IBM Watson Health™

WHITE PAPER

# Overcoming Medical Imaging Challenges in a Digital World

Contents



*Be careful what you wish for, you just might get it.* The phrase has become especially meaningful for those in the healthcare industry as technological advancements have brought many providers' digital dreams to life. Indeed, over the past several decades, the healthcare industry has moved a variety of processes from paper and film to computers and clouds.

Yet leaders are still looking for even greater value and efficiency from healthcare information technology. In fact, according to a *HIMSS Leadership Survey*, an overwhelming majority of healthcare executives (95%) view healthcare information technology "as a strategically critical tool to help healthcare organizations be successful . . . especially surrounding their patient care focused efforts." When asked to assess the criticality of health IT to the success of varied areas within their organization, respondents were most passionate about IT's support of the organization's patient-focused efforts. The top four areas cited — clinical integration, primary care provider efficiency, mandated quality metrics improvement, and care coordination — all focused on patient care issues and were deemed critical by at least two-thirds of all respondents.[1]

Caution should come into play as well. Healthcare organizations are discovering that while operating in an electronic environment accrues many advantages, it also presents new challenges over time. The continued push for greater digitization – while striving to achieve clinical, patient satisfaction, and financial results – often leads to myriad challenges. Nowhere is that more evident than in the medical imaging realm. As healthcare organizations increasingly leverage digital imaging innovations, they reap a variety of benefits but also struggle with challenges such as the need to deal with an ever-growing onslaught of imaging utilization demands; the difficulties associated with a fragmented IT infrastructure; and the drive to utilize technology to continually improve the quality of care. The upshot for healthcare organizations? They must confront the paradox of technological innovation – tremendous possibility accompanied by increased complexity.

## The devil is in the demand

The move to adopt new medical imaging technology is warranted as various studies have "linked the use of imaging examinations to longer life expectancy, declines in mortality, less need for exploratory surgery, fewer hospital admissions and shorter lengths of hospital stays."[2] But the subsequent demand for medical imaging is emerging as an unwieldly challenge for many healthcare organizations, considering the fact that hundreds of millions of exams are performed throughout the industry each year.

To keep up with this demand is no small feat. A study published in *Academic Radiology* illustrates how this spike in demand is making work life difficult for radiologists. The study examined the increased demand for radiology imaging at The Mayo Clinic in Rochester, Minn. The number of annual departmental cross-sectional images interpreted increased from just over 9 million in 1999 to more than 94 million in 2010 – a ten-fold increase. And, that had quite an effect on work demands, as the number of images requiring interpretation per minute of every workday per staff radiologist increased from 2.9 in 1999 to 16.1 in 2010. In fact, the demand means that radiologists need to interpret one image every three to four seconds just to keep up.[3]

Unfortunately, relief doesn't appear to be anywhere in sight. With an aging population, imaging demands are likely to become even more pressing. According to *ITN Online, Global Medical Imaging Trends,* the industry will need to cope with some 115 billion images by 2021, based on an annual growth rate of 5%. The challenge for healthcare organizations is to handle all of this imaging growth while simultaneously dealing with cost containment, quality of patient care, and data security.[4]

## Go big or go home?

Many healthcare organizations, however, are counting on the idea that there is power in numbers to better handle the imaging onslaught. In fact, the healthcare industry leads all other industries in terms of mergers and acquisitions – tallying $2.64 trillion worth of mergers, compared to $2.57 trillion for energy and power, $2.37 trillion for financial services and just $501 billion for retail.[5] In addition, 60% of hospitals are now part of a healthcare

According to ITN Online, Global Medical Imaging Trends, the industry will need to cope with some 115 billion images by 2021, based on an annual growth rate of 5%.

A study to better understand a patient's perspective on healthcare in the United States found that **one in five** of patients felt the quality of care was less than good.[8]

system. And, radiology groups are becoming larger, as there has been a 30% increase in the number of groups with 65 physicians or more.[6]

Such consolidation is intended to help organizations bring together both technical and workforce resources to deal with the more copious demands present in today's environment. The "implicit logic" of consolidation is "that by getting larger, hospitals and healthcare systems will generate scale and reduce operating cost while still delivering the same level of care," according to a report from PWC. The problem is that this consolidation frenzy is not producing the expected economies of scale.

According to PWC, healthcare systems comprising multiple facilities are not experiencing any scale effects. The study found no statistically significant correlation at the system level between bed capacity and cost per encounter across all four types of health systems that researchers considered. Not even for-profit, non-teaching systems, which typically pay close attention to finances, were able to show benefits from such consolidation.[7]

The unfortunate fact of the matter: While organizations are consolidating, their information systems – including their imaging systems – often stubbornly remain in silos. This means that healthcare organizations are dealing with:

- Decentralization of resources and expertise
- Lack of standardized processes
- Higher costs, associated with too many vendors
- Complex, and often ad hoc, workflows

Workflow challenges, in fact, are proving to be especially burdensome for radiologists. When chest x-rays are read on one system while mammograms are handled on another, for example, the disconnect makes it difficult for radiologists to physically complete their work, which could contribute to burnout. The discontinuity is especially disconcerting for those radiologists who, by nature, like to focus on one thing while working and don't do well with starts and stops.

### Is it ever good enough?

Besides the challenges related to image volume explosion and fragmented IT infrastructure, healthcare organizations are also struggling with

quality concerns. The need to improve quality, of course, weighs heavily on healthcare organizations. A study to better understand a patient's perspective on healthcare in the United States found that one in five patients felt the quality of care was less than good.[8] With such dissatisfaction providing a nudge, it's not surprising that quality concerns surrounding patient care and patient satisfaction accounted for the top two and three priorities of CIOs, according to a HIMSS study.[9] As such, the need to address quality is non-negotiable.

Multiple ways of looking at quality of care make it difficult to effectively measure how well health systems are doing and which types of 'quality' should take priority. Healthcare organizations, for example, are finding that they need to address quality in both an objective and subjective manner. The need to report on hard measures such as low report turnaround time and clinical outcomes has never been greater. With value-based care initiatives such as the Medication Authorization and Chip Reauthorization Act (MACRA)/Merit-Based Incentive Payment System (MIPS) coming into play, reporting on such quality measures could even have a potential impact on financial reimbursements.

At the same time, healthcare organizations need to consider more subjective quality measures, especially when looking at the overall patient care experience. Radiology has become a very competitive market, where patients are increasingly making their own decisions such as tradeoffs between convenience, price, and perceived quality. Many aspects of the patient experience cannot be tied to objective clinical measures and instead are linked to factors such as convenient scheduling, appointment reminders, access to images and reports, and seamless collaboration among reading and referring physicians.

To address these concerns, healthcare organizations are looking for ways to more tightly connect patients, clinicians, and the healthcare system. Patients want to communicate with healthcare organizations in the same way that they interact with their retail establishments and banks – through computers and smart devices. They want to connect to their health information at a time and a place that is convenient for them. This feeling of connection makes them feel like they are part of their care process and may make them more willing to adhere to their care plan.

Such quality concerns often prompt organizational leaders to continually assess their progress by asking questions. Is the organization struggling to deliver care? Are the best experts matched to the proper studies? Were all the stakeholders able to collaborate on the case? Are patients receiving services in a consumer-friendly manner?

## Never look back

To overcome imaging challenges associated with volume, integration, and quality, healthcare organizations must address the need for comprehensive enterprise data management strategies and implement the technologies that will support image viewing and sharing across the entire continuum of care. Many organizations are acknowledging this need, as evidenced by the fact that the global medical image management market is projected to grow at a CAGR of 6.5% from 2016 to 2021, according to a report from MarketsandMarkets.[10]

The right medical image management system is imperative in order for healthcare organizations to realize the benefits of migrating to a digital environment. What's needed is a comprehensive enterprise data management program that enables clinicians to easily and seamlessly access medical images. A vendor neutral archive (VNA), for example, can help organizations better access, manage, and protect the plethora of images generated by diverse image-capturing modalities. A VNA combined with an enterprise viewer not only provides access to any image, anywhere, any time, but also safely stores and manages images in a centralized location. Such a system can archive all images, both DICOM and non-DICOM.

In addition, to overcome some of the challenges associated with modern day imaging demands, healthcare organizations should consider medical imaging management systems that offer:

*Scalability* achieved through a centralized vendor neutral repository that can manage multiple types of content, in a cost-effective way and without a decline in performance. At scale, organizations can leverage a mix of on-premise and in the cloud storage to free resources and enable new ways to deliver better care.

*Simplicity* gained through a single platform that aggregates all the studies that clinicians need to read. As such, organizations can experience natural productivity gains for radiologists and referring physicians, resulting in greater job satisfaction.

*Sharing*, which can lead to improved quality. When physicians can share images, they can communicate and collaborate more effectively – and thereby offer the best course of care to their patients. When patients are brought into the mix and are allowed to send their own data while also accessing images, they are able to more fully engage in their own care, which can also lead to improved care results.

With an enterprise medical imaging management system that has these attributes in place, healthcare organizations can improve care and enhance both provider and patient experiences through the optimal use of medical imaging. And, they can have everything they wished for.

To learn how Watson Health imaging solutions can enhance your organization's enterprise imaging management strategy, visit us at merge.com/interoperability.

## About Watson Health Imaging

Watson Health Imaging, a market segment of IBM Watson Health, is a leading provider of innovative cognitive computing, enterprise imaging and interoperability solutions that seek to advance healthcare. Its Merge branded enterprise imaging solutions facilitate the management, sharing and storage of billions of patient medical images.

With solutions that have been used by providers for more than 25 years, Watson Health Imaging is helping to reduce costs, improve efficiencies and enhance the quality of healthcare worldwide.



IBM Watson Health
75 Binney Street,
Cambridge, MA 02142

Produced in the United States of America
September 2017



PAX-39389 Rev 2.0

References

[1]27th Annual HIMSS Leadership Survey. March 2016.
[2]Medical Imaging: Is the Growth Boom Over? The Neiman Report, No. 1, October 2012.
[3]The Effects of Changes in Utilization and Technological Advancements of Cross-Sectional Imaging on Radiologist Workload, McDonald, Robert J. et al. Academic Radiology , Volume 22 , Issue 9 , 1191 – 1198.
[4]Global Medical Imaging Trends. ITN Online. March 2017.
[5]Hospital 'merger-mania' keeps up momentum. Fierce Healthcare. January 2017.
[6]In the Heights: The Radiology 100 Achieves a New High, Steady Growth Prevails. Radiology Business Journal. October 2016.
[7]Size Should Matter: Five ways to help healthcare systems realize the benefits of scale. PWC. March 2016.
[8]Patients' Perspective on Healthcare in the United States. NPR, Robert Wood Johnson Foundation. February 2016.
[9]2017 HIMSS Leadership and Workforce Survey.
[10]Medical Image Management Market by Product (PACS (Departmental (Radiology, Cardiology), Enterprise), VNA (On-premise, Hybrid, Cloud, Multi-department, Multi-site, ISV), AICA) & End user (Hospitals, Diagnostic Imaging Centers, ASC, CRO) - Forecasts to 2021. MarketsandMarkets. October 2016.

IBM Watson Health™