What’s next

Healthcare, Healthcare AI, Radiology Solutions

A Real View: Hunting for the “easy” button: Finding balance and minimizing radiology overhead

Nuance Healthcare Diagnostics Vice President and General Manager Karen Holzberger and Senior Manager, Product Management, Andy Stahl discuss the challenge of workload distribution and explore considerations for redesigning a system that supports the unique needs across radiology departments and private practices. With varying organizational cultures, processes, and competing priorities, how are these groups dealing with these challenges and implementing effective solutions in an evolving imaging ecosystem?

Karen Holzberger
Posted November 19, 2018

The workplace dynamics of radiology reading “rooms” have changed dramatically in the last few decades. It’s less common for radiologists to sit in a single reading room and have the option to talk directly with each other about how to manage the daily workload. In addition to the physical separation, today’s radiology workloads have become more compartmentalized as specialization has increased. Many groups still rely on email, phone calls, multiple worklists, and manual work assignments. With these methods, groups struggle to scale and meet quality and cost goals.

As new technical solutions have emerged to address these challenges, it has become increasingly more difficult to separate marketing hype and unnecessary complexity from practical solutions. In order to separate signal from noise, I sat down with Andy Stahl, to get his perspective on the history of these concepts, the current state, and where these solutions are headed.

KH: Andy, you have been working with radiology departments and private practices for more than a decade. You have listened to their challenges, their goals – and have a first-hand view of what matters most. Can you share your view of the current status of workload distribution?

There is a spectrum of needs and solutions for workload distribution, so I would initially separate the discussion into two distinct categories: systems integration and operational

optimization. First, there is the most basic need to integrate data and workflow from multiple disparate sources into a cohesive system. Data can be interfaced into central systems or disparate applications can be integrated through a workflow orchestration platform. Requirements may vary based on governance, architecture, and integration challenges. Some data sharing between systems will inevitably be required, even if it is only to build a universal reading worklist. With the public push for interoperability and the decades-old teleradiology precedent, it’s surprising to still see some data owners reluctant to share information. That is still present, but thankfully a receding trend.

When governance and data access issues can be addressed, a true vendor neutral workflow orchestration platform should be able to integrate with multiple disparate systems using open, standards-based technologies. Vendor-neutral workflow orchestration platforms have proven their ability to integrate with multiple systems —multiple viewers, multiple RIS/EMR applications, multiple dictation/VR systems. Yet, they will always be dependent on the level of compatibility of other systems. The reality is that we see most groups try to consolidate the reading work into as few core systems as possible, for example, workflow manager, viewer, and reporting — and one of each. Consolidation not only reduces technical points of failures and complexity, but it also greatly improves the efficiency of end users. Imagine doing any daily computer work constantly switching between Mac and Windows OS at any given moment. Short-cuts, menu options, and other UI elements are all basic ergonomic examples of where efficiency is lost with technology context switching. Then, there are multiple inactivity time-outs, hardware compatibility, memory shortages, and other performance killers. Even in practices juggling multiple systems, we see a strong user preference to batch work in one application to avoid the context switch, as opposed to batching by clinical priority, which should be the goal.

The second and more interesting category of workload distribution addresses the issues of optimizing supply, all types of personnel, and the clinical demand. Culture, staffing levels, and specialization can vary widely by group. Therefore, one group may have a very different set of optimization challenges than another.

KH: Is it currently possible for an intelligent radiology workflow management system to fairly distribute work on any and every given day? How much of this is reality and how much is science fiction?

Fairness may always be a matter of perspective. There are ways to evenly distribute exams based on counts or weighted values such as RVUs. There are ways to adjust RVU values. There are ways to incorporate non-dictation events, like tumor boards, into an individual’s overall work effort. Those concepts are current realities. If fairness is assigning the same number or same weighted total or designated proportion to each user, then fairness is an achievable reality.

The idea that a workload balancing system can make all these decisions independently, or that work will always be evenly distributed without human oversight, may still be more myth, or marketing hype, than reality. A system can be designed around the average or expected

scenarios, but it should also be able to handle fluctuations in demand and unexpected changes in supply. If volume is unexpectedly high, then work can still be evenly shared. If a user is pulled away unexpectedly, then work may need to be re-allocated. Although the technology can handle these exceptions, these override scenarios need to be specified and then monitored for effectiveness. A system that optimizes workload distribution must deal with dynamic inputs and constraints and sometimes competing priorities, like fairness and clinical urgency. Good technology design may allow for easier and more practical approaches to achieving fairness then turning over all decision making to a computer algorithm. Using a component-based design that allows for flexibility has been key to helping our customers strike the right balance.

Distribution concepts solely focused on counting exams may also discourage other value-added work, such as clinician consults, patient communication, peer collaboration, and interdisciplinary team work. Radiology departments and private practices should be sure to explore solutions that facilitate and measure other quality-oriented activities in addition to counting load-balanced exam assignment.

KH: How do groups justify investing in new technology and new systems when so much has been spent on existing systems, like PACS and EHRs?

ROI calculations and a business case for a workflow management system should be oriented around value, which is a function of both quality and cost. The system should enable the provider group to deliver and quantify a higher value service while it lowers the overall cost of supporting the service line. It’s not just about one type of output – the number of reports. It’s not about one type of user – rads, techs, system admins, or rad assistants. The number and type of units should increase while the overall cost per unit decreases. Workflow management systems can add more depth and value than a PACS or EHR that is oriented around image management or a comprehensive medical record.

KH: What is your sense of the cherry-picking problem? What are the best methods to address these concerns?

Cherry-picking can be a real problem and it can be minimized and monitored. Look at the different types of potential cherry-picking. When working off a shared worklist, a user could choose high RVU exams with a low actual degree of difficulty. By placing exams onto individual worklists, the system could avoid the problem altogether. The system could know when that assignment was ignored and forced into someone else’s queue by exception. Poor behavior might be intentionally avoiding plain films or avoiding specific exams, like bone age and scoliosis exams. These exams could be pooled and distributed, but the trends can be easily spotted with analytics tools that show RVU, modality and exam code mix by user and by shift. Cherry-picking could also mean leaving before a worklist is cleared. Analytics tools can identify a pool of unread exams at a point in time and would quickly confirm whether these suspected behaviors are realities.

Some approaches advocate a break-the-glass approach, where users must explain their

behavior before reading or skipping exams. Our experience has been that users find this to be a nuisance and that it’s counterproductive. In general, customer experience has pushed us towards designing systems that facilitate positive behavior rather than ones that prevent negative behavior, especially when negative behavior is elusive and hard to prevent but easier to track.

KH: Is there an “easy button” or “one-size-fits-all” approach for helping groups that don’t have much time to spend on this?

There really isn’t a one-size-fits-all approach. We work with groups that have different perspectives even between their own sections. Neuro likes reading off shared worklists, but the body section wants workload distribution. Or, weekends and night shifts may have a different preference than day shifts. We believe that we need to be flexible to serve the customer base. We need to support shared worklists, automated assignment to a shift, manual assignment to a shift, automated assignment to a user, manual assignment to a user, and semi-automated assignment. We encounter new use cases constantly. One group might want to just distribute the undesirable plain films. Another group may have a body section in which some users don’t read certain types of exams. Another group may want to accommodate ordering MD preferences for radiologists. All these adjustments in worklist design should consider the schedule and its flexibility to match demand.

The truth is, you’re dealing with sophisticated and intelligent users. If you can give them do-it-yourself tools to work off individualized worklists with fewer rules, minimal overhead and better analytics, then you may be able to hit the “easier” button. Historically, the problem has mostly been that native PACS or RIS/EMR based worklists haven’t supported the sophisticated logic required to build the right worklist and allow dynamic adjustments for users. With better worklist technology, you could solve most of your workload distribution issues without adding unnecessary management overhead and complexity. That worklist technology better be sophisticated enough to tie your brain in knots with the flexibility of its logic.

A step-wise and iterative approach to solving these problems has typically been most effective. Use analytics to confirm suspected inefficiencies in scheduling, worklists, and personnel. Build new worklists that more precisely distribute the work to the appropriate shifts and people. Back-test these worklists against historical data. Edit the worklists. Edit the schedule. Consider the other value-added work and the whole picture.

KH: Andy, thank you for sharing. Your insights will give our readers much to consider as they evaluate solutions to help optimize their workloads.

The Real View is a Q&A blog series with Karen Holzberger, Vice President and General Manager of Nuance Healthcare s Diagnostic Division. The Real View cuts through the hype and gets to what’s real, here, and now. *The blog series features interviews and insights from health IT movers and shakers and uncovers disruptive technologies that solve challenges, optimize workflow, and increase efficiencies to improve patient care.*

Tags: Workflow Orchestration

About Karen Holzberger

Karen Holzberger is the senior vice president and general manager of Nuance’s Healthcare’s diagnostic solutions business. Karen joined Nuance in 2014 with more than 15 years of experience in the Healthcare industry. Prior to Nuance, she was the vice president and general manager of Global Radiology Workflow at GE Healthcare where she managed service, implementation, product management and development for mission critical healthcare IT software. Karen attended Stevens Institute of Technology where she earned a B.S in Mechanical Engineering.

View all posts by Karen Holzberger