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Improving Healthcare Delivery with Role-Enabled Communications

Executive Summary

Only a decade ago, healthcare information technology (HIT) organizations were primarily concerned with solutions that promised improved patient safety, workflow and financial optimization. Communications technology was a second-tier focus. Paper-based charting, which was prevalent then, kept information technology from having an impact on healthcare delivery improvements at the patient-doctor interface.

Times have changed tremendously in a little more than 10 years. Paper-based charting has given way to electronic medical records (EMR), picture archival and communications systems (PACS), radiology information systems (RIS), billing solutions and Radio Frequency Identification (RFID) technology. Traditional telephone voice services have migrated from circuit-based switches to Voice over Internet Protocol (VoIP), which enables more advanced unified communications (UC).

UC integrates various communication methods, including voice, instant messaging (IM)/presence, call center functionality, unified messaging (UM), collaboration and conferencing over both wired and wireless networks. Today, more healthcare IT organizations than ever are interested in not only learning more about these applications but implementing them in a planned, cost effective manner. They wish to protect their previous investments while improving healthcare delivery, employee productivity and work-team collaboration.

Implementing these applications in order to meet their tremendous potential for improved healthcare delivery requires far more than UC. It requires role-enabled communications that place patients and staff at the center of the communications process – for it is at this center that clinical teams can access communications when and where they need it across a variety of devices.

This paper describes common IT and communications challenges in modern healthcare facilities and describes three healthcare challenges that can be solved with role-enabled communications - clinical mobility, clinical workflow and emergency medicine. It concludes with a discussion about best practices to consider when implementing role-enabled communications in a healthcare setting.

Current IT/Communications Challenges Facing Healthcare Institutions

Physicians walk six miles or more per day when they are on call.[1] Even though nurses typically treat patients only in their units, they still log an average of two to three miles per day.[2] Time spent walking is time stolen from patient services delivery.

A significant amount of walking is done in order to access communications. Providers that have conducted time-in-motion studies have found that nurses spend 21 percent of their time on communications-based activities and only 19 percent of their time at patient bedsides.[3]

Because mobility is pervasive, achieving optimal productivity requires solutions that improve real-time collaboration among clinical teams. Industry studies indicate that among traditional enterprise environments, 75 percent of party-to-party calls go unanswered on the first attempt. In highly mobile environments such as healthcare, the call failure rate is even higher.[4] Providers simply cannot have their nursing staff spending 21 percent of their time on activities that have a failure rate of at least 75 percent. The fact that more healthcare institutions than ever are moving to EMR, PACS and RIS is important because these technologies optimize clinical workflow; however, enabling interdisciplinary teams with a truly collaborative communications environment is equally as important.

58.4 percent of the time a healthcare professional spends during his/her shift is used documenting (i.e. charting, responding to e-mails, etc.), with only 17.4 percent of time spent on direct care. The persistence of Computers on Wheels (COWS) provides a prime example of a clinical HIT solution that hospitals invest in today in order to bring technology closer to the patient. Dr. Bill Crounse asserts that, "Although numerous alternatives are out there, COWS persist because they meet the work-flow requirements of a highly mobile workforce wanting access to data at the point of care."[5] As a result, hospital administrators and IT executives are looking for solutions that enhance the effectiveness of COWS and improve patient workflow. Like other HIT solutions, COWS deliver improved bedside productivity. However, without integrated voice communications, this stand-alone solution cannot reach its full potential for productivity improvement. When coupled with bedside voice services, integration of soft communications into COWS can dramatically increase their effectiveness and give nurses access to a patients' EMRs and additional vital patient data.

Today, the healthcare industry is clear in its move toward becoming a paperless and wireless system. Due to heightened focus on HIT advancement as a result of the massive health IT components of the ARRA, providers will deploy integrated solutions that combine clinical technology with unified communications solutions at increased levels. As providers continue to capture the benefits of EMR solutions, they will continue to explore how they can also harness the potential of UC.

What is UC? UC unites multiple communication media such as voice, video, contact center, conferencing and instant messaging. It often integrates with a common presence database to allow for real-time delivery of communications based on the preferred method and location of the recipient. Combined, these capabilities are extremely valuable in highly mobile environments.

UC usually includes productivity-enhancing applications such as:

- Allows users to receive fax, voice and e-mail messages in one inbox that is accessible anywhere over any connected browser

- Provides visibility of staff availability, status and the preferred devices that they wish to be contacted on. It helps coworkers stay in touch, which promotes faster, more informed decision-making

- Enables the convergence of voice and data over a single network for enhanced call functionality and reduced communications costs

- Integrates video and voice conferencing applications tightly with desktop client, and to provide – for example -- dragging and dropping individual users into and out of conferences

- Offers document sharing, white boarding and special conferencing, which enhances teamwork in every aspect of clinical care

- Provides integrated mobile communications to reduce the device proliferation so prevalent in healthcare institutions today. It also provides a single number that can be used to contact each user, thereby eliminating the guesswork and wait times associated with using pagers and dialing multiple numbers.

UC has great potential to help healthcare institutions save money and improve productivity; however, UC alone is not enough. The challenge is implementing UC services so they result in role-enablement.

What is Role-enabled Communications?

Roles in a hospital are highly specific and well defined. For example, a surgical nurse has a very different role than a neonatal nurse, and a radiology tech's role is distinct from a pharmacy tech's. Not only are their roles different; their information and communication requirements can vary as well. This variance is the case for every role in a hospital - from doctor to billing clerk.

When a life is on the line and a nurse needs to reach a doctor, the hospital's communication infrastructure should enable her to contact that doctor as rapidly, effortlessly and efficiently as possible. Technology should serve people; people should not be asked to serve technology.

Role-enabled communications takes into account the various roles individuals play in a healthcare organization. Role-enabled communications seamlessly provide for the information and communication needs that meet the work-process requirements of that role.

Improving Healthcare Delivery with Role-Enabled Communications: Three Examples

In role-enabled communications, the role defines not only which UC application is used, but also how it is implemented.

Clinical mobility is crucial to overall healthcare delivery. Challenges facing hospitals in the area of clinical mobility include:

- The need for ubiquitous communications. Nurses, doctors, technicians and therapists need access to current electronic medical records (EMRs) wherever they interact with patients.

- Patient-nurse communications. The ideal solution instantly allows a patient in distress to communicate with a nurse and allows the nurse to quickly assess the situation without having to be physically present.

- Wireless ICU telemetry monitoring. Patients can be monitored from a voice over wireless LAN (WLAN) device that can receive notifications and alarms wirelessly from the patient monitoring equipment.

- COW optimization. It is one thing to put a computer on wheels, but quite another to expand the range of activities clinicians can use it for.

When it comes to role-enabled communications, everyone whose role includes code blue paging responses, patient transport and call responses for environmental services require compact, timely, information-rich mobile communications.

Today, many hospitals employ high-gain gear to increase cellular signal strength or duplicate cellular signals on the hospital campus. Likewise, many hospitals are undertaking device consolidation and expense reduction.

Physicians, nurses and other professionals must often carry multiple mobile devices that complicate communications instead of simplifying them. The cost to the hospital for all these devices for only 500 users can total $100,000 per year.

Now healthcare organizations can consolidate devices and reduce expenses by introducing mobile UC accessed by smart phones. For nurses whose role includes high-acuity patient monitoring, patient alarm management and to patient need response, clinical IT integration can:

- Streamline the communication of data
- Deliver on the crucial alerts to nurses
- Eliminate alert desensitization that comes from false alerts
- Improve response times to patient needs
- Enable assured close-loop response to notifications (No alerts go unanswered.)

Today, dual-mode communications render the multitude of devices some healthcare professionals carry unnecessary. A single dual-mode device, which contains two radios (both a cell phone and a fixed mobility radio that works on hospital Wi-Fi network),
can integrate patient alerts. Clinical IT integration makes thin-client computing/ communications possible on a COW, which provides mobile access to crucial patient information. This reduces power consumption through virtualized computing. The COW can also include access to EMRs, picture archival and communications systems (PACS) and a UC interface to enable nurses to use presence to see which doctors are available for phone calls and then a phone call with push-to-talk functionality.

Many hospitals invest in fat-client devices, which limit the usefulness of COWs. As a result, the bedside computing devices are not as secure as virtualized desktops. Additionally, many nurses do not like charting on laptops.

For nurses whose role includes accessing clinical applications, handling patient documentation and ordering labs, COWS that include UC can:

- Increase bedside productivity
- Reduce the number of devices the nursing staff must carry
- Improve network security and reduce IT support time

Moving to a thin-client computing model and building communications into a COW can make it more effective, accepted by nursing staff and more secure. Building communications like UC into the COW and offering quick access to EMR, PACS, RIS and other enterprise applications can turn the COW into more meaningful solution for nursing staff.
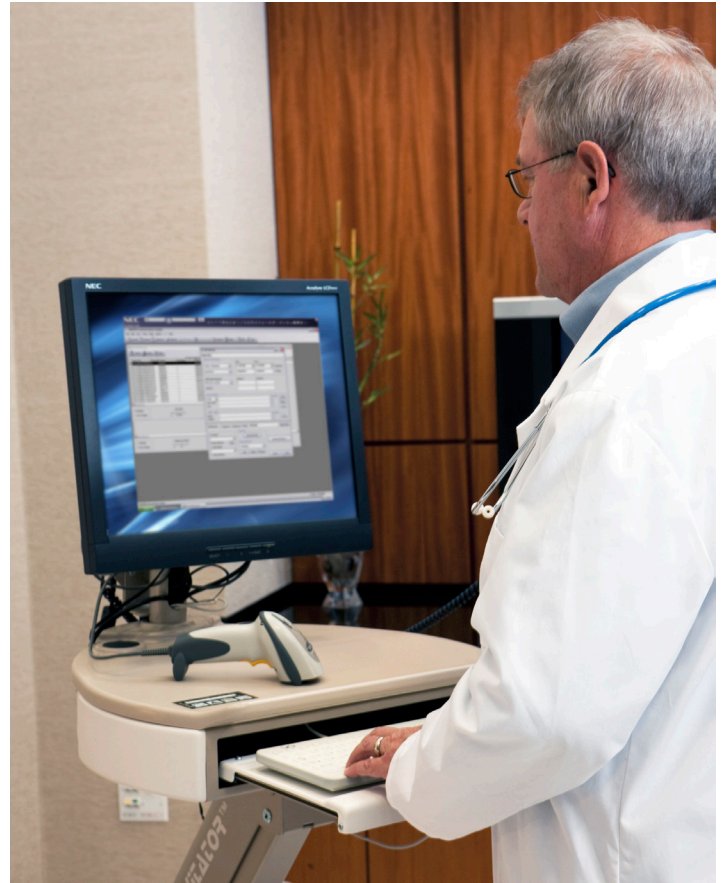
Clinical workflow improvements relate directly to overall institutional effectiveness and bottom line performance. On average, hospitals require 210 minutes to turn a bed over. On average, 74 minutes passes after patient discharge before housekeeping is notified of the event. If bed turnover times were increased enough, it would be as if the hospital added beds when calculating key performance metrics.

A role-based approach to clinical workflow via improved communications can lead to improved utilization management and reduces lengths of stay (LOS), lowers expenses per adjusted discharge, reduces full-time equivalents (FTE) per occupied bed and improves net operating revenue.

Solutions behind a role-enabled approach to improve clinical workflow include:

- Improved call handling and distribution
- Emergency message distribution
- Multimedia communications

For example, those who have the role of initial patient examination at intake can use a wireless client that consolidates multiple applications on one notebook that:

- Improves interdisciplinary team access
- Keeps clinical staff at the patient bedside
- Supports higher patient-to-staff ratios

Emergency Medicine is a fast-paced environment that requires improved patient throughput and bed capacity while reducing ER backlog and achieving overall patient satisfaction. Communications can play a significant role in enabling these improvements.
For those who educate patients, monitor exam room status and track whereabouts of patients and staff, digital signs that display the status of each exam room have been shown to raise the visibility of room/bed status, resulting in:

- Reduced ER backlog
- Increased bed capacity
- Improved average discharge times
- Increased patient satisfaction
- Shorter stays

ERs with automated patient tracking and WLAN solutions in place would benefit from the tracking of mobile assets and the ability to secure laptops. Real-time location tracking using radio frequency ID (RFID) tags result in:

- Improved inventory control
- Lower leasing costs
- Faster patient-response times
- Higher rate of procedure completion
- Increased reimbursable revenue

Best Practices for Role-Enabled Communications Implementation

- Before thinking about UC, examine all clinical processes thoroughly. Where could decision latency be eliminated by helping staff stay in touch more effectively?

- Involve department heads to outline and agree upon an approach to implementing UC. Gather information about which roles and workflow processes in each department can be enhanced with UC.

- Before implementation, examine the network and make sure it can handle the increased traffic. Be aware that some vendors have specific services and site surveys to test networks and report results. Make certain the vendor you select has an established testing process.

- Choose a single vendor with a proven track record of being able to integrate the necessary elements such as third-party applications. Make certain the vendor can provide after-the-sale services including remote network management, diagnostics and responsive break-fix.

- Read the feature and specifications documents of the systems you are considering. They will clearly state the maximum number of users the systems support. Make certain that the UC system's maximum number of users is well in excess of your current number of FTEs.

- Mobility is an important part of the productivity enhancements UC makes possible. Analyze the roles that each person contributes to determine which individuals need mobility to complete their daily tasks.

- It is essential that the addition of UC applications to your organization not be unduly burdensome. Look for IP telephony systems with a web-based centralized management application that includes easy-to-use graphical user interfaces (GUIs).

- Take a phased approach when deploying UC. Identify the departments or clinics where UC applications will do the most good, then select power users based on roles for usability testing. Prioritize your rollout schedule.

- Make certain the UC solution provides unquestioned investment protection and has a clearly defined, long-term product migration vision.
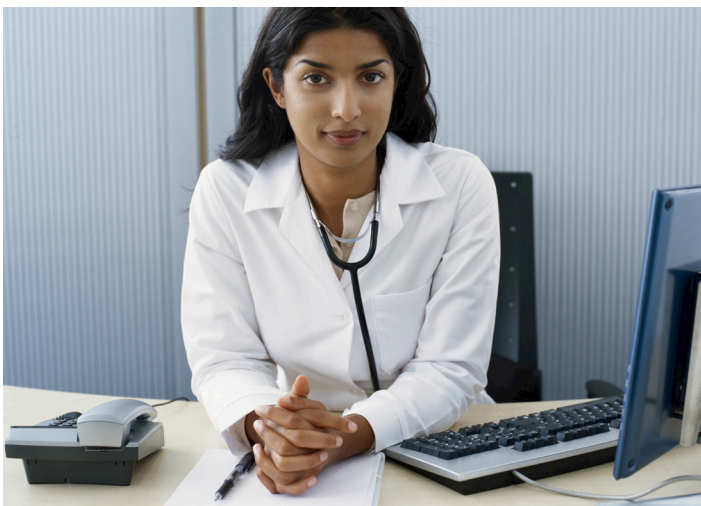
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