Find Your Path to Enterprise Imaging: A Guide to Realizing Optimal Value

Best practices for adopting an Enterprise Imaging strategy that meets the clinical needs and budget demands of your healthcare organization.

Hospitals and health systems are facing increased pressure to improve care quality, enhance the patient experience and reduce costs. As organizations increasingly look for ways to meet these goals, they may want to consider evaluating their medical imaging environment. Medical imaging brings unprecedented clarity and understanding to patient health and outcomes. However, these vital images often get trapped in departmental silos that are disconnected from the core clinical systems and don't make their way into electronic health records (EHRs). When this occurs, these images aren't available for clinicians at the point of care where crucial treatment decisions are made. This negatively impacts clinical workflow, care quality and patient outcomes while contributing to increased costs.

Enter Enterprise Imaging

Healthcare providers can address these issues by adopting an Enterprise Imaging strategy.

Many tend to define Enterprise Imaging by the technology it employs such as a Vendor Neutral Archive (VNA) an image viewer and an image-enabled EHR. However, it's really more of an approach. For example, the HIMSS-SIIM member workgroup defines Enterprise Imaging as a "set of strategies, initiatives and workflows implemented across a healthcare enterprise to consistently and optimally capture, index, manage, store, distribute, view, exchange and analyze all clinical imaging and multimedia content to enhance the electronic health record."[1] However, Enterprise Imaging is about more than just image-enabling the EHR; it's about image-enabling the entire enterprise.

In short, Enterprise Imaging consolidates imaging information throughout a healthcare enterprise — including images contained in Picture Archiving and Communications Systems (PACS), and other non-DICOM specialty archives — into a single, standards-based and vendor-neutral image repository that communicates seamlessly with all IT systems. This capability enables healthcare providers to capture, access, manage and view medical images both at the point of care and within various departments such as radiology. This significantly streamlines clinical workflows, enhances care decisions and ultimately improves patient care and outcomes.

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Creating an Enterprise Imaging strategy

With no single technology to meet all of an organization's needs, many struggle to develop and implement an effective Enterprise Imaging solution. A successful Enterprise Imaging strategy creates a framework to standardize and centralize images. It encompasses a wide array of resources and capabilities to meet service needs and workflow requirements across the organization. It's also built on a flexible foundation that can shift and grow as the enterprise's needs change. To meet these requirements, a four-part strategy, implemented in stages, is recommended to help organizations better prepare and experience greater success along their Enterprise Imaging journey. This four-part strategy consists of image acquisition, management, visualization and distribution.

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1. Acquisition – Capture and integrate all medical imaging content types including DICOM, XDS and non-DICOM with existing EHR, PACS and imaging archives using an image acquisition and management solution.

2. Management – Eliminate departmental silos and manage imaging content from all "-ologies" in a single repository with a VNA.

3. Visualization – Access and interact with medical images from anywhere with a zero-footprint enterprise viewing solution.

4. Distribution – Share images and data at the point of care through EHR-enabled image viewing capabilities, a health information exchange (HIE) and other resources.

Adopting the right technologies for a powerful solution

Implementing this four-part strategy requires a series of key technologies working in concert to centralize image management throughout the healthcare enterprise. These technologies include image capture and acquisition tools, a VNA and an enterprise image viewer.

Image Capture and Acquisition

Medical images are typically scattered throughout healthcare facilities, making image capture and acquisition difficult. Radiology and cardiology images are stored in PACS, while non-DICOM specialty images such as endoscopy video and dermatology photos are stored in isolated departmental systems; CD, DVD and tape media; and even on mobile devices. Therefore, implementing a true Enterprise Imaging infrastructure requires a comprehensive image acquisition solution to automatically capture, integrate and share documents and images across departments and from any EHR and PACS.

Vendor–Neutral Archive

A VNA eliminates data silos and provides centralized storage and standardized management of all medical content and images — regardless of their origin, native format or vendor orientation — making information readily available across the healthcare delivery spectrum. The VNA provides an essential foundation for delivering a comprehensive image-enabled view of the patient that is centralized, easily accessible and better supports care decisions.

Enterprise Viewing

In healthcare organizations today, medical images are all too often left out of the decision-making equation because it's either too time consuming to locate them or they simply can't be found. In fact, 35 percent of a clinician's time is wasted due to the lack of interoperable systems.[2]

With an enterprise viewer, digital image access is no longer confined to the department where the data originated. This platform enables clinicians to view any medical image, imaging report and related patient data in any format across the enterprise. Such a viewing solution may replace or coexist with a traditional PACS viewer and may be integrated with a VNA or EHR.

Achieving Organizational Support

So how does an organization get started? Many hospitals and healthcare systems find that a good way to gain organizational support for an Enterprise Imaging strategy is to start from a financial perspective. Separate data and PACS systems for departments across an organization often require technology and infrastructure updates to support them. In fact, it's not uncommon for radiology departments to request a new PACS system every few years. This new system requires underlying infrastructure changes to core clinical systems that are both time consuming and costly. Multiply that by 10 to 12 departments across a hospital or health system and it's easy to see how imaging costs can spin out of control. When organizations begin to delve into their overall imaging expenses, many key stakeholders, including the chief financial officer, will fully support an Enterprise Imaging strategy. Putting an Enterprise Imaging strategy in place can help curb departmental expenses and get overall organizational costs under control.

Armed with the financial data to create a business case for Enterprise Imaging and potential return-on-investment (ROI), makes it easier to promote this strategy throughout the senior leadership team to gain further buy-in and support from key decision makers. Getting support from high imaging utilizers such as radiology, cardiology and oncology can help as well. Once those support systems are in place, many organizations then form a governance committee to build a strategy that meets the hospital or health system's overall business goals and supports departmental workflow and clinical needs. This committee is often made up of clinical, administrative, operations and IT professionals that champion an enterprise strategy because they make technology, budget and clinical use decisions for the entire organization. This committee is also often involved in overseeing the implementation of the Enterprise Imaging strategy to ensure success.

Building a Roadmap to Implementation

When it comes to implementing an Enterprise Imaging strategy, the approach will be different for every hospital and health system depending on goals, budget, merger and acquisition status and other needs. Organizations who have been most successful have approached Enterprise Imaging as a journey; not necessarily something achievable in well-defined steps or by a certain deadline. Similar to implementing an EHR, it takes time to streamline imaging across an entire organization.

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Taking an inventory of all images across the organization is a critical first step along the path to Enterprise Imaging. The majority of images may reside in oncology, cardiology and radiology but most organizations are surprised to find how many images sit in other specialty departments such as wound care, gynecology, dermatology and the emergency room. The number of modalities, disconnected systems and other medical content scattered across the organization is often staggering. Armed with this information as well as an understanding of image viewing needs, the governance committee can begin to make decisions about how to best capture and manage image files.

After completing an inventory, establishing a VNA to store images going forward is an ideal first step. Data migration can occur immediately for the last 30 days or it can be staggered in stages going back as far as two years or more depending on the organization's goals. This also allows organizations to quickly make the switch to a VNA and experience some immediate success. Organizations who wait to get two years of data migrated before starting to use the VNA on a day-to-day basis may experience some frustration. It may also put them at risk for getting the strategy implemented if, during that time, they are acquired or acquire another hospital.

Additionally, it is most advantageous if the VNA sits in front of the PACS. This provides the ability to organize images and serve multiple departments and specialties through EHR and imaging analytics. When the VNA is in front it can serve as a router for various modalities. Later when a viewer is needed the organization can simply migrate away from PACS since images are already stored in the VNA.

While installing a VNA in front of a PACS is an ideal first entry point to an Enterprise Imaging infrastructure, it isn't always realistic for all health systems, depending on budget or resource constraints. In this case, there are several other viable Enterprise Imaging entry points that a healthcare provider can take.

For example, another potential Enterprise Imaging starting point may be to implement a mini VNA for non-DICOM images for a particular department. Other departments can be added in the future to move towards an enterprise-wide strategy.

Many organizations may also choose to implement an enterprise viewing software first to extend reference or non-diagnostic access and viewing to all clinicians across the enterprise. This strategy helps "image-enable" an EHR, making imaging data accessible through core clinical systems and provides clinicians with a complete view of a patient's imaging history at the point of care.

Another alternative is to take a departmental approach focusing on high utilizers first and implement an enterprise viewer, with interpretation and diagnostic capabilities, within radiology. This would make DICOM images stored in a PACS accessible and viewable remotely or via Internet, freeing radiologists and cardiologists from PACS/RIS workstations. This improves productivity, allows for teleradiology and telehealth and gives the organization a glimpse into the power of extending patient images outside of silos.

A hospital may also choose to use image connectivity solutions to import departmental specialty images not normally centralized into an existing VNA or PACS. For example, a healthcare facility may have GI video stored in a scope system, surgery video and images stored in an operating room system and dermatology images stored in yet another separate system. Using tools to identify and import these images from their existing departmental silos to centralized repositories is another crucial step toward Enterprise Imaging.

The key is to fully evaluate the imaging environment, identify the most pressing imaging-related clinical needs and determine where the organization can get the most ROI given its budget and goals.

If an organization isn't quite ready to take the full VNA step towards Enterprise Imaging but desires to do something, then any of these strategic alternatives are good places to start. The key is to fully evaluate the imaging environment, identify the most pressing imaging-related clinical needs and determine where the organization can get the most ROI given its budget and goals.

When it comes to Enterprise Imaging, the implementation strategies and possibilities are endless. If one of the highlighted strategies above doesn't meet an organization's needs, then chances are there is another that will. However, the most important part of the Enterprise Imaging journey is to start somewhere. As healthcare becomes more digitized and more specialties generate images and reports that need to be archived electronically, waiting only compounds the problem.

Realizing Value

By expanding the vision for medical imaging, adopting a broader strategy and implementing effective tools and technologies, organizations can make major strides toward true Enterprise Imaging and be well on their way to improving care quality and lowering costs.

Enterprise Imaging can help healthcare organizations optimize financial performance in a number of ways. Such is the case with Piedmont Healthcare. Piedmont took the ideal first step toward Enterprise Imaging by installing a VNA in front of its main PACS. Since implementing the VNA, Piedmont has saved more than $700,000 and expects an additional $2-3 million in savings as it moves additional PACS over to the Enterprise Imaging model. Like Piedmont, other organizations can benefit from improved financial performance as they experience reduced duplicate testing, lower hospital readmissions and increased workflow efficiency and clinical productivity.

The Enterprise Imaging model also helps improve patient outcomes by providing clinicians with a more complete view of the patient's health history and streamlining workflows for better point-of-care interactions.

Moving Forward

To be successful in today's patient-centered environment, hospitals and health systems need to find new ways to improve care quality, enhance the patient experience and lower costs. An Enterprise Imaging strategy provides an excellent opportunity for organizations to work towards those goals. By adopting an Enterprise Imaging strategy, healthcare providers can ensure medical images get into the hands of clinicians and other clinical stakeholders for more informed decision making. As a result, organizations can make significant strides towards improving care quality, enhancing the patient experience and reducing costs for years to come.

Learn more at Hyland.com/Healthcare »

Sources

1. A Foundation for Enterprise Imaging, HIMSS-SIIM Collaborative White Paper, May 2016, https://siim.org/ page/ himss_siim_white_pap.

2. The value of medical device interoperability, Westhealth Institute, March 2013.

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