



HYLAND HEALTHCARE | CUSTOMER SUCCESS STORY

UNC HEALTH CARE

By integrating enterprise imaging with its EMR, UNC Health Care eliminated PACS, facilitated image exchange and created a true longitudinal patient imaging record

As a HIMSS Stage 7 validated provider in inpatient, ambulatory and analytics, UNC Health Care is recognized as a national leader in healthcare information technology (IT). The provider, based in Chapel Hill, NC, has implemented an advanced and integrated electronic medical record (EMR) that serves as the core clinical system throughout its academic medical center, numerous affiliate hospitals and physician network.

UNC Health Care successfully merged and consolidated more than four separate record systems into a single, enterprise-wide EMR — achieving its “one patient, one chart” vision. Despite this success, the team quickly realized that an EMR implementation isn’t a destination, but instead a journey of continuous improvement.

PACS/EMR INTEGRATION PROVIDES LIMITED VISIBILITY, POOR USER EXPERIENCE

UNC Health Care’s enterprise EMR solved many problems. It created a master patient index, allowing clinicians throughout the system to view an identical and comprehensive list of health data associated with each patient under its care. It simplified IT management and maintenance. It even prevented patients from receiving multiple bills generated from the various EMR systems previously in use throughout its different locations. However, one thing it didn’t do was provide a thorough platform for accessing and viewing medical images — a critical element of a patient’s medical history.



SIZE

Includes UNC Hospitals and its provider network, the UNC School of Medicine and eleven affiliate hospitals and hospital systems across the state.

LOCATION

Chapel Hill, North Carolina

INTEGRATIONS

Acuo VNA
NilRead Universal Viewer



Portfolio simplification:

- ✓ Nine PACS eliminated
- ✓ Six additional PACS to be decommissioned
- ✓ Three reporting systems eliminated



Improved image sharing:

- ✓ CD/DVD image transport eliminated
- ✓ Physician consults accelerated
- ✓ Repeat imaging tests reduced

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Dr. Don Spencer
Chief Medical Informatics Officer
UNC Health Care

To achieve HIMSS Stage 7 recognition, UNC Health Care had image-enabled its EMR by linking its picture archiving and communications system (PACS) to the core clinical system. However, the health provider realized simply checking this box was insufficient.

“We had 32 radiology and cardiology PACS in use throughout our enterprise and were inheriting even more imaging systems through facility acquisition,” says Vineeta Khemani, Director of Information Services Division Architecture and Clinical Systems at UNC Health Care. “You could launch these multiple radiology and cardiology browsers from within our EMR, but the experience was inconsistent. It was both departmental- and facility-focused. As the patient moved from one location to another in our network, the longitudinal patient record, from an imaging perspective, was lacking. This is a gap we needed to address.”

Even though UNC Health Care had an integrated enterprise EMR, a provider still needed to burn medical images from a departmental PACS to a CD and DVD in order for those images to be shared with and viewed by a clinician in another UNC Health Care department or location. This was inconvenient and added unnecessary costs and time to the image review process.

Things got even more complicated when UNC Health Care ventured outside the core imaging areas of radiology and cardiology. Several specialty imaging systems (e.g. dermatology) were used and clinicians performed a significant number of point-of-care imaging procedures with no formalized structure or image retention policies being applied.

“The biggest complaint I received from physicians regarding our EMR was difficulty finding the healthcare information they needed using the media manager feature in the EMR software,” says Dr. Don Spencer, Chief Medical Informatics Officer at UNC Health Care. “This included the visible light images doctors started storing in the system. If the information you store isn’t organized in a way that physicians can easily find it, then it fails to be useful in informing clinical decisions. It can also lead to unnecessary repeat imaging studies.”

CLINICAL LEADERSHIP ENSURES PROPER ENTERPRISE IMAGING WORKFLOWS

UNC Health Care believes images are a crucial extension of the patient record and sought to provide its physicians with system-wide access to these assets, just as it had done with digital health data via its enterprise EMR deployment. It aimed to accomplish this goal by implementing a single clinical image repository and universal viewer that it would integrate with its EMR.

“We wanted to create a seamless image viewing experience for our physicians, so that it didn’t matter if a doctor was looking at a patient image in our community hospital or our main academic campus,” says Khemani. “Regardless of his or her location, we wanted that doctor to be able to view the same image, access the same toolset and retrieve the same longitudinal patient record.”

UNC Health Care established an enterprise imaging selection committee to make the crucial technology purchasing decisions. The committee was led by clinicians and supported by the IT department. In fact, the physician champion for enterprise imaging



within UNC Health Care was a radiologist. This made the difficult ask of changing the health system's current PACS environment easier for the radiology and cardiology departments to accept.

The enterprise imaging selection committee chose the Acuo vendor neutral archive (VNA) to serve as UNC Health Care's core image repository and the NilRead universal viewer, both by Hyland. UNC Health Care carried over many of the implementation governance policies that it had established for its enterprise EMR rollout and applied them to the enterprise imaging initiative.

For example, to expedite implementation, the health system ensured that most enterprise imaging decisions were made on the front lines and that only conflicts were escalated to the higher levels of the organization for resolution. Furthermore, an enterprise imaging governance subgroup was established to ensure all workflows made sense from a clinical perspective and that the EMR integrations added clinical value.

ENTERPRISE IMAGING SIMPLIFIES IT PORTFOLIO, ENHANCES CLINICAL COLLABORATION

UNC Health Care signed its enterprise imaging contract in September 2015 and began a phased 'Go-Live' in May 2016. During each Go-Live, the PACS was unplugged and the VNA was installed as the primary repository for all patient medical images. This included not just radiology and cardiology DICOM images from PACS, but visible light, point-of-care and a variety of other non-DICOM images from specialty departments throughout the health system. The new, non-proprietary repository and the universal viewer were then integrated with UNC

Health Care's enterprise EMR, providing clinicians with a complete view of a patient's entire image history from directly within this core clinical application.

In addition to providing access to images via the EMR, the new enterprise imaging solution offers a host of valuable information about the images as well. By hovering over image icons within the viewer, clinicians can see the type of study, when and where the image was captured and more. Additionally, with the universal viewer, images aren't just accessible via the EMR, but also via a mobile app for convenient and secure remote viewing.

Prior to the enterprise imaging initiative, medical images stored on the radiology equipment located at the ambulatory clinics were only available directly on those modalities and not accessible via the EMR. As for the dermatology photos, several of the clinics had attempted to use the EMR itself as a repository for these images. Images stored in this manner were difficult to locate and image quality suffered. With the VNA, image organization and quality has significantly improved.

UNC Health Care has also implemented the enterprise imaging solution in many of its point-of-care imaging areas and functional departments including ED, Trauma, ICU and surgery. Other point-of-care areas continue to be added.

Perhaps the biggest benefit of the enterprise imaging initiative has been the portfolio simplification. "Since 2016, we have eliminated nine PACS and three reporting systems, and we have six more planned for elimination in the coming months," says Khemani. "These are systems that we are migrating to the VNA and then shutting down. This not only results in hard cost savings, but also reduces annual support and enhancement costs."

Notable patient-centered benefits have also been attained as a result of the enterprise imaging solution. For example, the tight integration between the imaging system and the EMR means CDs and DVDs no longer need to be burned in order to share images from one UNC Health Care facility with another. Instead, images are electronically available enterprise-wide in near-real-time, which accelerates physician consults and reduces instances of unnecessary repeat imaging tests.

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Director of Information Services Division
Architecture and Clinical Systems
UNC Health Care

TELEMEDICINE, AI NEXT STOP ON THE ENTERPRISE IMAGING JOURNEY

While the gains UNC Health Care has enjoyed from its enterprise imaging deployment have been impressive, the healthcare system realizes that EMR and enterprise imaging optimization is an ongoing journey that doesn't stop with the initial rollout. As a result, UNC Health Care has several system enhancements planned going forward.

For example, the provider is adding cloud image exchange to its solution, partnering with neighboring providers Duke Health and Wake Forest Baptist to share patient images electronically via the cloud as opposed to exchanging them via CD or DVD. UNC Health Care is also investigating ways to leverage its enterprise imaging solution to support its telemedicine efforts.

The healthcare system is also looking to converge enterprise imaging with its enterprise content management (ECM) assets to create a longitudinal record that includes an even more comprehensive set of unstructured content. Finally, UNC Health Care is planning to use its enterprise imaging solution in conjunction with artificial intelligence (AI) and machine learning technologies to enable image reconstruction initiatives.

In the end, UNC Health Care realized that each patient's medical history is made up of much more than just the discrete data captured by an EMR. To truly create a longitudinal patient record, clinicians must be able to access documents, media, and perhaps most importantly, medical images.

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