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Breaking Down Silos: Delivering True Clinical Value From a VNA



The vendor neutral archive offers one of the best opportunities to join together imaging and other valuable data from across diagnostic modalities, to the entire hospital and beyond. How can we ensure the underpinning technology works for everyone's needs? Sectra's Chris Scarisbrick explores.

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Why we need a VNA—joining up diagnostics across the enterprise

Imaging and valuable clinical intelligence generated by a multitude of diagnostic departments, ranging from radiology to pathology and everything in between, has traditionally sat in isolation on dozens of individual departmental systems, or even on paper. Even today rich sources of imaging generated in the diagnostic environment and elsewhere is stored on separate servers, USB sticks and CDs, hidden from those who can use it for the patient's benefit.

Clinical colleagues wanting to use this information in their diagnoses, have had to search to obtain it from the relevant department. But in reality, when data is held in isolation it often doesn't get used at all in the diagnostic process. Sometimes examinations will be repeated having been reordered by clinicians who are simply unaware the results already exist in a departmental system or filing cabinet, exposing the hospital to greater cost and patients to additional tests that they don't need. If we are to genuinely shift to patient centricity, we must ask if we are achieving true clinical value for the patient from our imaging and the technology that supports its effective dissemination. Departmental systems may still be needed to interrogate information, but they will rarely provide a robust storage solution required to allow information to follow the patient across the hospital.

With issues around security, interoperability and more, providing enterprise access to the full range of departmental systems that exist in the majority of hospitals is simply not feasible. But wherever you have a silo

of data, you have a problem for patient care.

There is an opportunity to make the VNA really work for everyone in the hospital to solve this challenge; to lift the archive out of department systems like the picture archiving and communication system (PACS) and up to the enterprise level. A VNA can be a central repository for all forms of diagnostic imaging data, as well as non-imaging data like blood results, so that hospitals only need to spend money on a single archive for all of the 'ologies', and so that valuable information can be shared from a single place to break down barriers between departments.

Sharing without creating challenges for users

Despite the huge potential, introducing VNAs has not always been the simplest of tasks and globally many problems have been encountered. Sometimes hospitals have solved IT department challenges and introduced new problems for users. A technical framework might solve cost and sharing issues for the entire enterprise, but if that hinders the working process of a radiologist, for example, then we are presented with a new dilemma that can't be allowed to happen.

Serving complex needs of multiple departments, disciplines and professionals with a single storage capability is not easy. But by identifying and fully understanding the requirements of varying users—both inside and outside of diagnostics—at the earliest opportunity, we can ensure clinical and diagnostic workflows are accounted for. Simply put we need to ensure that all users are able to draw on information in the VNA and use it in a way that they are accustomed to, whether that involves simply viewing information or much more intensive interrogation.

Can a VNA be all things to everyone?

For many frontline clinical users, relatively basic front-end functionality is needed to view images and gain necessary insights. For others working in specific diagnostic departments, much more complex functionality and granularity of detail is often needed to allow professionals to interact with images in a way necessary for effective examination. Many hospitals have tended to shift towards either one extreme of a best of breed approach to IT, where each department works within their own system, in-turn creating a raft of interoperability challenges; or there has been a move to a best of suites approach, where everything is procured from a single vendor, potentially solving integration challenges but pleasing no-one with endless compromise. A balance must be found to provide real clinical value from a VNA. Hospitals might take an 80/20 approach. In other words, they might ensure that the 80% of the hospital workflow works well within the VNA, and then look to integrate remaining speciality systems.

An open system with a good ability to integrate is also key. Standards can help, but with so many standards used, this alone will not solve the challenge. Imaging from various departments may not conform to the DICOM standard used in radiology. A VNA must be much more than a DICOM archive. It must stringently adhere to all standards and accept data from different departments in its native form without morphing it in any way whatsoever. It must remain compatible with specialised systems where required and be able to serve that data to the application layer that sits in departments that require unique functionality. A true VNA must be able to store the data, view it, allow it to be interrogated in departmental systems where necessary, feeding back results into the hospital's overarching architecture.

Linking information from the VNA back to the electronic patient record (EPR), is important for frontline clinical staff to know that diagnostic information exists, as is ensuring that clinicians are alerted with content notifications, directing them to a relevant user interface or a universal viewer. By doing this we don't alter the user experience, but the enterprise can make an investment in a single storage platform, a far more cost effective strategy than procuring multiple times over for multiple departments.

Expectations of a YouTube generation

Content must also be available at speed, a key challenge when diagnostic imaging means extremely large, complex files. Streaming a digital pathology image of up to a gigabyte in size, whilst drawing on computational functionality to display 3D images can cause significant performance problems. But a pathologist might only need to view 1% of an image. By using appropriate annotation tools, a 10MB section of an image can be streamed to the pathologist's workstation in seconds.

The same challenge holds true for video. Retrieving four hours of open heart surgery from a VNA would place high demands on a system. But a bookmarked 10 second area of interest found at half way through the video can be streamed to a clinician in moments. YouTube and other consumer technologies now set the benchmark and that is what clinicians demand in terms of performance.

Security and governance opportunities

For all the potential challenges of a VNA, a single storage architecture can provide robust security Risks of data corruption, or USB devices being left on public transport, can be eliminated or dramatically reduce. And safeguards can be embedded to restrict access where necessary—for example if imaging relates to abuse victims or contains sensitive material.

Understand users and follow the patient

Ultimately a VNA offers a huge opportunity to allow information to follow the patient. Hospitals must understand the workflows of its users to ensure the VNA meets their needs. This is about sharing information, whilst ensuring users can continue to deliver the best analyses and diagnoses for patients.

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