



Complete case notes & the enhanced patient experience

Beyond PACS:
the advantages of vendor-neutral image archiving in the pursuit of the single patient record

A SynApps executive paper



Introduction: Care standards & the single view of the patient

The Holy Grail for healthcare is a point when services can be provided seamlessly and with continuity across any combination of service providers - from Acute and Mental Health Trusts to community GP practices, pop-up clinics and mobile caregivers. Irrespective of whether the patient is registered locally or has made an appointment, the clinician and supporting staff should have secure yet easy access to the individual's full case history. That means the very latest consultant notes, prescription details and results of any tests, including X-rays and other images - enabling greater patient safety and ultimately better patient outcomes.

Health Secretary Jeremy Hunt recently conceded that the NHS will only ever be able to deliver world-class care once it has world-class information systems. He has promised that by 2015 British citizens will have online access to their health records, and that by 2018 all crucial health information should be available online. This will create a situation where patients feel more involved in decisions made about their own health, and where the various professionals involved in a single person's care are able to collaborate and share pertinent information - readily and securely.

So far, attempts to deliver this vision have fallen short because of overly ambitious attempts by the Department of Health to dictate standards on a national basis. This has resulted in lengthy project cycles and unpalatable costs as healthcare organisations have been forced to comply with mandated systems from a restricted set of suppliers. Consequently Trusts have had their hands tied, and have had limited - if any - flexibility to prioritise their own unique local requirements.

Until now, that is.

New procurement options

Today, healthcare Trusts have a new opportunity to deliver a joined-up patient experience following the dismantling of the government's national IT initiative, Connecting for Health. Although individuals Trusts still need to adhere to open standards so that they can easily exchange patient medical records with other care providers, they now have more freedom to choose the IT companies they work with, the types of systems they implement, and the way in which they prioritise and tackle projects.

It is in this context that vendor-neutral archiving (VNA) has taken centre stage, as a means of providing digital access to medical images such as X-rays and MRI scans.

Currently, the standard way of holding these complex image files digitally is in a dedicated **Picture Archiving and Communications System (PACS)**. In future however Trusts will need to be able to do more than simply store and view these vital images electronically. To enhance their value, their contents need to be accessible in tandem with a patient's broader case notes to produce a complete electronic medical record - one that can be intelligently interrogated by any authorised physician anywhere in the country.

The following executive paper sets out the options open to trusts as they are given the opportunity to step outside of national NHS IT specifications, exploring the considerations and opportunities facing decision-makers as they align the possibilities with their own strategic requirements. Specifically it examines the role played by PACS, VNAs and enterprise content management in taking patient information sharing to the next level.

Combining patient data

Every NHS healthcare organisation is challenged with balancing two overriding strategic goals – a step change in productivity and cost-efficiency and the need to elevate the quality of patient care. Making comprehensive, accurate patient notes – **a complete 360-degree patient medical record, which is 100% up to date – readily available to anyone that needs them, at the time and point of need, is fundamental to achieving both of these goals.**

This in turn means that all content must be digitised, and that the content is dynamic and easily searchable to elicit the exact information required by the clinician or supporting member of staff to enable timely and reliable decision-making. In a mainstream business context would take an organisation into the realms of enterprise content management (ECM).

Such solutions allow content of different types and in different formats to be combined to create a 'single version of the truth' (in this case the definitive electronic medical record), which can be called up in a number of different ways according to the needs of the user. To achieve this, all content must be indexed intelligently, so that specific information can be pulled out, and viewed in chronological order or according to key words.

The role of PACS

A standard Picture Archiving and Communications System, as used currently to store digital medical images, does not support the above scenario, being to all intents and purposes a flat image-archiving system that does one thing very well.

A major limitation of PACS is that they are unable to exchange content with non-compatible systems both internally and at other Trusts, or certainly not in a way that is reliable. This means that, as they stand, PAC systems do not meet the government's criteria for national patient record sharing.

This has led to the development of 'vendor-neutral archives' - archiving systems that support the exchange of medical image content however and wherever it has been generated - storing and processing the images in a way that can be understood and exploited universally.

Although there are PACS vendors which claim that their systems are 'vendor neutral', or that they qualify as VNAs, the reality is that they do not reliably support content from other branded systems. This is due to differences in the way alternative systems describe or 'tag' their contents. The danger when transferring electronic records of these images from one PACS to another is that vital, assigned information could be distorted or lost - reducing the file's value and increasing the risk to the patient.

There are other limitations to PACS-based VNAs. Ultimately these systems have been designed purely to hold digital X-rays and medical scans in electronic form (ie as DICOM files), so that these can be called up and consulted through a compatible viewer. Their value ends there. In this sense, their contribution to broader electronic medical record initiatives, remote notes-sharing and mobile healthcare is limited. To all intents and purposes PAC systems are another silo – a separate source of content that must be blended with other resources to form a complete patient file.

From PACS to extended enterprise content management

Although it is unlikely that a trust would want to decommission a perfectly good (and paid-for) PACS, there is a strong argument for being able to add a new dimension to medical images. To expand the usefulness of a PACS, trusts need to be able to incorporate these systems within a broader unified medical records/cross-document sharing strategy, where different forms of content – DICOM (digital medical image) files and non-DICOM patient information – can be combined. This is essential if wider plans include delivery of medical records to mobile devices, for example enabling healthcare professionals to view a patient's scan or x-rays spontaneously at their bedside, during a clinic session or out in the community.

Taking a broader enterprise content management (ECM) approach to patient data has additional benefits too, aligned to other priorities on a trust's agenda. These include retention management, security and scalability - facilities which are inherent within an ECM-based technology platform. The legal requirement to retain patient files for X number of years can create a cumbersome storage requirement. This demands intelligence in the way that content is stored, for example enabling old records to be consigned to cheaper storage media if they don't need to be as readily accessible online. Also of value is the option to store images at different resolutions, to save on storage capacity or network bandwidth if larger file sizes/highly detailed images aren't needed.

What to look for in a vendor-neutral archive (VNA)

Where the goal with a VNA is to achieve something greater than the digital storage of medical images, and particularly as trusts strive to meet their responsibilities on fuller patient information sharing, **it is vital that issues of platform compatibility are addressed. A true vendor-neutral archive, which has been designed from the ground up to support multi-platform content and fuller ECM functionality, comes into its own here.**

The source-agnostic capabilities of a VNA will be determined by the way the system treats the tagging/headers/indexing of digital image content coming from external systems. For maximum flexibility and reliability the system will preserve the original qualities (tags and other indexing information) so that these can be restored at any point, while 'normalising' any platform-specific differences so that the VNA's repository can manage and interpret all documents in a uniform way - yet with access to all of the inherent information.

By decoupling the content from a given technology vendor and its particular way of doing things, trusts will have much more freedom and flexibility to change their archive system supplier at any point. Currently, many healthcare organisations are spending a fortune each year upgrading their storage systems because they are locked in to one of a handful of government-approved IT providers. Now that these supplier requirements have been relaxed, giving trusts access to a broader range of platform vendors listed on the NHS framework, trusts have an opportunity to look further afield with a view to bringing these costs down. There are currently 13 vendors eligible to provide vendor-neutral archive solutions to the NHS.

At this point, trusts have an opportunity to decide how far to take the platform – ie whether to extend it so that it encompasses non-DICOM patient information in addition to medical images. Ultimately, this is an important requirement too – ie the ability to share patient information in its entirety with other hospitals and healthcare providers - so it makes sense to try to address both challenges through economies of scale. By getting the underlying platform right (choosing one based on an enterprise content management architecture), a trust will have maximum flexibility in the way it manages all sorts of data and makes this available – for example via a browser-based clinical portal.

The optimum solution will be one that **allows trusts to migrate and develop their solutions at their own pace**, as dictated by their own needs and available funds.

In time, and as budget allows, they will also have the option to add a range of other medical applications that further enhance and exploit this content in value-added ways. This might include enabling mobile content access; performing advanced analysis of trends in patient conditions; or managing workflow more proactively – for example by prompting clinical staff to take next actions.

Questions to ask

To maximise the possibilities, trusts should consider the following when choosing a VNA solution:

- 1 How independent is the system really?
- 2 Can it handle content from a variety of PACS systems/modalities?
- 3 Does it work with any brand of storage system?
- 4 To what extent does it support true cross-document sharing (XDS), so that via a clinical portal, any type of patient content (both DICOM and non-DICOM) can be called up, viewed and manipulated, regardless of where and in what format it originated?
- 5 What are the system's image management capabilities, and do these extend to content generated by other systems?
- 6 Can lower-resolution versions of images be created easily to enable quick browsing by a GP, for example?
- 7 To what extent does the platform support other NHS priorities including patient record retention requirements, and associated information lifecycle management?
- 8 What range of storage options are supported – for example the ability to vary the medium used according to whether the patient record is live or closed?
- 9 What is the scope to use the VNA platform more broadly, for example as part of a trust-wide electronic patient record management system/clinical portal/mobile access strategy?
- 10 What is involved in implementing the VNA solution? Is a full-scale migration required, or is there a quicker/more affordable way to gain access to the benefits?

Conclusion

The demise of Connecting for Health, and the recognition by the government that the NHS's world standing depends on its ability to adopt more dynamic and boundary-less information exchange, has created a new opportunity for healthcare trusts to take back control over their IT initiatives and to drive change in a way that matches their own needs.

Although additional budget is not forthcoming, all of these opportunities dovetail with trusts' needs to be more efficient, and to raise the standards of patient care. Approached thoughtfully, such projects have the scope to achieve these targets while paying for themselves through operational savings and productivity gains.

On one hand, trusts don't have a choice but to embrace VNAs as they are forced to deliver on more fluid patient information exchange; on the other, they have been given a new chance to make more flexible and self-interested choices about how they do this, which will be hugely liberating for trusts in the longer term.



About SynApps Solutions

Formed in 2003 by Documentum Services management team and senior consultants

Extensive experience in enterprise content management (ECM) and planning, delivery and support of large-scale infrastructures and applications

Products: ConXMail, ConXOffice, ConXSys, ConXLoader

Strategic partner:



Contact:

tel: **+44 (0)8702 405143**

email: **info@synapps-solutions.com**

www.synapps-solutions.com

