

National Strategy for Radiology Image and Report Sharing

A paper prepared by the Information
Technology Sub-Committee of The Royal
College of Radiologists

Picture archiving and communications systems (PACS) have been implemented throughout the UK though the pattern of the roll-out has differed between England and the devolved nations. The process has been largely successful in individual hospitals but has resulted in isolated local PACS with poor communication between systems in different hospitals, particularly in England and Wales. Time-consuming manual processes such as DICOM Push, remote web access and CD transfer with encryption for non-emergency patients are required to get access to images and reports which were performed and issued in other NHS trusts. What follows is primarily of relevance to NHS trusts in England, but these issues may also be of significance in other parts of the UK.

When local service providers (LSPs) were appointed to deliver the National Program for IT (NPfIT) in 2001–02, the contract was for one year of local PACS storage with additional archiving to Central Data Stores (CDS) at a cost of £35 million. NHS trusts were led to believe that these CDS would be pivotal to automatic image and report sharing. It subsequently came to light that radiology image and report sharing was not in fact a contractual requirement for LSPs. Trusts with existing systems did not replace their PACS with an LSP provided solution as it soon became clear they did not provide significant additional benefits. This has resulted in a multi-vendor PACS environment (for example, in London, 21 trusts have an LSP PACS whereas 16 trusts have pre-existing systems).

Other weaknesses in the National Programme to date include:

1. A failure to realise the importance of radiology information systems (RIS), and the importance of file sharing that integrated both reports and images
2. The creation of artificial LSP Cluster boundaries that limited information sharing
3. An absence of data sharing standards such as those developed by the Integrating Healthcare Enterprise (IHE) initiative or Health Level 7 (HL7)
4. A lack of a clear long-term strategy on how radiology reports and images are to be integrated into the electronic patient record.

Clinical and business drivers for image and report sharing

1. Patients and clinicians recognise that having access to the entire imaging history improves clinical management and patient care.
2. Radiologists recognise having access to the entire imaging history improves report accuracy.
3. Current image and report sharing practices using DICOM push, physical transfer of CDs or DVDs with encryption result in duplication of images, require manual processes and are associated with patient safety issues as well as issues of clinical data protection and medico-legal risk. They are inefficient and expensive, especially when compared to the efficiency and utility of data sharing solutions already available and described below.
4. If the current plans for cancer/cardiac/stroke services are to be realised formal networks with clear lines of interhospital referral will be necessary. A seamless automated process for image and report sharing between all sites in a network will be essential.

Defining the clinical requirements

The Royal College of Radiologists (RCR) has worked with Connecting for Health (CFH) to produce a validated list of clinical requirements for data sharing in 2007 (*NPfIT-PAC-DES-0198_v1_0_-PACS_Clinical Imaging Data Sharing Requirements.doc*)

To date, these requirements remain largely unmet, in summary.

1. Access to the entire patient's imaging history from anywhere in the NHS at the point of clinical care (reporting of radiology exam/assessment in a clinic/ward/GP surgery) is vital for improved patient safety and efficient care.
2. The imaging history should be accessible from the opening page of the software used by radiologists or non-radiologist clinicians at the time of reporting/review.
3. Other clinical information (pathology reports/clinical letters/discharge summaries) should be easily accessible to radiologists.
4. Ideally non-radiologist doctors should be able to access the whole of the electronic patient record (EPR), including the imaging and reports using a single user name and password.

5. The system needs to support the use of the NHS number as a unique identifier, and the use of linked local hospital identifiers at the point of care until the use of the NHS number becomes universal.
6. Radiology reports and images need to be incorporated into the care records system, and be available on hospital EPR and GP systems automatically.

Standards

It would not seem sensible to reinvent standards that already exist and work well. Therefore, the successful implementation of a data-sharing strategy which will work and be cost-effective for image and report sharing should adhere to the following principles.

1. Use of vendor agnostic open standards such as those developed by IHE or Health Level 7 (HL7). These allow for interoperability between different RIS/PACS systems. The use of non-standard proprietary interfaces/single supplier monopolies is likely to be expensive in the long term.
2. Image and report-sharing methodologies used should be completely automated.
3. Many PACS suppliers are global and provide solutions internationally, as they move away from proprietary data objects and private tags. The UK should also endorse such open systems.
4. The existing international standard for providing an automated PACS image and report sharing is XDS-I (Cross Enterprise Document Sharing for Imaging) from IHE. This is part of the wider XDS standard that can be used for sharing of clinical documents such as clinical letters, discharge summaries, radiology reports and pathology reports.

Successful adoption of XDS and XDS-I requires the following:

- a. A national XDS-Registry to store the meta data so that it is possible to tag where all exams performed in the NHS are located
- b. All local PACS solutions need to conform to XDS-I Standards
- c. PACS display software displays XDS-I information appropriately from a clinical perspective
- d. All patient information systems, including RIS, EPR, GP systems, pathology systems etc, conform to XDS.

SUMMARY

1. Radiology image and report sharing is a vital component of patient safety – both in image interpretation and from the clinical perspectives of Choose and Book and networked services.
2. Adoption of international open standards of interoperability, such as XDS and XDS-I, is a cost-effective solution.
3. The methodology for information sharing needs to be completely automated, using a single log-in into one clinical system. However, access to all relevant clinical information which may reside in multiple clinical systems must be available.
4. Front end user interface (PACS and RIS for radiologists, EPR for hospital doctors and GP systems) needs to have the ability to automatically display clinical information from multiple clinical systems, easily and efficiently.

The Royal College of Radiologists looks forward to the challenge of shaping the next generation of computer systems for the benefit and safety of patients, optimum efficiency and productivity.

Citation details:

The Royal College of Radiologists. *National Strategy for Radiology Image and Report Sharing*. London: The Royal College of Radiologists, 2009.

Ref No. BFCR(09)6 © The Royal College of Radiologists, March 2009

For permission to reproduce any of the content contained herein, please email: permissions@rcr.ac.uk

This material has been produced by The Royal College of Radiologists (RCR) for use internally within the National Health Service in the United Kingdom. It is provided for use by appropriately qualified professionals, and the making of any decision regarding the applicability and suitability of the material in any particular circumstance is subject to the user's professional judgement.

While every reasonable care has been taken to ensure the accuracy of the material, RCR cannot accept any responsibility for any action taken, or not taken, on the basis of it. As publisher, RCR shall not be liable to any person for any loss or damage, which may arise from the use of any of the material. The RCR does not exclude or limit liability for death or personal injury to the extent only that the same arises as a result of the negligence of RCR, its employees, Officers, members and Fellows, or any other person contributing to the formulation of the material.