

# CTRM Raises the Bar for Patient Safety and Staff Productivity

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## E X E C U T I V E

### S U M M A R Y

- *Ever since the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) included medical communications among its National Patient Safety Goals, hospital administrators have become increasingly aware of this weak link in healthcare delivery.*
- *A growing number of hospitals, including Parkland Memorial Hospital in Dallas, are implementing critical test result management (CTRM) technology that specifically addresses and solves the problem of critical values reporting.*
- *CTRM technology did not even exist until 2–3 years ago. Now that it is here, it will likely become standard practice for hospitals everywhere.*

**D**elays and failures in communicating critical patient findings from reporting clinicians to ordering clinicians can and do threaten patient safety. For radiologists, in particular, such communication breakdowns generate a large proportion of medical malpractice claims. In addition to threatening patient safety, problems in communicating critical test results can sap productivity as physicians and other clinical staff spend precious minutes or even hours trying to verify that the responsible physician has received the test result information.

A growing number of hospitals, including Parkland Memorial Hospital in Dallas, are implementing critical test result management (CTRM) technology that specifically addresses and solves the problem of critical values reporting. In the process of doing so, hospital administrators are discovering an important new strategy for performance improvement.

Additionally, now that Parkland and many other hospitals and hospital systems nationwide have implemented CTRM, an important body of knowledge is developing rapidly about best practices and how to do it.

## A Long-Standing Problem

In the delivery of medical care, fail-safe, verified communication of critical values is a longstanding problem. Radiologists, such as Leonard Berlin, MD, chairman of Radiology at Rush North Shore Medical Center, Skokie, IL, addressed it in detail in the April 2002 issue of the American Journal of Roentgenology (AJR).<sup>1</sup> The results of a study of malpractice claims and insurance issues in 2001 by Gracey & Associates for the Florida Radiological Society confirmed the seriousness of the communication problem:

“One of the most astounding facts that we have uncovered is the ratio of radiology diagnostic errors versus the subsequent communication errors of a diagnosis. Remarkably, approximately 75% of claims against radiologists stem from various sorts of errors in communicating, while only 25% are errors in diagnosis. That means that almost three-quarters of radiology claims could be prevented if serious focus is placed on developing effective communication systems and highly accurate administrative procedures.”<sup>2</sup>

In short, communication delays, failures, and errors account for a shockingly high proportion of medical

condition that is likely to worsen over time if not promptly addressed, and where findings are unclear and follow-up is required.<sup>4</sup>

## JCAHO Steps In

The new, broader communications standard from JCAHO, which took effect January 1, 2004, spotlights this weak link in healthcare delivery. The updated 2006 standard and National Patient Safety Goal says, in part:

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malpractice claims against radiologists. This is both intolerable and correctable.

Critical test results, especially from ancillary services such as pathology and radiology, are subject to systematic errors partly because of the large numbers of tests that are ordered and relative infrequency of urgent results that require immediate attention, as well as the lack of direct consultation in the ordering of such studies. In a 500 bed hospital, there may be more than 2500 laboratory tests and 300 imaging studies requested each day.

Regardless of the causes, the legal and financial consequences of failures in the timely communication of critical test results can be severe. A study by Brenner and Bartholomew published in 2005 showed that delay or ineffective communication in diagnosis of breast cancer resulted in malpractice awards twice as high as when effective communication was employed and were 15 times as high as a percentage of total indemnity payments to plaintiffs.<sup>3</sup>

On the national level, the American College of Radiology revised its Guidelines on Communication in 2005 to reflect the need for direct communication where findings suggest the need for immediate medical intervention, where conclusions differ in substance from prior interpretations, where findings suggest a

- *Goal 2:* Improve the effectiveness of communication among caregivers.
- *Goal 2C:* Measure, assess and, if appropriate, take action to improve the timeliness of reporting, and the timeliness of receipt by the responsible licensed caregiver, of critical test results and values.<sup>5</sup>

Getting the diagnosis right is only half the battle for a radiologist or other diagnostic clinician, according to JCAHO. Healthcare providers have not done their job unless the communication loop is closed and error free.

Radiologic communications are expected to follow well-established, but still evolving, rules and standards. These rules and standards are spelled out in statutes, 20 years of case law, and professional guidelines, namely those of the American College of Radiology.

## Massachusetts Leads the Way

Perhaps no state has exerted more leadership on the issue of critical test result reporting and management than Massachusetts. In March 2002, an advisory group of hospital representatives was convened by the Massachusetts Coalition for the Prevention of Medical Errors (the Coalition) and the Massachusetts Hospital

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Association (MHA). The group reached a broad consensus that errors in the process of communication of test results were both frequent and had the potential for serious harm. The initial meeting led to a patient safety initiative during 2002–2003 that ultimately resulted in comprehensive guidelines for communicating and managing critical test results. The final report and an editorial were published in the February 2005 issue of *The Joint Commission Journal on Quality and Patient Safety*.<sup>6</sup>

The consensus group defined “critical test results” as “values/interpretations for which reporting delays can result in serious adverse outcomes for patients. The scope included laboratory, cardiology, radiology, and other diagnostic tests in inpatient, emergency, and ambulatory settings.”<sup>6</sup>

In an accompanying editorial, Drs. David W. Bates and Lucian Leape noted that a fundamentally sound policy and system for handling critical test results includes four elements:

1. Organizations must reach consensus about which results are considered critical.
2. The organization must have an effective process for communicating the results to the key clinicians involved.
3. The organization needs a fail-safe program to ensure that backup procedures are implemented if the initial communication efforts break down for any one of a number of reasons.
4. It is essential for the organization to have in place monitoring systems for it to know how it is doing with respect to the above dimensions.<sup>7</sup>

### **Individual and Institutional Issues, Responsibilities**

Both individual physicians and institutions share responsibility for communicating critical test results. Individual physicians are responsible for issuing an authenticated, substantive report with a reasonable interpretation. The institution’s systems must enable the physician to communicate diagnostic test results in a reasonable and expeditious manner, especially when the findings are urgent and/or unexpected.

Above all, the system must ensure that the communications loop is closed. This means it is not enough to report an urgent or unexpected finding to an anonymous or open-ended system. There must be documentation of the communication and verifica-

tion, ie, date and time that the communication was received by the responsible party.

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### **Challenge to Management**

It is one thing to establish guidelines and policies for communicating critical test results, but hospital managers face the daunting challenge of managing and measuring hospital-wide performance against established goals and targets. This requires verification and documentation of each communication. Considering that multiple diagnostic departments and hundreds of physicians can be involved, this is no small task. Indeed, without technology to automate the process, it is virtually impossible.

Today, if hospital administrators are asked about CTRM, they will likely say they already have procedures and systems in place for that. In reality, these “systems” are mostly prescriptive and manual, inconsistent across departments, haphazard, inefficient, and prone to error. Even computer-based systems typically lack the capability of real-time reporting and verification of receipt by the ordering physician. The systems and technology are passive in nature. Reports might be available online, but it is up to the referring physician to remember to check. And there is no special notification for critical test results.

### **The Parkland Experience**

Primary teaching hospitals, such as Parkland, are particularly prone to communication problems because most of the front-line doctors are resident physicians who work under the supervision of faculty physicians. Resident physicians work no more than 80 hours per week and rotate on a regular schedule to other teaching sites or services.

Parkland is the primary teaching hospital for the adjacent University of Texas Southwestern Medical Center, and resident physicians rotate among Parkland, Zale-Lipshy University Hospital, St. Paul University Hospital, and the Dallas Veterans Affairs Medical Center. With normal rotations and shift changes, there can be delays in communicating critical test results. Parkland’s radiology department performs about 500 exams per day, and the number of critical test results ranges from 4

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to 25 per day, mostly generated by the hospital's busy emergency department (ED). As a Level 1 trauma center, Parkland sees about 83,000 ED patients annually.

Each Parkland patient is cared for by a team of physicians, and members rotate on and off the team frequently. Finding the responsible physician and verifying that the medical communication was received and acted upon can consume, literally, hours of staff time and create needless anxiety or even harm for the patients.

To fix the problem, Parkland adopted a CTRM solution that is based on a hosted technology platform that merges voice messaging and data technologies. The user-friendly system requires the reporting clinician to make just one voice call from a phone or computer and the system does the rest:

- Alerts the responsible ordering clinician that a test result message is available;
- Indicates the degree of urgency;
- Continues to send alerts until the message is retrieved;
- Provides built-in escalation levels;
- Notifies the reporting clinician that the message has been received and when;
- Documents the communication process from beginning to end;
- Automates compliance with all legal and professional standards;
- Stores the original voice message in a searchable archive for 10 years or longer.

Additionally, the technology enables hospital administrators to have a window on performance and risk. Physicians and administrators can establish benchmarks, set target goals, and easily monitor performance in real time and over any period of time. Parkland now knows when and where there's a problem pattern or trend and how to fix it.

Cost, of course, is always a concern, especially for a public hospital such as Parkland. Since the adopted CTRM system is a hosted solution, there was no investment in new hardware or software. The hospital paid a one-time set-up fee of \$20,000 and continues to pay a monthly fee of \$3500 (12 month contract) for access to the system. In the final analysis, though, it was the automation and reporting capabilities of the technology that led us to choose this particular solution.

The decision to implement CTRM technology required buy-in from the medical directors and patient care vice presidents, but nothing would have happened if it did not have a strong advocate within the organization. At Parkland, that advocacy came from the Performance Improvement staff.

Parkland, the hub of Dallas County's Parkland Health and Hospital System, initially implemented the solution only for radiology, but now there are plans to expand it to the pathology labs and cardiology, as well.

### **The Implementation Process**

In the process of preparing to implement this technology-based solution, Parkland administrators and clinical staff had to reevaluate what they were doing and why things were being done that way. We created a Performance Improvement team made up of the Chief Medical Officer, patient care vice presidents, medical and department directors, and the Performance Improvement staff.

The goal was simple enough: Get timely and reliable information to the clinician who can take action. Basic issues came to the surface, such as what parameters should be used for defining critical or urgent test results and what escalation procedures would be necessary if the ordering clinician was not accessible.

It was also determined that the needs of the Parkland ED required somewhat different procedures than the inpatient units. Often, for example, ED clinicians find that patients have other urgent or chronic medical problems, in addition to the immediate reason for the ED visit. ED patients that have yellow (notification) results, such as a tumor or a chronic disease, require follow up by a clinician. Some method of case management must be initiated to get the patient to the correct caregiver for follow up since many of the patients do not have a primary care physician. This was just one of the issues that surfaced in preparing to implement CTRM.

Utilizing the work of the Massachusetts Coalition, the team came up with more specific deliverables:

- Identify who should receive the results
- Identify who should receive the results when the ordering provider is not available
- Define critical results that require timely and reliable communication
- Identify when results should be actively reported and explicit timeframes
- Identify how to notify the responsible provider
- Establish a shared policy for uniform communication

Consensus was also reached on how to measure performance:

- Percent of critical tests meeting time targets
- Average time to acknowledgement

In order to gain rapid acceptance of the new CTRM system, it was important to achieve some “quick wins.” The medical staff leaders expressed genuine appreciation that the hospital was addressing the “critical values” issue. The

clinicians also liked the way the system distinguished between critical findings, which required immediate attention and urgent findings, requiring quick, but not immediate, action. Since the volume of critical findings generated by radiology was relatively small and manageable, any usage problems or issues were addressed quickly.

In retrospect, here are a few tips to help the implementation go smoothly:

- Assigning a performance improvement analyst or other staff resource to coordinate is crucial
- “Systems thinking” is a required attribute for the coordinator
- Expect this to be 25–30% of an FTE during development and for the first several weeks after “go live”

Of course, there is a learning curve in implementing CTRM, but it is surprisingly easy, if all the necessary planning and preparation are done. The result is well worth the effort. Parkland now knows whether its patients are at risk from persistent communication problems. And if they are, the hospital can take corrective action quickly.

CTRM technology did not even exist until 2–3 years ago. Now that it is here, it will likely become standard practice for hospitals everywhere. ☸

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