It’s good to share: medical image and report exchange between UK health service providers
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Foreword and acknowledgements

This report assesses the negative impact that difficulties in sharing images and reports between health service providers has on the quality and efficiency of radiology and oncology departments and the provision of patient care. The report is based on a survey conducted in early 2016 of clinical oncologists and radiologists working as NHS consultants across the UK and shows that image and report sharing difficulties are widespread and impact on patients. However, some UK countries and regions have much more functional image sharing systems than others and there are lessons to be learnt here. The solutions to the problems highlighted in this report are going to be very largely technological and the newly created Radiology Informatics Committee of The Royal College of Radiologists (RCR) is working with industry and standards bodies to produce a document illustrating these solutions in 2016.

We would like to thank all those RCR Fellows and members who responded to the survey and provided, in many cases, quite detailed and insightful commentary around the issues of accessing and sharing radiology images and reports. We would also like to thank Dr Neelam Dugar (Chair, RCR Radiology Informatics Committee) for contributing to the design of the survey questions and Mr Don Liu (RCR Data, Audit and Surveys Manager) for developing and conducting the survey and analysing and writing up the results.

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1. Main findings

Accessing external radiology images and reports

Across the UK, only 52% of clinical oncologists and radiologists responding to this survey had online access to picture archiving and communication systems (PACS) in organisations external to their own. Access to external PACS is important given that patients are often scanned and subsequently their images and results are held at a different hospital to that of the clinician making diagnostic or treatment planning decisions. Of those who had online access, 54% reported experiencing difficulties searching for and retrieving images from external PACS. There was a wide regional variation, with all respondents in Wales experiencing these difficulties compared to 18% in Scotland. For radiotherapy planning, multidisciplinary team meetings (MDTM) and follow-up image reporting, between 87% and 96% of survey respondents had experienced difficulty accessing images and reports at some time.

Sending images and reports to external organisations

Many trusts and health boards still rely on manual processes requiring administrative support when sharing images and reports. Only 28% of survey respondents had electronic systems in place to seamlessly send images and reports from their local PACS to PACS in external organisations, and some 86% stated that this information had to be imported into their local PACS by administrative staff. Out-of-hours emergency and urgent care are particularly affected by this arrangement when administrative staff are not normally at work, making it difficult for clinicians to access vital information.

Length of time to access external images and reports

Only 25% of clinical oncologists and radiologists responding to this survey had instant access to external images and reports. Instant access is important when providing emergency care. For many respondents, external images were often not accompanied by a report or the reports took longer to access than the images. Some 47% of respondents said it took them one day or more to access external reports compared to only 33% for images.

Impact on clinical work

Non-availability of external images and reports can affect the work of clinicians in three important domains: productivity, efficiency and quality. This conclusion is drawn from the free-text comments made by respondents to this survey. Instances were given where clinicians were required to work with incomplete information, work was being duplicated, scans were being unnecessarily re-reported and patients were being subjected to repeat imaging and other medical (including invasive) procedures. Discussions, decision-making and treatment planning during multidisciplinary team meetings (MDTM) were particularly affected, resulting in process delays, time wastage and postponement of patient cases. If instant access to external images and reports was available, nearly all respondents agreed that it would prevent clinicians’ time being wasted, reduce healthcare costs and lead to improvements in the image-reporting process and subsequently quality of reports.

Impact on patients

In some parts of the UK nearly all clinical oncologists and radiologists responding to this survey were concerned about the length of time it took to access external images and reports in the context of providing care to patients. Just over half of those responding stated that there had been at least one instance where patient care had suffered in the past 12 months as a result of the length of time taken to access external images or reports. The nature of these concerns is that a lack of access to images and reports creates clinical risks, has adverse effects on patient care, results in the recall of patients, delays treatment of cancer and impacts on out-of-hours and urgent and emergency care.

Areas of good practice

The survey identified a number of areas of good practice in the sharing of images and reports. The need to balance patient confidentiality with the clinical benefits of sharing information is recognised. Good working relationships between health service providers will facilitate co-operation and collaboration when sharing information. Scotland has a national PACS which (although not perfect) has greatly facilitated the sharing of information. It is notable that respondents in the North West and South West of England, where regional PACS/radiology information systems (RIS) have emerged, report fewer instances of patient care suffering and concerns about the length of time it takes to access external information in the context of patient care, compared to their colleagues in other parts of England.
2. Background

The sharing of radiology images and reports among health service providers is a crucial issue in the management of patients, including those with a suspected or confirmed diagnosis of cancer, but this poses a significant problem for NHS and independent sector providers. Issues typically come to a head when diagnostic scans from multiple hospitals – some of which have different PACS and radiology information systems RIS – arrive via various different means to staff who are then under considerable pressure to ensure cases are visible to clinicians. Fellows and members of the RCR, who are currently working as NHS consultant clinical oncologists and clinical radiologists were invited to complete an online survey. The results of the survey form the basis for this report.

Image sharing is a timely issue given the recent Government announcement of a digital and information technology (IT) review in the NHS. Interoperability of information systems and the sharing of radiological images and reports are also important in realising recent policy initiatives. A report commissioned by Cancer Research UK has recommended the development of out-of-hospital diagnostic centres to make it easier for patients to access imaging services in the community, even though the interpretation and reporting of these images are undertaken by hospital based clinicians. Improvements in diagnostic pathways, aided by closer collaborative working between health service providers, is seen by the Independent Cancer Taskforce as key to achieving earlier diagnosis and treatment of cancer and therefore better outcomes in patients.

Four main drivers for image and report sharing were listed in a paper prepared by the RCR in 2009.

1. Access to the entire imaging history improves clinical management and patient care.
2. Access to the entire imaging history improves accuracy in radiological reporting.
3. Practices requiring manual processes in sharing images and reports, for example, physical transfer of compact discs (CDs), result in the duplication of images and are associated with patient safety, data protection and medico-legal risks.
4. A seamless automated process for image and report sharing will be essential in supporting cancer, cardiac, stroke service and other clinical networks with clear lines of inter-hospital referral.

These still stand and are more important today than ever before. An additional driver should now be included to reflect the mobility and expectations of patients in accessing imaging services in different local and community settings. This was mentioned by at least one of the survey respondents:

Timely sharing of images and reports is critical for progression though the pathway and decisions about treatment. Patients much prefer scans to be carried out locally (and the central imaging services have insufficient capacity to do all scanning) but these scans are needed on our PACS for review in MDTMs and for radiotherapy planning and surgical planning.

(Clinical oncologist, South East England)

Survey and presentation of results

A total of 782 Fellows and members of the RCR working as NHS consultants (172 clinical oncologists and 610 clinical radiologists) completed an online survey between 23 February and 9 March 2016. The survey questions did not focus on the technical elements in sharing information among health service providers, although some respondents clearly had specialised knowledge and offered solutions based around IT systems, architecture and interoperability. Instead, the survey focused on the experiences of clinicians as users of these systems, in accessing and sending images and reports from and to hospitals, trusts and health boards external to their own. Insight into these experiences is important given that these clinicians are frontline medical specialists delivering patient care and require the tools and information to help with their decision-making and treatment planning.

As well as quantitative data collected through closed-ended questions, the survey also collected detailed and insightful qualitative comments from respondents. The comments provided an indication that sharing images and reports is an issue that many clinicians feel deeply concerned about. Emerging from the comments were the following main themes: problems and challenges, impact on clinical work and patients and areas of good practice. For each, sub-categories (or themes) emerged and these are used as key findings alongside the quantitative data in this report. Where useful, some of the comments have been reproduced. It must be noted that they do not necessarily represent the views of the RCR and any product or company names mentioned do not represent endorsements.
3. Accessing external radiology images and reports

Difficulties in accessing external radiology images and reports

All 782 respondents to the survey indicated that they required access to external images and reports for either radiotherapy planning, attending MDTMs and/or producing follow-up image reports. Despite this requirement, around three-quarters of respondents occasionally had difficulty accessing this information (Table 1). Around 20% of respondents experienced difficulty almost every time or every time. Similar proportions of both clinical oncologists and radiologists experienced these difficulties in their MDTM and follow-up image reporting work.

There are notable differences when the results are examined at the level of UK country/region (see Figure 1). In London, 43% of respondents experienced difficulty almost every time or every time when accessing images and reports for MDTMs, compared to only 4% in Scotland. For follow-up image reporting work the proportion for London was 38% compared to 3% in Scotland, and for radiotherapy planning 19% compared to 0%. These geographical variations suggest that good practice in sharing images and reports has emerged in some areas and in other areas there is scope for improvement.

Table 1. How often do you experience difficulty in accessing external radiology images and reports for the purposes of radiotherapy planning, attending MDTMs and producing follow-up image reports?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Occasionally</th>
<th>Almost every time or every time</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Radiotherapy planning</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical oncologists</td>
<td>13 (8%)</td>
<td>134 (79%)</td>
<td>22 (13%)</td>
<td>169 (100%)</td>
</tr>
<tr>
<td>Clinical radiologists</td>
<td>14 (39%)</td>
<td>15 (42%)</td>
<td>7 (19%)</td>
<td>36 (100%)</td>
</tr>
<tr>
<td>All respondents</td>
<td>27 (13%)</td>
<td>149 (73%)</td>
<td>29 (14%)</td>
<td>205 (100%)</td>
</tr>
<tr>
<td><strong>Multidisciplinary team meetings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical oncologists</td>
<td>6 (4%)</td>
<td>130 (77%)</td>
<td>32 (19%)</td>
<td>168 (100%)</td>
</tr>
<tr>
<td>Clinical radiologists</td>
<td>21 (4%)</td>
<td>390 (67%)</td>
<td>166 (29%)</td>
<td>577 (100%)</td>
</tr>
<tr>
<td>All respondents</td>
<td>27 (4%)</td>
<td>520 (70%)</td>
<td>198 (26%)</td>
<td>745 (100%)</td>
</tr>
<tr>
<td><strong>Follow-up image reporting</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical oncologists</td>
<td>11 (9%)</td>
<td>98 (77%)</td>
<td>18 (14%)</td>
<td>127 (100%)</td>
</tr>
<tr>
<td>Clinical radiologists</td>
<td>25 (4%)</td>
<td>432 (72%)</td>
<td>140 (24%)</td>
<td>597 (100%)</td>
</tr>
<tr>
<td>All respondents</td>
<td>36 (5%)</td>
<td>530 (73%)</td>
<td>158 (22%)</td>
<td>724 (100%)</td>
</tr>
</tbody>
</table>

Notes: the results exclude those responding ‘not applicable’ or ‘don’t know – access is not required’ to the questions asked
Instant access to external images and reports is seen to be important for many aspects of medical care particularly in an emergency setting or when a patient requires urgent care. The following survey respondent made mention of the need for instant access in the context of MDTMs. Instant access to reports and images would, in my opinion, significantly cut down on delays in terms of inter-hospital MDTM decision-making, which would speed up patient pathways and improve the patient experience significantly. It would also avoid time wastage in MDTMs where patients are not discussed as their imaging is not available.

(Clinical oncologist, South West England)

Only 25% of respondents had instant access to external images and reports. For the remaining 75%, there was a delay ranging from under one hour to one day or more before they could access the information. Delays were more likely to occur when trying to access external reports. It took one day or more to access reports for 47% of respondents, compared to 33% for external images (Figure 2). Several respondents commented that external reports were much more difficult to obtain.

I have audited the availability of reports on external images in our region. Brief results: 15% of external studies had a report with the images at 48 hours, with 52% at two months. Looking specifically at a tertiary MDTM, 55% of external studies had the report available at the time of the MDTM. Many of the external reports are not fully identifiable (65% with no demographics, author or exam/report date), further compromising patient safety, as we cannot always be sure that a report relates to the images to which it is attached.

(Clinical radiologist, North East England)

The systems, processes and arrangements in place for sharing images and reports among health service providers influence how long it takes for clinicians to access information. Instant access to images is determined, for example, by instant access to external PACS, the IT infrastructure allowing clinicians immediate viewing of information, security and governance arrangements and so on.
There are variations by UK country/region in the percentage of respondents taking one day or more to access external radiology images and reports (Figures 4 and 5, pages 9 and 10).

- For images, the percentages were lowest (19% or less) for both clinical oncologists and clinical radiologists in Northern Ireland, Scotland and North West England; the highest (52% or more) can be found in the East Midlands and West Midlands.
- For reports, 72% of clinical oncologists in the East Midlands took one day or more to access information compared to 0% in Northern Ireland and North East England. The percentage for radiologists in London was 79% compared to 11% in Northern Ireland.
**Figure 4.** Percentage of respondents taking one day or more to access radiology images

**Figure 4A.** Clinical oncologists

<table>
<thead>
<tr>
<th>Region</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>England - West Midlands</td>
<td>63%</td>
</tr>
<tr>
<td>England - East Midlands</td>
<td>57%</td>
</tr>
<tr>
<td>England - London</td>
<td>54%</td>
</tr>
<tr>
<td>England - South Central</td>
<td>50%</td>
</tr>
<tr>
<td>England - East of England</td>
<td>50%</td>
</tr>
<tr>
<td>England - North East</td>
<td>38%</td>
</tr>
<tr>
<td>England - South East</td>
<td>31%</td>
</tr>
<tr>
<td>UK - total</td>
<td>31%</td>
</tr>
<tr>
<td>England - South West</td>
<td>29%</td>
</tr>
<tr>
<td>Wales</td>
<td>25%</td>
</tr>
<tr>
<td>England - Yorks and Humber</td>
<td>15%</td>
</tr>
<tr>
<td>England - North West</td>
<td>10%</td>
</tr>
<tr>
<td>Scotland</td>
<td>10%</td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>0%</td>
</tr>
</tbody>
</table>

**Figure 4B.** Clinical radiologists

<table>
<thead>
<tr>
<th>Region</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>England - East Midlands</td>
<td>58%</td>
</tr>
<tr>
<td>England - South East</td>
<td>57%</td>
</tr>
<tr>
<td>England - West Midlands</td>
<td>52%</td>
</tr>
<tr>
<td>England - Yorks and Humber</td>
<td>48%</td>
</tr>
<tr>
<td>England - London</td>
<td>47%</td>
</tr>
<tr>
<td>England - South Central</td>
<td>45%</td>
</tr>
<tr>
<td>England - East of England</td>
<td>40%</td>
</tr>
<tr>
<td>Wales</td>
<td>35%</td>
</tr>
<tr>
<td>UK - total</td>
<td>34%</td>
</tr>
<tr>
<td>England - South West</td>
<td>23%</td>
</tr>
<tr>
<td>England - North East</td>
<td>21%</td>
</tr>
<tr>
<td>England - North West</td>
<td>19%</td>
</tr>
<tr>
<td>Scotland</td>
<td>12%</td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>5%</td>
</tr>
</tbody>
</table>
Figure 5. Percentage of respondents taking one day or more to access radiology reports

Figure 5A. Clinical oncologists

Figure 5B. Clinical radiologists
4. Problems and challenges

Radiology image and report sharing among health service providers is dependent on adequate electronic systems and organisational processes and arrangements being in place. The problems and challenges faced by survey respondents in sending and obtaining images and reports are related to gaining access to, searching for and retrieving information from external PACS, the functionality and infrastructure of electronic systems, organisational processes and methods used in sharing information and the availability and co-operation of administrative and IT support staff. The sharing of information between NHS and independent sector providers is particularly problematic.

Online access to external PACS

All those responding to this survey required access to external radiology images and reports for their work. However, 35% of clinical oncologists and 52% of radiologists, in total accounting for 406 respondents, did not have online access to any external PACS to obtain this information (Figure 6, below). Instead, external images and reports were obtained by other means, usually requiring a manual process involving administrative staff ‘pushing’ or ‘pulling’ and uploading information onto a local PACS for viewing.

Figure 6. Number (and percentage) of clinical oncologists and radiologists with online access to external PACS

Authentication of PACS users

Of the 406 respondents who have online access to external PACS, less than half (45%) have a single log-in to access one or more systems (Figure 7). The majority (55%) are required to use different log-ins for the external PACS systems they have access to – nearly one-third of these respondents are required to use three or more separate log-ins. Multiple log-ins can be inconvenient especially if the details, for example, passwords, regularly change for security reasons. Ideally, there should be an authentication system enabling clinicians to access multiple PACS with a single log-in.

A lot of time is wasted in our neurosciences MDTM logging in to different trusts’ PACS systems. Much time would be saved if all images were available from one log-in. This could also allow images from different trusts to be brought up next to each other for comparison which is not currently possible.

(Clinical oncologist, North West England)
Searching and retrieving images from external PACS

The 406 respondents who have access to external PACS were asked if they found it difficult to search for and retrieve radiology images in these systems. Those not finding it difficult made up 46% of these respondents, while 42% had difficulty with some PACS and the remaining 12% had difficulty with all PACS to which they had access (Figure 8, below). When examined by specialty, a similar percentage breakdown can be found among clinical oncologists and clinical radiologists. Where differences were evident was between UK countries/regions (Figure 9, page 13). In Wales, all respondents (n=6) found it difficult to search for and retrieve radiology images in some or all external PACS they had access to. This is compared to only 18% of respondents in Scotland (n=93) and 37% in Yorkshire and Humber (n=16).

Figure 8. Percentage (and number) of clinical oncologists and clinical radiologists finding it difficult to search for and retrieve radiology images in external PACS
Sending images and reports to external PACS

Two-thirds of all survey respondents (n=520) stated that they were required to send images and reports to external healthcare providers (Table 2). These respondents were asked if electronic systems were in place to send this information seamlessly between local and external organisations’ PACS. The results show that 72% did not have electronic systems in place for transferring images and reports or had them only for some (but not all) external PACS. When examining the results by UK country/region, clinical oncologists in North West England and South West England were found to be more likely to have these systems in place compared to their colleagues in Wales and Scotland. Radiologists in North East England and the West Midlands are in a better position than those in Wales and Yorkshire and Humber (Figure 10, page 14).

Table 2. Electronic systems in place enabling respondents to send images and reports to external PACS

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Number of responses</th>
<th>No – electronic systems are not in place</th>
<th>Yes – but only with some external PACS</th>
<th>Yes – with all external PACS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>520</td>
<td>138 (27%)</td>
<td>235 (45%)</td>
<td>147 (28%)</td>
</tr>
</tbody>
</table>

Out of the 382 respondents who had electronic systems in place, 73% occasionally found it difficult when sending images and reports from their local PACS to external PACS. A small minority of 5% had difficulty every time or almost every time. The remaining 22% never experienced any difficulty.
Figure 10. Percentage of respondents stating electronic systems are not in place or only in some cases to send images and reports to external PACS

Figure 10A. Clinical oncologists

Figure 10B. Clinical radiologists
Integration of systems

Based on the comments received through the survey, it will be challenging (but not impossible) to achieve a seamless automated process for image and report sharing among health service providers at a national, regional and, in some instances, trust or health board level. To meet this challenge it should be taken into account that there are different PACS and RIS in use across and within individual NHS and independent sector providers. This raises issues of integration, compatibility and communication between systems.

Non-integration and incompatibility

A number of reasons were given as to why different PACS and RIS were not integrated or were incompatible with one another. Some respondents blamed the failure on the use of different commercial vendors and/or failure to use recognised standards to facilitate the transfer of information. A few respondents viewed the challenge as being the integration of information, rather than systems, into a single archive accessible to different providers.

A single provider is highly undesirable, but all systems should be digital imaging and communication in medicine (DICOM) compatible. A bigger part of the problem is incompatibility of RIS, both between each other and with the local PACS, preventing access to images, reports or both. (Clinical radiologist, North West England)

The use of a global work-list has helped massively. The fact that most PACS were [named medical IT company] has helped initiate this, but our PACs and RIS are different. Yet (with trials and tribulations), it has been possible to integrate our images onto a global list. So vendor neutral collaboration should be possible without every trust in a region choosing the same PACS. (Clinical radiologist, North West England)

Communications between systems

Some respondents saw the lack of integration and compatibility in terms of different PACS failing to communicate with one another.

Some trusts within our network use the same PACS/RIS and we have instant access to images and reports when available. Others have opted to use a different system for reasons that are questionable. This does not communicate with our PACS but the images can be sent. It is in the patients from these trusts that the risk and delays are greatest. (Radiologist, South Central England)

IT infrastructure

Where systems are in place to share images and reports there may be problems in viewing the information due to connectivity and speed issues and capacity to store digitised data.

Some external PACS systems in the area are not accessible, while some are slow to open. Our trust is not happy to import images temporarily due to cost of storage. [This all leads to] concerns regarding the rapidity of review required using external PACS systems during four-hour MDTM with >50 patients. Some external PACS systems are very slow, reducing reporting and MDTM productivity. (Clinical radiologist, North West England)

Information governance and identification issues

Robust information governance policies and security and unique identification mechanisms are needed to reassure patients that their information (in the form of images or reports) will be safely and confidentially shared among different health service providers according to the relevant legislation. In some cases, implementing these policies and mechanisms can hinder the sharing of images and reports among providers; conversely, in some instances these same policies may facilitate image and report sharing.

IT security

Cyber-attacks and computing viruses are growing threats to NHS IT systems and data security. Protection against these threats can, at times, provide clinicians with an obstacle when trying to access and view external images and reports.

A major obstacle to improved image access is individual trust IT departments putting in place barriers in the name of security. Understandable, but decisions appear to be dependent on individuals rather than a strategic overview at a regional level. (Clinical radiologist, South West England)

Information governance

A major source of unhappiness for some survey respondents is the information governance policies of and interpretation of Caldicott principles by NHS trusts and health boards. Some see these policies as being an obstacle in the sharing of images for the purposes of clinical practice and therefore unreasonable, especially if it leads to delayed or compromised patient care.

Delay in sending imaging from an external trust to the cancer centre where radiotherapy is planned is an ongoing frustration in my practice as a clinical oncologist. 'Information governance' is raised as an issue by the other NHS trust as a reason why we cannot pull images without
human intervention at their end and telephone calls and faxes are often not acted on. So far, the longest wait was three days. Massively frustrating and results in delayed radiotherapy planning and potentially delayed treatment. (Clinical oncologist, North East England)

Patient and organisational identifiers

The use of unique identification numbers for both patients and health service providers is seen as a mechanism to facilitate the sharing of information. When these identifiers are not used, or are used incorrectly, it does make it difficult to match up disparate pieces of information – images, reports, patient records and so on – held by different providers or agencies. This could lead to important information being overlooked or mistakes being made, for example, matching up wrong images to a patient being seen.

Unless administrative staff upload the imaging studies sent via the image exchange portal (IEP) (or imported from CD) to RIS as well as PACS then these studies appear on PACS under a different hospital ID number and the PACS regards them as different patients. These studies are therefore missed altogether as historical studies when reporting or viewing subsequent imaging studies performed on those patients at the receiving hospital. They also do not appear automatically as part of the default display/hanging protocol (DDP) for comparison and so are missed for comparison because we do not know they are there on the PACS, unless we specifically search under ‘all exams’ by the patient surname. Searching by hospital number obviously will not find these exams until the hospital numbers have been merged, and this rarely occurs. This is a dangerous situation.

(Clinical radiologist, London)

Manual processes used in sharing information

All 782 survey respondents (irrespective of whether they had online access to external PACS or not) were asked how else external radiology images and reports were made available to them. Three answer options were given. Two of the options detailed processes that involved a manual intervention by administrative staff in sending and importing images and reports into a local PACS or separate mini-PACS. The third option provided the opportunity for respondents to describe how else external images and reports were made available to them. In many cases, respondents detailed how the first two options worked in practice.

Nearly all respondents stated that there were manual processes in place involving administrative staff sending and/or retrieving images and reports to and from external organisations (Table 3, below). The processes can be best described as data transfer via intermediary systems, for example, IEP, point-to-point DICOM transfers and the use of CDs. Some respondents mentioned that they had remote online access to external PACS via a web browser.

Table 3. Methods used to send and make available external images and reports to clinical oncologists and radiologists

<table>
<thead>
<tr>
<th>Option</th>
<th>Response option</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1</td>
<td>Images and reports are imported into my local PACS by administrative staff</td>
<td>675 (86%)</td>
</tr>
<tr>
<td>Option 2</td>
<td>A separate mini-PACS (not integrated with your local PACS) is used to import external images and reports</td>
<td>54 (7%)</td>
</tr>
<tr>
<td>Option 3</td>
<td>Other method(s) – please provide details</td>
<td>173 (22%)</td>
</tr>
</tbody>
</table>
Data transfers via intermediary systems

One respondent described the current situation whereby clinicians are faced with multiple health service providers with their own separate islands of radiology data, which require a facilitator to enable sharing. A solution is the use of intermediaries to exchange data according to an agreed standard, for example, DICOM (see below). Image exchange portals (IEPs), run by NHS or commercial agencies, allow for studies to be transferred to a temporary store, from which the recipient can download them within a specific time frame and import/upload into a local PACS. This type of transfer can delay the sharing of information as it requires staff intervention. Studies have to be located and pushed to a recipient, which then have to be linked to the patient’s record and information uploaded onto a local PACS for viewing. The originator of the study is always in control of what is viewable and can mean the recipient receiving what they perceive to be incomplete information, for example, images but not reports.

The IEP does not routinely export/import reports. An imaging examination is incomplete without a report so such a portal should have facility to export both images and reports. The inability to perform DICOM query retrieve through the IEP slows down the import process.

(Clinical radiologist, London)

Images are transferred relatively easily via IEP but reports are much more patchy. Both are dependent on the source trust sending the images to us, which is not always easy because PACS admin staff are often busy. We need a reliable pull and push system so we can access and retrieve the images ourselves for when PACS admins are away or snowed under.

(Clinical radiologist, London)

DICOM transfers

DICOM is a standard and file format for sending information in medical imaging. Some survey respondents commented that not all health service providers used this standard.

Some of the external providers in the region do not keep images for more than a certain amount of time and have no facility to share. Providers should only be able to provide imaging services if they can provide the images in an appropriate DICOM format with the report in a timely fashion.

(Clinical radiologist, South East England)

Compact disks (CDs)

Transfer of images and reports via encrypted CDs is a time consuming manual process, which could delay planning and treatment of patients. Sending information in this way involves burning data onto a CD, encrypting it (due to the sensitive nature of the information) and getting the CD to the recipient, usually via post, courier or taxi. Receiving the information involves decrypting the CD and uploading the data onto a local PACS for viewing.

Some organisations do not belong to IEP and that requires a physical disk to be requested, burned and imported and then staff need be alerted to the presence of the images in PACS. This takes much longer than the timescales inferred in some of the [survey] questions.

(Clinical radiologist, South East England)

Web viewers

Respondents with remote web-based access to external PACS may encounter problems of functionality in accessing and manipulating images and also issues regarding the quality of those images, to an extent that they may not be suitable for diagnostic purposes.

Instant access to external PACS at the adjacent local trust is through an inferior web browser. Images are slow to load, difficult to scroll through and not in DICOM format. I have made errors through reviewing images on this system.

(Clinical radiologist, North West England)

Requesting information

Radiology images and reports often do not accompany patients when they are transferred to or attend another hospital. In many cases, clinicians at the receiving hospital would need to make a formal request for this information. Requesting this information is seen by some survey respondents as being laborious and bureaucratic, leading to time-delays in the treatment of patients. The delays are also caused by what some respondents see as communication bottlenecks and poor design of communication pathways, resulting in repeated requests for the same information.

I have to remember to request images via our radiology department and sometimes I forget until I have to plan the patient. While I can instantly access radiology reports I cannot access the images without requesting them and this can take time, up to 24 hours.

(Clinical oncologist, Wales)
Administrative and IT support

As already stated, in many cases the process of sharing images and reports requires manual intervention by administrative staff. Sharing of information is also heavily dependent on IT and, in turn, IT staff working in trusts and health boards.

**Administrative and PACS support**

Respondents to the survey recognised that the information sharing process was reliant on trained and committed administrative and PACS support staff. It was also recognised that many hospitals were understaffed (or staffing was being reduced) and it could be a time-consuming process requiring much effort to locate, and make available, images and reports to clinicians. Given the current manual systems in place administrative staff are seen as a necessary resource in facilitating the sharing of information, although questions were raised about the opportunity costs and whether it was an efficient use of their time.

*Most large secondary and tertiary referral trusts employ one or two people full-time simply to import and upload outside imaging studies and reconcile their demographic data. This is an incredible waste of resource.*

(Clinical radiologist, London)

**IT staff and departments**

Survey respondents saw those working in IT as either experts in facilitating the electronic sharing of information or as being obstructive or inadequate (in terms of numbers and availability) in facilitating information sharing.

*The IT staff work tirelessly and mention should be given to their expertise and hard work in this area.*

(Clinical radiologist, North West England)

*IT systems are not easy to access remotely. There is lack of co-operation from IT support staff to facilitate transfer and sharing of images.*

(Clinical radiologist, Scotland)

Independent sector providers

A particular challenge for those working in the NHS is engaging with independent sector providers in sending, receiving and accessing images and reports. This was highlighted by many of the survey respondents. NHS IT networks can make it difficult to transfer information to and from non-NHS providers. Therefore, most transfers between the NHS and the independent sector are likely to be via IEP or compact disc. As already seen, these types of transfers require staff intervention and can considerably delay the sharing of information. The increasing use of independent sector providers by the NHS to manage patients and outsource scanning and reporting work calls for more integrated links to be made between the two sectors.

*Most of the NHS solutions do not address the independent sector. We would be very keen to work with our outsourcing teleradiology service who also support a large number of surrounding trusts, to create a local radiology network where they would support the routing and distribution of images using established IT systems and could also include the private sector.*

(Clinical radiologist, South West England)

**Ultrasound scanning (USS) providers**

Another issue raised by respondents was the poor quality of images and reports received (in addition to the time it took) from the independent sector, especially those providing ultrasound services. Where quality is severely compromised it can be argued that this is a limiting factor in the sharing of images and reports, impacting on patient care and the work of NHS clinicians.

*There is a local private company that has gained contracts for large swathes of the primary care (and other) ultrasound imaging around the city. The patients are scanned on the cheapest machines out in the community by sonographers. Most reports are of course normal or irrelevant but our clinicians are plagued by requests for further management and complex imaging of numerous patients perceived to have pathology. Requesting the images is tedious and results in low-quality JPEGs eventually arriving on PACS days or weeks later. These are often completely unhelpful. We frequently have to rely on the reports alone.*

(Clinical radiologist, England)
5. Impact on clinical work

Productivity, efficiency and quality

The accessibility of external images and reports can affect the work of clinicians in three important domains: productivity, efficiency and quality. This conclusion is drawn from the free-text comments made by respondents to this survey. Instances were given where clinicians were required to work with incomplete information, work was being duplicated, scans were being unnecessarily re-reported and patients were being subjected to repeat imaging and investigations. Discussions, decision-making and treatment planning during MDTMs were particularly affected, resulting in process delays, time wastage and deferment of patient cases. Respondents were asked to agree or disagree with a set of statements relating to improvements in clinical work that could result from instant access to external images and reports. The results (which exclude those who responded ‘not applicable’ to the statements) indicate that instant access would strongly influence the productivity and efficiency of clinicians and also the quality of their work; key criteria when evaluating the introduction of new technologies in hospitals.7

Reviewing and reporting on prior investigations

Patients can be referred to or attend different hospitals or care providers as part of their healthcare journey. Clinical oncologists and radiologists in the latter part of the journey are often faced with the non- or delayed availability of earlier images and subsequent reports generated at external health service providers. If this prior imaging is not available it cannot be used to compare with more recent imaging, resulting in the incomplete assessment of patients and suboptimal reporting. Therefore, it is not surprising that 94% of survey respondents somewhat or strongly agreed that instant access to external images would improve the clinical reporting process and quality of those reports (Figure 11, below). The majority of respondents (89%) also agreed that instant access to earlier images and reports could improve the report turnaround times for cancer follow-up images.

Figure 11. Percentage of respondents agreeing that reporting processes would improve if they had instant access to external images and/or reports

- Strongly or somewhat disagree %
- Somewhat agree %
- Strongly agree %

**Improve the reporting process and quality of reports (responses = 738)**
- 6% Strongly or somewhat disagree
- 25% Somewhat agree
- 69% Strongly agree

**Prevent unnecessarily re-reporting of images (responses = 741)**
- 12% Strongly or somewhat disagree
- 25% Somewhat agree
- 63% Strongly agree

**Improve report turnaround times for cancer follow-up images (responses = 732)**
- 11% Strongly or somewhat disagree
- 32% Somewhat agree
- 57% Strongly agree
Non-availability of prior reports is also an issue when reporting of a patient is shared across a network of hospitals, hindering a co-ordinated, coherent and consistent approach to further reporting. The following comment explains why suboptimal reporting is detrimental to patient care and poses a clinical risk.

Non-availability or delayed availability of all prior imaging and reports, including external ones, can lead to one or other of the following: a) delayed reporting of current study due to need to compare, b) inaccuracy of report due to failure to compare or access pertinent findings from prior, c) incomplete MDTM case discussion or postponement. All these are frequently encountered problems with significant impact on patient management. (Clinical radiologist, East of England)

Re-reporting of images

External images are often made available but without any subsequent report. Radiologists are then required to make a report on these incoming images despite them having been reported elsewhere. Many respondents feel that this is an unnecessary waste of time and resources. Figure 11 (page 19) shows that 88% of respondents felt that instant access to reports would prevent unnecessarily re-reporting of images.

I only rarely get to see external reports (perhaps 1% of the time). We routinely re-report every image that gets sent to us, crazy but true. Our clinicians expect this. But we rarely get to see why the external scan was done or the report. It is a huge waste of time (usually), and the external images take up 50% of our PACS storage. (Clinical radiologist, London)

Repeat imaging

When external images and reports exist but are not available, patients may need to be re-scanned. In some cases this may be harmful for the patient. Some survey respondents mentioned the pressures NHS trusts faced in not breaching waiting-list targets for treating patients. Rather than holding back for external images to come through, patients are instead re-scanned so that an informed decision can be made about their treatment. Unnecessary repeat imaging, as well as re-reporting of images, represents a duplication of work for a financially constrained NHS and a workforce that is already stretched to full capacity. Figure 12 (below) shows that 95% of respondents agreed that instant access to external images and reports would prevent wastage of clinicians’ time and 88% agreed that it would reduce healthcare costs in caring for patients.

The trust is penalised for breaching two-week waiting targets when waiting for availability of external images, so the patients often simply get rescanned. This is not appropriate and wastes money and time, etc. (Clinical radiologist, South East England)

**Figure 12.** Percentage of respondents agreeing that healthcare costs would be reduced and wastage of clinicians’ time prevented if they had instant access to external images and/or reports

<table>
<thead>
<tr>
<th></th>
<th>Strongly or somewhat disagree %</th>
<th>Somewhat agree %</th>
<th>Strongly agree %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce healthcare costs in caring for patient</td>
<td>12%</td>
<td>38%</td>
<td>50%</td>
</tr>
<tr>
<td>Prevent wastage of clinicians’ time</td>
<td>5%</td>
<td>23%</td>
<td>72%</td>
</tr>
</tbody>
</table>
Awareness of existing images and reports

Inadequate systems and procedures to share information between (and in some cases within) trusts and health boards quite often mean that clinicians are unaware that images and reports of patients have already been produced. If clinicians were aware, a request for this information could be made to the organisation that produced it. Survey respondents highlighted this problem and how it could lead to wasteful and unnecessary duplication of imaging and investigations.

There is a particular problem that we are often (usually) not informed of the existence or location of previous scans so have to search for them manually. There have certainly been instances where a near-miss occurred because of having different systems and of more frequent examples of patients having unnecessary examinations requested. Sometimes these are picked up early, sometimes the examination is appointed (but picked up before scanning thus wasting a slot and annoying the patient) and occasionally examinations are being repeated unnecessarily.

(Clinical radiologist, Northern Ireland)

Multidisciplinary team meetings

The MDTM is an integral process in the management of cancer patients. Clinical radiologists and clinical oncologists, together with other clinical experts, are important members of the MDTM. Access to previous images and reports for patients before their cases are discussed at the MDTM should be the norm. The RCR recommends that there should be prior review of all images and reports by an individual with appropriate expertise and with sufficient time to provide an unhurried professional and robust opinion for the MDTM. Instant access to external images and reports would improve patients’ passage through the MDTM process according to survey respondents (Figure 13, below).

Figure 13. Percentage of respondents agreeing that patients’ passage through the MDTM process would be improved and time for decision-making at MDTMs would be reduced if instant access to external images and reports was available

Obtaining previous images and reports from external organisations for MDTMs is a problem for many respondents. When this information is not available or is incomplete, it was felt that it could:

- Affect the preparation for MDTMs
- Affect the decision-making process
- Lead to delays in processes and time wastage
- Lead to postponement of cases being discussed.
Preparation for MDTMs

An opinion provided by a radiologist may be significantly more accurate and complete should he or she be given adequate time before an MDTM to review prior imaging and reports. However, the experience for many of the survey respondents was that external images and reports were often not made available until the day of the MDTM, allowing little chance for adequate preparation. Respondents also had to be accommodating when external images did arrive which often means preparation for MDTMs undertaken in their own (that is, unpaid) time.

I have personally been rebuked by management of the cancer care division for asking that external reports and images be retrieved by the MDTM co-ordinators prior to the MDTM. Apparently this is an excessive demand on admin time and regarded as a radiology duty. Since we get the MDTM list the afternoon prior to the meeting, this would require approximately three to four hours to search and load the data during the evening before the MDTM, in my own time. Preparation time is not job planned. Some of my colleagues actually do this … It is a waste of medical time but we are in the tricky position of being expected to give an opinion and being held responsible for timely turnaround without the time to find all the data in advance.

(Clinical radiologist, South Central England)

MDTM decision-making process

The decision-making processes of MDTMs can be affected by either the non-availability of external images and reports or limited access in viewing these images on local PACS during meetings. Decisions can be delayed or, when made, compromised due to incomplete information being made available.

I know of many instances whereby patient care is determined by opinions at the ‘specialist centre’ at the ‘specialist’ MDTM on the basis of limited web-browser access to images. Poor quality decisions are commonly made. It is very common to come across cases where an improved report could have been generated by reviewing images on a different PACS but that had not been done because it is not easy.

(Clinical radiologist, North West England)

Process delays and time wastage

One of the main complaints of clinicians is the time taken to access and load images for viewing during MDTMs. Meetings are considerably slowed while waiting for images to load and this is a waste of clinicians’ time. Most MDTMs are scheduled for 60–90 minutes and consider several cancer cases. Delays in processes can be a frustrating experience for clinicians, lead to meetings overrunning and/or patients not being adequately reviewed.

The main issue is going into external PACS systems multiple times (can be up to ten times) to run ‘add ins’. It used to happen occasionally but now very common. It can take 10–15 minutes to access an image which is very frustrating and in MDTMs a massive waste of a lot of people’s time.

(Clinical oncologist, North West England)

Postponement of patient cases

Non-availability of external images and reports often leads to a postponement in discussing a patient’s case until a future MDTM. Relisting a case for a future MDTM could be deemed as extra work for clinicians and cause some anxiety for patients awaiting the outcome of their case discussion. However, clinicians should not feel obliged to provide an opinion during MDTMs if necessary information is not available, as this would not be in the best interest of patients.

The problem as I have encountered it is that admin staff are usually able to import the images but not always the accompanying report. This is sometimes due to an IT problem or the fact that the scan has not been reported yet. This is particularly an issue at MDTMs when patient-management decisions can be delayed if the patient has to be deferred due to lack of report. The RCR’s advice is that best practice at MDTMs is for the report to be available. I think instant access to imaging and reports across a regional network would be helpful and save a lot of time.

(Clinical radiologist, Yorkshire and Humber)

MDTM co-ordinators

Getting images and reports ready in time for meetings is the responsibility of MDTM co-ordinators. Many survey respondents recognised the multiple administrative tasks required in ensuring external images and reports are requested and made ready in time. When MDTM co-ordinators are not available this can be problematic for all concerned.

Have robust PACS but these PACS systems are getting old and slow. Not bad to be honest when compared ten years ago but this not solely PACS improvement but better work by MDTM co-ordinators, who ensure image import for patients from hospitals with ‘troublesome’ PACS.

(Clinical radiologist, North West England)

The service we get depends on our MDTM co-ordinators who spend hours and hours getting everything ready. That is a trust cost, not a radiology cost.

(Clinical radiologist, London)
6. Impact on patients

Concerns for patients

The majority of survey respondents (81%) were somewhat or extremely concerned about the length of time it took to access external images and reports in the context of providing patient care. Nationally, there is only a small difference in the proportion of clinical oncologists (76%) and clinical radiologists (82%) reporting these concerns (Figure 14, below).

Figure 14. Percentage (and number) of clinical oncologists and radiologists concerned about the length of time needed to access external images and reports in the context of providing patient care by specialty

![Bar chart showing percentage of concern among clinical oncologists, radiologists, and all respondents](chart)

Where differences are notable is when the results are examined by UK country/region (Figure 15, page 24). In the East Midlands and West Midlands nearly all respondents (>95%) were concerned, compared to 65% in Northern Ireland and 46% in Scotland. Only four out of 98 respondents in the East and West Midlands combined were not at all concerned compared to 59 of 109 in Scotland. The extent of these regional differences is similar to those found when respondents were asked about the difficulties in searching for, retrieving and accessing external images and reports (see Figures 1 and 9, page 7 and page 13). In regard to these areas of difficulties and the concern for patients, Scotland ranks favourably compared to the other UK countries/regions. The availability of the Scottish National PACS is a determining factor.

The exact nature of these concerns for patients emerged from the free-text comments made by those responding to the survey. Lack of access to images and reports creates clinical risks, has adverse effects on patient care, results in the recall of patients, delays treatment of cancer and impacts on out-of-hours and urgent and emergency care.
Clinical risks and adverse effects

Respondents suggested that inadequate systems and processes in sharing information could create clinical risks. The absence or difficulties in getting hold of, existing images and reports could lead to repeat procedures for patients on a routine basis which could be harmful. Inadequate systems may lead to errors in uploading or sending incorrect images for patients, erroneous decision-making by clinicians and so on.

The IEP system relies on organisations that have staff available to respond and download images. The response time is very variable. Patients have to be re-booked in clinics or re-imaged (Ionising Radiation Medical Exposure Regulations?) and we usually allow 14 days. This is stressful for them and wasteful for us all.
(Clinical radiologist, South East England)

As a tertiary centre we may be unaware of external centre imaging at the point of request receipt. The patient then has an unnecessary repeat examination (and repeat unnecessary radiation exposure) – very bad – should be reportable if we knew about it.
(Clinical radiologist, Wales)

Re-call of patients

Breast radiologists in particular highlighted the need to recall patients for further assessment and investigations as a consequence of images not being made available. These recalls were deemed to be unnecessary and avoidable for the patient had their images been made promptly available.

I work in breast screening. Due to tight turnaround times (targets) we may recall someone for assessment rather than wait for old images to arrive. The lack of timely access to previous mammograms can significantly affect the pathway.
(Clinical radiologist, London)

Delays in cancer treatment

As already highlighted, when images and reports are not made readily available this often results in a delay in the MDTM process and subsequently in the treatment of patients. Radiotherapy and other types of treatment for cancer patients are particularly prone to delay due to a lack of access to this information. The delay could be a matter of a few hours, days or, in some cases, several weeks.
More serious problems have occurred, for example, a delay in orchidectomy when images of a testicular tumour were not available for four weeks from an external provider.
(Clinical radiologist, South West England)

There is a time delay between when PACS admin or radiotherapy admin state they have made the request for transfer and when images are available (they state there is a downloading/uploading queuing system) which can delay radiotherapy planning if colleagues are covering and only working at the radiotherapy centre on certain days. Time delays can occur when awaiting neurosurgical opinion at another centre, before deciding to transfer to my centre for cord compression.
(Clinical oncologist, East of England)

Out-of-hours care

Non-automated or semi-automated systems and processes that require manual input in sending and accessing radiology images and reports are dependent on the availability of administrative staff. Out of hours (that is, outside 8:00 am to 6:30 pm, Monday to Friday) is when administrators are not normally at work. This has implications when patients attend or are transferred to a hospital for medical care in the evening, at night, during the weekend or on bank holidays, and clinicians (not just radiologists or clinical oncologist) require access to previous images and reports. Without this information, clinical decision-making and treatment is sub-optimal. Alternatively, patient care is delayed. The RCR recognises that administrators are essential in supporting clinicians in delivering comprehensive seven-day services as envisaged by the NHS.10 Currently, this support is not forthcoming in many trusts and health boards as the following survey respondents testify.

Working in a cancer centre, I need access to scans and reports from surrounding units. The only reliable and seamless link (not requiring admin input) is for neurology and neurosurgery, and is not available for other sites. It is impossible at weekends, when admin staff are not on duty, to access images for patients transferred for radiotherapy for spinal cord compression – a clinical risk.
(Clinical oncologist, South Central England)

Sending images and reports during working hours is reasonably easily achieved by delegating the job to a radiographer or administrator, but it is a nightmare during OOH if we come across life-threatening or unexpected significant pathology that needs management in a different health board or organisation when image and report transfer is the first step needed. The only practical solution to this is to enable consultant radiologists to send images and reports directly from their workstation. This will save time and effort and definitely prevent avoidable delays in patient management, especially in emergency situations.
(Clinical radiologist, Wales)

Urgent and emergency care

Patients transferred to a hospital for urgent or emergency care out of hours are particularly at risk from the problems health service providers have in sharing images and reports. In an emergency situation, immediate or timely access to this information is often essential. When this information is not available clinicians may need to track it down (sometimes without success) or initiate a re-scanning of the patient. Both of these actions introduce a delay in the treatment of patients.

Problems at weekend when imaging staff and physicists are not available. Problems with [named trust] and [named hospital] and in particular a spinal cord compression patient. Scans done in [named hospital] then patient transferred. No images available and three hours spent phoning technicians. The images had been sent to the neuro hospital but they were not allowed to be forwarded due to trust policies and confidentiality. This is despite me calling two consultants and several IT people at home. Eventually the MRI was repeated but not at our hospital. Required transfer of the patient and admission elsewhere for scan then transfer back. Total delay was over 12 hours.
(Clinical oncologist, North West England)

Overall impact on patient care

The concerns for patients expressed by respondents in the free-text comments are also reflected in the quantitative data collected through the survey. When asked, 53% of respondents stated that there has been at least one instance where patient care has suffered in the past 12 months as a result of external images and reports not being made available (Figure 16, page 26). The majority of these respondents have seen patient care suffer on several occasions.
A similar proportion of clinical oncologists (54%) and radiologists (53%) reported that patient care had suffered once or more in the past 12 months. There were more pronounced differences when examining the results by UK country/region. In Wales, just over three-quarters of respondents, compared to just over one-third in Scotland and Northern Ireland, fell into this category (Figure 17, page 27). Scotland, Northern Ireland and North West England reported fewer instances of patient care suffering compared to other UK regions.
Figure 17. Percentage of respondents reporting one or more than one instance of patient care suffering in the past 12 months as a result of external images and reports not being made available by UK country/region.
7. Areas of good practice

The survey identified areas of good practice, conceptually and geographically, in the sharing of radiology images and reports among health service providers. The following reflects the views and suggestions of survey respondents in setting out the basis of a conceptual framework to enable the sharing of information among providers and where in the UK successful systems of information sharing have been introduced.

Areas of good practice – conceptual

**Balance patient confidentiality with the clinical benefits of sharing information**

The requirement to protect patient confidentiality must be balanced against the clinical benefit of sharing images for the wellbeing of patients. Each trust will have a Caldicott Guardian to advise where this line should be drawn. Clearly a variety of interpretations exist and a formal statement within local protocols should make clear that consent will include sharing of images across the clinical team, which may be based in different locations and institutions.

**Facilitate co-operation and collaboration among health service providers**

Good practice in the sharing of images and reports is mainly driven by technology. However, just as important is the willingness of health service providers to co-operate and collaborate with one another. A good relationship between neighbouring providers, as well as a technological solution, is the basis for developing a successful system of sharing information. This was suggested by one of the survey respondents:

Large IT projects are hard to oversee and the national spine seems a huge project to try and resurrect. Data sharing within organisations is hard and sharing between organisations is even harder. I believe that the answer is local networks where people know one another and provide support so that when help or co-operation is needed there is not a huge amount of resistance. I think the answer lies in us looking at human behaviour (our own), not technology. It is way harder than trying to design a technological answer, but just looking at IT never actually addresses the problem.

(Clinical radiologist, Yorkshire and Humber)

Areas of good practice – geographical

Lack of integration and incompatibility of existing information systems, as described earlier in this report, have led to many survey respondents calling for a single or unified system, implemented regionally or nationally. Suggestions include a single or unified PACS for all hospitals, covering both the NHS and independent sectors, accessed via a central network (or spine). In Scotland, North West England and South West England where such systems have been or are in the process of being successfully implemented, survey respondents have welcomed the development. However, these systems are not perfect and respondents often saw some scope for improvement.

**Scottish national PACS**

The system connects around 40 hospitals in Scotland using vendor neutral archive technology. The PACS integrates with the national RIS archive of digital radiology images and reports shared across NHS Scotland.

I work as a clinical oncologist in Scotland. We have a fantastic national PACS system. It may be that my radiology colleagues have trouble with this and I am sure they are overworked in terms of reporting. Nonetheless, they give us a great service. There are only ever problems when people get imaging in the private hospital, which thankfully is rare. Although far from perfect, the unified system gives great access to images both at MDTM, in clinic and at radiotherapy planning. This can be a nightmare in a fragmented, increasingly privatised system as I previously experienced in New Zealand. I suspect the situation is different in England.

(Clinical oncologist, Scotland)
North West England PACS Portal

A system has been developed allowing a large number of NHS providers to seamlessly share radiology images and reports wherever they originated in the region.

In the region I work in we are lucky in that, compared to other areas of the country, we have instant access to radiology reports on the RIS for imaging done in the majority of other NHS trusts in our region and are able to review imaging from most of these trusts on a PACS web browser. This is extremely useful, particularly as many patients will have had their relevant previous scan at another hospital in the region and also reduces unnecessary scans at the time of vetting as sometimes clinicians are unaware of recent duplicate investigations in other trusts. There are, however, a minority of hospitals in our region for which we do not have access to radiology reports through our RIS and for which we are not able to access their images on the PACS web browser (as well as all the private hospitals). In these situations it is firstly difficult to know what investigations the patient has previously had and also has delays in importing the relevant previous scans to be able to compare or for MDTM discussion.

(Clinical radiologist, North West England)

South West England PACS consortium

A new PACS was implemented in 2013 for a consortium of five NHS acute trusts in Devon and Cornwall. Survey respondents working in these trusts have enthusiastically welcomed the new system.

We have a good image sharing system for the five Peninsula trusts in Devon and Cornwall. This is a massively useful resource, used many times per day and has allowed networked out-of-hours reporting. It is the most important and valuable thing to happen in radiology since PACS itself. Outside of this region, it can be a real problem accessing other images, and unless we know when and exactly where they have been performed, we cannot get them at all.

(Clinical radiologist, South West England)
References


10. www.rcr.ac.uk/posts/rcr-response-achieving-seven-day-care-nhs (last accessed 27/05/2016)