AssureCare: Pioneering Proactive Care

Dr. Yousuf Ahmad, CEO
Intelligent and Insight-driven Workflows

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Better Patient Care for Better Outcomes:
For radiology, advanced workflow management typically refers to the work managed by a RIS (Radiology Information System), which stores, manipulates, and distributes patient imaging data for scheduling, tracking, and reporting. In short, a RIS defines the behavior by which radiology practices and imaging departments handle studies to optimize clinical outcomes. For vRad, workflow management is driven by a patented assignment algorithm that optimizes imaging study distribution, based on key factors such as physician licensing and credentialing status, worklist depth, subspecialty expertise, ordering physician preferences and study type. Workflow management is all geared towards getting the right study to the right physician in the shortest period of time—typically under a 30 minute turnaround time for a standard emergent patient study.

The workflow management landscape for radiology has become increasingly complex, driven by heightened client expectations—and the scalability challenges coming from volume growth; our 400+ physicians will read nearly 7,000,000 imaging studies this year. That means, in a typical 24 hour period, our workflows will optimize the distribution of over 20,000 cases, including non-emergent X-Rays to emergent full body scans for trauma patients. For example, while an acceptable turnaround time for a non-emergent X-ray may be 12 to 24 hours, a trauma study must be read much more quickly and should be read within subspecialty to impact clinical outcomes. With hospitals and health systems increasingly measured on value vs. volume, improved patient outcomes depend on improved clinical workflows.

For example, vRad’s patented Trauma Protocol workflow automatically “unbundles” trauma cases, assigning each body region (Neuro, Body, Upper or Lower Extremities) to the appropriate sub-specialized radiologist to be read concurrently. The workflow escalates trauma cases to the top of the radiologists’ worklists with a requirement to be read next. The workflow also includes notifying radiologists which of their colleagues are reading the other body regions for the same patient, enabling real-time collaboration at the point of care. The radiology reports for each body region are sent to the facility as soon as they are completed, allowing treatment to begin as quickly as possible. This complex workflow delivers an average turnaround time of under 12 minutes vs. a complete trauma study possibly taking upwards of 45 minutes when only one physician is involved. Better efficiency and optimized use of subspecialty physicians means better patient care with better patient outcomes.

In addition to clinical workflows, a large number of operational workflows is also considered crucial to maximize practice efficiency and assist in the delivery of patient care. These include critical findings workflows, i.e. when a radiologist must speak directly with a referring physician to indicate positive findings, requests for prior reports or images, follow up on incomplete reports prior to study distribution, etc. Relying on both automated and manual workflows, the administrative burden on both physicians and client personnel is further minimized with our 24/7 Operations Center.

Imaging workflows are being disrupted by the move from manual, to automated and “intelligent,” “insight-driven” technologies, as well as the requirement for increasingly integrated systems to drive more efficient delivery of imaging solutions. Most radiology practices have multiple imaging systems—at best, loosely integrated—such as PACS, RIS, reporting systems, phone systems, voice recognition, etc. Integrating these disparate technologies and their associated workflows...
into a “smart ecosystem” is challenging for most radiology groups. The introduction and availability of NLP (Natural Language Processing), AI (Artificial Intelligence) and Deep Learning are also beginning to change workflow rules.

For example, vRad is currently using Deep Learning to detect the likely presence of intracranial hemorrhage (ICH) in patient images in real-time and auto-escalating likely ICH cases to the top of radiology worklists. We are also using NLP to “listen” for critical findings language during report dictation and when found, the physician call to the referring physician is auto-dialed. Once the connection is made, the automated and intelligent workflow creates a conference bridge and auto-populates the relevant patient images so that the radiologist has the right information to report to the ordering facility. This is just one example of disruptive and transformative workflow innovation.

‘Standard’ Solutions Keep Clients Happy:
Standardized tasks, procedures and processes should not mean inflexibility. With 2,100+ client facilities generating nearly 7,000,000 patient studies annually, handling the scale and increasing client demand would be very difficult without standardization. Yet, it is critical that standard workflows still adapt to client systems. vRad’s ability to customize “standard” solutions is what keeps clients happy and operations running smoothly. For example, most facilities only want to activate vRad’s critical findings workflow and verbally communicate patient results between the radiologist and the ordering physician, when there is actually a positive finding. However, some stroke centers want the workflow in place for both positive and negative findings for stroke protocol patients.

Creating standardized processes is a complex endeavor given the lack of input normalization. With 2,100+ facilities and 400+ physicians, there arises a need to create normalization tools so that standard workflows—both manual and automated are able to be triggered by non-standard inputs. Regardless, our experience tells us that clients care more about the outcomes, i.e. high quality reports within acceptable turnaround times vs. the specific intricacies of internal workflows.

Informed Diagnostic Workflows:
Technology has and continues to transform the enterprise and workflow management developments. Radiology is a highly digital service and was therefore one of the first clinical specialties to benefit from workflow automation. Our business has followed the “normal” evolution of moving from a manual workflow (doctors travel to the images for interpretation) to an automated environment (the images travel to the physicians for interpretation). Now, radiology is moving to the third evolutionary phase moving from an automated environment to “intelligent” and “insight-driven” workflows.

As mentioned previously, Natural Language Processing (NLP) and AI/Deep Learning technologies have recently had the most significant impact in our environment. For example, driving unique stroke and trauma workflows based on insight derived from Deep Learning algorithms helps our practice and patients. Combining these technologies with our anonymous data warehouse of tens of millions of imaging reports for benchmarking and informed decision making is also a major change and has had a positive impact on practice efficiency and patient outcomes. For example, leveraging NLP, RPC (Radiology Patient Care) Indices was launched by vRad as the industry’s first findings-based national benchmarking metrics for the use of radiology imaging.

Technology has the ability to put radiology in a leadership position as healthcare moves towards value-based, population management. Technology tools and informed diagnostic workflows result in measuring, reporting and managing our specialty—all critical in today’s new healthcare environment.