midlands, London and the South East regions.

Figure 1. Unreported plain film studies – breakdown by region

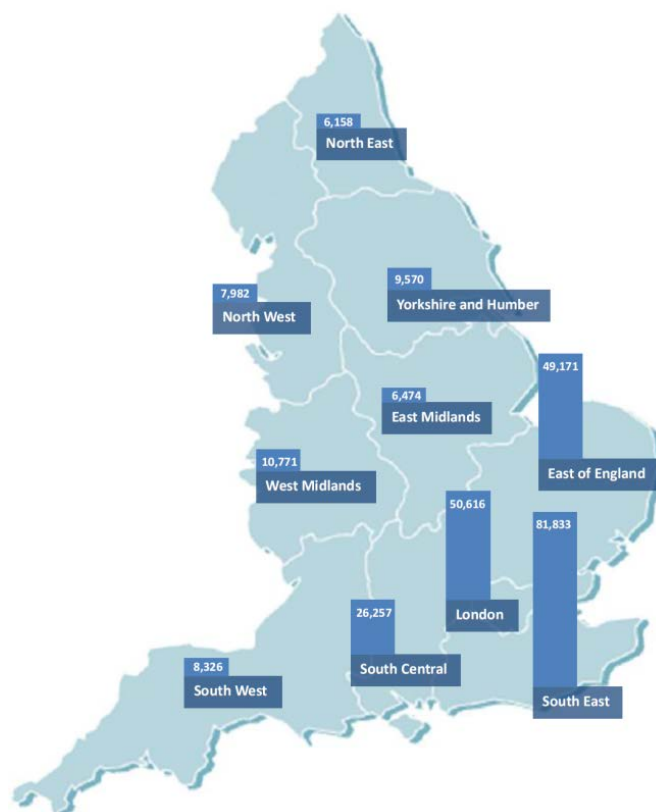


Table 2. Summary of survey results

	<u>Trusts with studies waiting >30 days for a report</u>			<u>Number of radiology studies waiting >30 days for a report</u>			<u>Highest figure provided by a trust</u>		
	Number of trusts	% trusts submitting data	Plain film	CT	MRI	Total	Plain film	CT	MRI
England	86	71%	257,158	2,883	3,277	263,318	49,057	624	592
East Midlands	7	88%	6,474	112	202	6,788	2,791	73	95
East of England	10	63%	49,171	652	458	50,281	49,057	624	346
London	13	76%	50,616	514	548	51,678	41,402	228	299
North East	2	33%	6,158	6	26	6,190	6,158	6	24
North West	13	65%	7,982	405	342	8,729	3,758	279	252
South Central	6	100%	26,257	99	205	26,561	24,446	69	147
South East	8	80%	81,833	768	484	83,085	44,783	541	357
South West	8	50%	8,326	105	207	8,638	2,996	59	88
West Midlands	9	75%	10,771	202	784	11,757	5,974	115	592
Yorkshire and The Humber	10	100%	9,570	20	21	9,611	8,720	17	6

Challenges and solutions

Two-thirds of participants took the opportunity to provide free-text comments to contextualise their survey data submissions. The comments can be categorised as challenges faced by departments and solutions in managing or preventing a backlog of unreported radiology studies. A number of subcategories can also be identified.

Challenges

- Resourcing issues
- Staff commitment
- Increasing demand

Solutions

- Outsourcing
- Use of locums
- Use of radiographers
- Additional reporting sessions
- Performance management of radiologists

Table 3 reproduces selected examples of comments provided by respondents.

Main categories	Sub-categories	Selected examples of comments provided
Challenges	Resourcing issues	<ul style="list-style-type: none"> • We were doing everything in-house until ten days ago and keeping to 93% of all studies reported within 24 hours, but sudden illness has meant we are now outsourcing some routine work – anything CT/MRI that has waited >72 hours from exam now goes out. We are not alone, as you know, so there is a risk that the underlying resource problem is masked. • We have ~3,200 examinations waiting for reporting less than four weeks old. For a small department of only five consultants (often down to two or even less with leave, sickness, etc.). This very quickly becomes an out-facing and unmanageable number. • Currently fully staffed with 11 radiologists and a long-term locum. We will require two more whole time equivalents (WTEs) to cover seven-day working from April. • We need several extra substantive consultants for our current throughput but we cannot plan for this due to musculoskeletal services being contracted to another company by the clinical commissioning group (CCG) who plan to perform the imaging outside our trust. This could reduce our MRI workload by up to 40% at [hospital site] which would resolve our capacity shortfall.
	Staff commitment	<ul style="list-style-type: none"> • We would usually cover these by doing extra paid sessions at weekends although enthusiasm for this is falling. • Major issues with school and public holidays. High levels of leave and locums and outsourcing become 'unavailable'.
	Increasing demand	<ul style="list-style-type: none"> • Demand continues in line with national picture with CT and MRI growth at ~10% per annum. • In 2014 the department was short staffed and had significant reporting backlogs. Since January we are now up to budgeted establishment plus a funded six-month locum. We have introduced a new work list system which is proving to be successful in reducing backlog. However, there is no flexibility in the system for unexpected leave, increasing demands or a move to seven-day working. • Lack of capacity to report plain films is a significant risk to our department and on the executive risk register, but plain film reporting always plays second fiddle to CT, MR and ultrasound. Therefore in the current climate where demand outstrips capacity, plain film suffers.

Solutions	Outsourcing	<ul style="list-style-type: none"> We have to use outsourcing companies [name of commercial companies]. Without these, we would have a backlog issue. CT scan lists are still covered by named radiologists and so delays in reporting are minimal. There are general MR and plain film lists which require outsourcing to reduce delays. 30 day stats maintained by considerable volumes of outsourcing and some insourcing.
	Use of locums	<ul style="list-style-type: none"> We are currently using agency radiologists to undertake <i>ad hoc</i> additional out-of-hours CT and MRI reporting sessions to increase reporting capacity.
	Use of radiographers	<ul style="list-style-type: none"> Qualified reporting radiographers currently undertake 58% of the plain film reporting.
	Additional reporting sessions	<ul style="list-style-type: none"> We pay consultants on a regular basis to do additional reporting sessions Most of excess demand being reported by 'in-house' radiologists out of hours for additional payment. We have some unfilled consultant vacancies at present and use extra session reporting to avoid developing backlogs. We have previously used outsourcing for plain film but we are currently avoiding this as it is more cost effective and also seen as higher quality to insource using extra sessions. The reason for this is that a large volume of additional work has been agreed by our radiologists – over and above job plan and is being carried out at evenings/weekends. As a trust we have increased scanning hours to cope with increasing demand and had to agree the additional work with radiologists before starting as there has been no increase in radiologist provision.
	Performance management of radiologists	<ul style="list-style-type: none"> We have recently gone through a process of producing regular statistical reports of our backlogs, aiming to report all studies within two weeks. Our reporting backlogs are therefore much less than they were previously. Escalation processes in place for prioritisation, insourcing then outsourcing ... Quite clearly despite active management we struggle to meet these targets.

Projected regional and national unreported radiology studies

As a small number of trusts did not submit data for this survey, an estimate has been made of the total figure for plain films, CT and MRI studies waiting more than 30 days for a report for all 155 trusts in England. The following estimates have been projected:

- Plain film: 322,543–329,417
- CT: 3,636–3,693
- MRI: 4,198–4,268

The projections are based on:

- Method 1: Ascertaining the overall national mean figure for all three modalities using data submitted by trusts
- Method 2: Ascertaining the regional mean figures and aggregating them to project a single national figure for the three modalities.

Table 4. Projected unreported radiology studies for all 155 NHS trusts

Region	Plain films	CT	MRI
<i>Method 1</i>			
England	329,417	3,693	4,198
<i>Method 2</i>			
East Midlands	7,399	119	214
East of England	52,063	693	487
London	71,458	587	626
North East	9,237	7	31
North West	10,776	540	456
South Central	35,009	134	277
South East	98,200	1,075	678
South West	8,846	148	292
West Midlands	16,157	303	1,176
Yorkshire and The Humber	13,398	30	32
Total	322,543	3,636	4,268

Impact of unreported radiology studies

Imaging studies not being reported in a timely way by a radiologist has a negative impact for all parties concerned.

Patient safety

A delay in the reporting of X-rays and CT and MRI scans is potentially linked to a delay in the diagnosis of cancer and other serious illnesses, and may put patients at risk. These delays can have a significant effect on the time to initiation of effective treatment and/or palliation of symptoms. In some cases, access to imaging and timely reporting by a radiologist could lead to a different course of treatment resulting in a different outcome for the patient.

Radiographer reporting of some plain X-rays is already established in many NHS radiology departments and can play a valuable role in freeing up consultant radiologist time for the more complex examinations such as CT and MRI. It is, however, the most complex work for which we are seeing the greatest increase in demand so the impact of radiographer reporting is likely to diminish over time. Additional costs in training and supervision of radiographer reporters must also be considered.

Patient experience and responsiveness of health services

Patient experience is heavily dependent on the responsiveness of health services. An unreasonable length of time waiting for the results of an X-ray can be seen by some as a failure of the system to deliver prompt care. This is at a time when many patients are in an anxious state waiting to hear if their potential need is an actual need for medical care. Patients may also make wasted journeys to hospitals expecting their results or attending follow-up appointments with their physician without the vital radiologist report being available. In most cases, it is the lost opportunities that patients (and their families) would be most upset with in relation to treatment prospects, management of pain and the possibility of additional life span.

Financial costs

Radiology departments are increasingly outsourcing their reporting work to commercial private companies and/or using expensive locum agency staff to minimise any backlog in unreported studies. These are both expensive solutions which impact considerably on NHS finances.

Prompt reporting of X-rays and scans leads to quicker treatment and potentially better prognoses and outcomes for patients. It can also prevent unnecessary admissions to or reduce length of stay in hospital, as appropriate treatment can be initiated to match the diagnosed illness. Where reporting is delayed,

inefficiencies in the healthcare system may result, in the form of unnecessary and lengthy hospital stays due to the absence of vital information contained in a radiologist's report.

Addressing the problem of radiology reporting delays

To address the problem of radiology reporting delays in the NHS, the RCR is proposing that:

- ***Delays be properly monitored***

At present, the NHS target counts the time from a patient being referred for a test to the date of the test being performed. This is meaningless if the patient then has to wait a further month for the result. The whole waiting time from referral to result should be monitored (including the further time from the result being available to its being received by the patient).

- ***More radiologists are recruited and trained***

There is a chronic shortage of radiologists in the UK. We have around 48 trained radiologists per million population, a figure which has increased only slowly over the past five years.² The equivalent figures are 92 in Germany, 112 in Spain and 130 in France.² The number of scans performed in the UK remains significantly below those in other countries for most tests. Further growth is inevitable. The situation revealed by our survey will only improve if a commitment is made now by NHS England and Health Education England to train more radiologists.

- ***The current radiologist workforce is better used***

We could make better use of the radiologists we already have. Networks allowing groups of radiologists to provide services to a population greater than that traditionally served by a single hospital could help to offer timely and equitable access to imaging for patients. This proposal would help to reduce delays and is explained further in our paper, *Radiology in the UK: the case for a new service model*.² The barriers that prevent this from happening must be removed.

References

1. <http://www.nhs.uk/servicedirector/pages/acutetrustlisting.aspx> (last accessed 19/03/2015)
2. The Royal College of Radiologists. *Radiology in the UK – the case for a new service model*. London: The Royal College of Radiologists, 2014.

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