

Process Management: A New Standard in Lab Productivity

Emerging Trends in Diagnostics IT

White Paper

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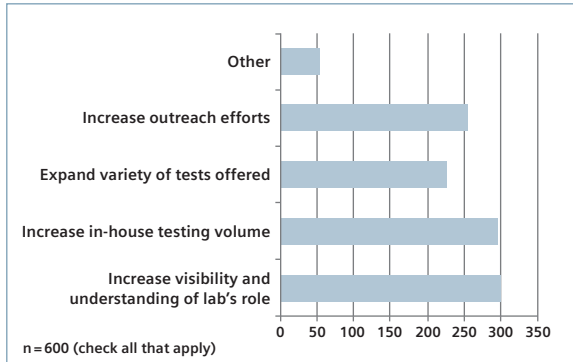


Introduction

As pressure to reduce healthcare costs and improve patient care continues, clinical labs today are more conscious than ever of the value they can bring to the health system and the need to position themselves to help drive change within it. At the same time, the push toward electronic health records (EHR), with associated financial incentives, and the ongoing outcry about medical errors are creating an environment where the visibility of the lab's contribution will increase, as will opportunities for labs to contribute in patient management and quality improvement.

In a recent survey conducted by Siemens Healthcare Diagnostics and ADVANCE for Administrators of the Laboratory, 569 clinical lab professionals shared their views about their business goals, their priorities for performance improvements, and how they expect diagnostics information technology (IT) to help them achieve their goals. Results from this survey reinforce earlier findings on the importance of integrating process control and data management within the framework of process management—a new category in diagnostics IT. Drawing on the power of visualization and proven concepts in contemporary manufacturing, process management can help to achieve new levels of productivity in the clinical lab.

Changing needs of today's laboratory



Lab's business goals over next 12 months
–IT Survey, November 2010

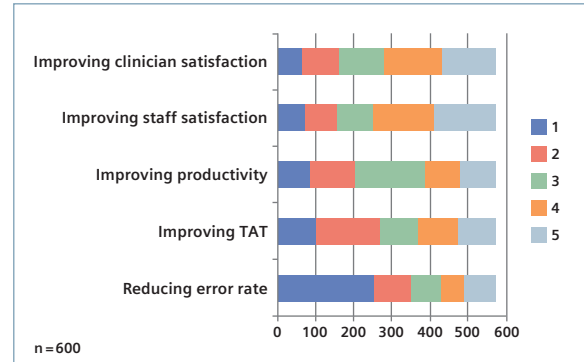
A business perspective

More than 60 percent of labs in the survey stated that their most important business goal is to “increase visibility and understanding of the lab’s role within the hospital and health system.” Perhaps in support of this goal, there is strong expression of the desire to grow the testing business (i.e., “increase in-house testing volume,” “increase outreach efforts,” and “expand variety of tests offered”).

This view was echoed in our discussions with lab directors.

“One basic goal for the coming year is to optimize use of our IT tools so that we can grow volume without adding staff.”

Laura Casey, Lab Manager,
Dorchester House Multi-Service Center,
Boston, Massachusetts



Lab's priorities over next 12–18 months (1=most important)
–IT Survey, November 2010

Aligning lab performance with health system needs

When asked about operational and performance goals, labs stated that reducing error rates is the number one priority, with more than 40 percent giving it the highest priority in a forced ranking where only one item could be assigned top priority. This is not surprising in light of the heightened concern about medical errors. The concern for maintaining accreditation is also a factor.

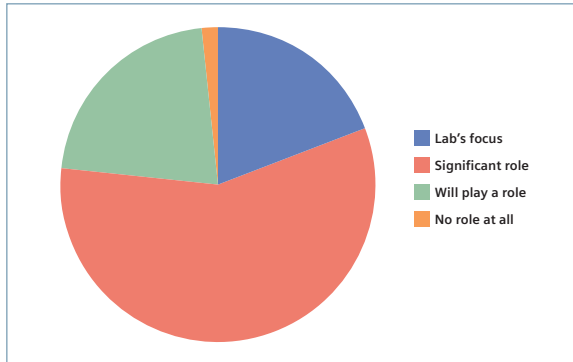
“There is a lot of concern about error rates, in part because of recent publicity about the alarming medical error rates.”

Kathleen David, POC/Phlebotomy Supervisor,
Kingman Regional Medical Center,
Kingman, Arizona

Getting results into the clinician’s hands faster is top priority, as reflected in the importance of “improving TAT.” And lab productivity is still top of mind.

“Our lab needs to deal with continued increases in test volumes with declining resources. We also have the pressure to deliver fast, reliable results. So the challenge is to work faster and smarter.”

Oliver Colhoun, Head of Laboratory,
Klinikum Frankfurt Höchst,
Frankfurt, Germany



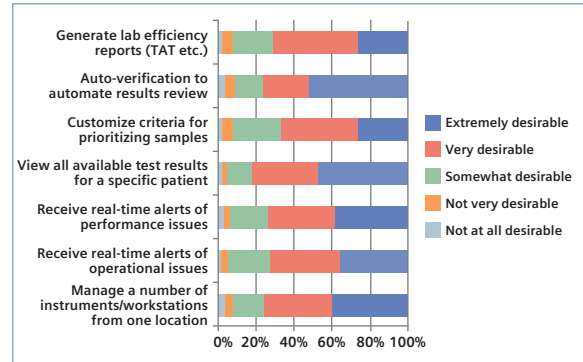
Reliance on IT to achieve lab's most important goals (respondents asked to choose one only)
 –IT Survey, November 2010

Diagnosics IT is the focus

More and more, labs are turning to diagnostics IT to help them achieve higher productivity and improved quality in today's challenging environment. A full 22 percent of those surveyed indicated that "IT will be our focus in the next 12–18 months," while another 60 percent said "IT will play a significant role." A closer look at what labs expect IT to accomplish for them offers interesting insights into how labs plan to deploy IT. Labs are unified behind the goal of getting quality results into the clinician's hands faster. The sense of urgency to mobilize the power of diagnostics IT is especially evident in the hospital environment, with a proportionately greater number of high-acuity patients.

"Everything is affected by IT. For example, IT is important in helping us get results to the doctor's office faster, without waiting for the mail or fax. Doctors should get results as soon as they are available."

Suzanne Felton, Core Lab Supervisor,
 St Luke's Hospital,
 Cedar Rapids, Iowa



Desirability of IT features
 –IT Survey, November 2010

Drivers of lab performance

Consistent with the lab's increasingly important role in patient care, 90 percent of those surveyed consider it extremely or very desirable to be able to "view all available test results for a specific patient." In discussion with lab professionals, many indicated the value of putting lab results in the context of other patient information such as diagnosis, which can help the lab triage anomalies in test results, advise clinicians in interpreting test results, and/or recommend supplemental tests.

Auto-verification ranks a close second, with 84 percent considering it extremely or very desirable, with the benefits of speeding up the release of results and reducing human errors from manual reviews.

The goal of improving workflow and streamlining operations are high priorities, in addition to the desire for centralized control (i.e., managing a number of instruments/workstations from one location). The ability to generate lab efficiency reports is considered extremely or very desirable by 86 percent or more of those surveyed.

Real-time alerts of operational issues (e.g., reagent inventory) and performance issues (e.g., TAT) follow closely behind. And more than two-thirds of those surveyed would like the ability to customize criteria for prioritizing samples.

"Real-time alerts of operational issues are very important for us as we bring in more tests that are currently sent to reference labs and do so without going down the path of managing additional FTEs."

Laura Casey, Lab Manager,
 Dorchester House Multi-Service Center,
 Boston, Massachusetts

Process management: The next step in diagnostics IT

Today's labs recognize that diagnostics IT will play an expanded role in helping them excel and enhance their role in the ever more demanding and increasingly patient-centric health system. While diagnostics IT has always been the key driver in automation and data management, labs are beginning to express the need for a more integrated view of diagnostics IT. And that is the premise of process management. Process management integrates process control and data management, while embracing the concepts of visualization and centralized control that have been proven in contemporary manufacturing.

“The lab is rich in data. The challenge we face is how we can work together to mine the data into meaningful information that will drive improvements in productivity, reduce errors, and provide the lowest total cost solution.”

Chris Christopher, Vice President,
Siemens Global Customer Solutions

To understand the impact of process management on productivity and quality, consider the lab's desired outcome: high-quality and timely delivery of results. From an operational perspective, to achieve the least amount of errors in test results with the fastest turnaround time (TAT) possible, a number of intertwined issues need to be addressed. These include: (a) minimizing to the extent possible human errors; (b) enabling the incorporation of human judgment where needed; and (c) minimizing all unplanned delays due to product failure (e.g., electrical and mechanical deficiencies) or operational issues (e.g., workflow interruptions due to insufficient or incorrect patient sample or reagent inventory).

Early experience with process management

In 2010, the Institute for Laboratory Medicine, Clinical Chemistry, Microbiology and Transfusion Serology at Klinikum Frankfurt Höchst became one of the first labs in the world to implement the Siemens *syngo*® Lab Process Manager. The lab handles more than 1 million tests per year for the 1,000-bed Klinikum Frankfurt Höchst.



Dr. Oliver Colhoun,
Head of Lab

Dr. Oliver Colhoun, the head of the laboratory, explains that like most other labs, his lab is challenged to deliver high-quality test results—and fast—while lowering costs. The lab offers a broad menu that encompasses chemistry, immunoassays, infectious diseases, virology, blood

banking, hematology, and point-of-care testing. As a result, lab personnel have to manage a wide variety of instruments, consolidate data from different analyzers, and keep everything running on a 24/7 basis. In Dr. Colhoun's view, the concept of centralized management offers the advantage of “reducing the many workplaces into one workplace” and thus “reducing the complexity for technologists.” Although the lab has only experienced the *syngo* Lab Process Manager for a short time, Dr. Colhoun feels that its power, flexibility, and ease of use will make a significant impact on productivity.



Automation Laboratory at Klinikum Frankfurt Höchst

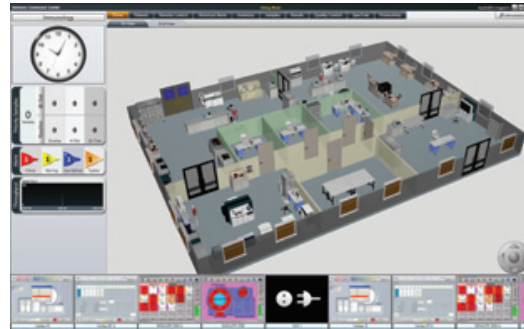
The evolution

In 2006, Siemens began a process to consider how the power of diagnostics IT can best be applied to optimize lab processes. A customer advisory board (CAB) provided early input and ongoing feedback as functionalities were tested and optimized. For example, the insight that processes vary widely from lab to lab mandated a highly flexible, customizable system. Similarly, the ability to visualize what is happening at the lab and provide clear, actionable status updates was judged extremely desirable by the CAB. And since we know that significant workflow interruptions are often caused by a seemingly minor process issue, exception management was incorporated into the design.

“Our exploratory work with the CAB was instrumental in identifying the need to create a new product category that transcends existing boundaries and the identification of process management as a crucial tool for optimizing lab quality and efficiency...Along the way, the CAB was invaluable in helping us accelerate development by acting as a resource for real-time course correction. Product features were fine-tuned in their early stages, often through an iterative process.”

Jim Jacobson, Director – Informatics, Research and Development, Siemens Healthcare Diagnostics

The result is the definition of a new diagnostics IT product, grounded in the concept of process management. Process management has four key functionalities: centralized visibility, centralized control, exception management, and process analytics.



View the lab from a single screen

Centralized visibility

Lessons from visual manufacturing point to the importance of being able to see what is happening from a computer screen without having to be in front of the instrument or sample track.

And the way the computer screen is designed to present the data is just as important. For example, being able to customize the screen for specific job functions and work areas will help individuals focus on what they need to pay attention to, resulting in better workflow and fewer human errors. The workstation can also provide a window to critical areas through placement of webcams and integration of webcam images into the workstation display. This allows lab personnel to identify potential bottlenecks such as centrifuge malfunction or to be alerted of the arrival of critical samples.



Manage the lab without leaving the office

Centralized control

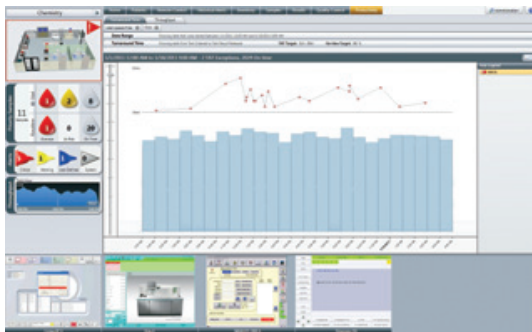
By exploiting the power of visualization, process management enhances the ability to control systems and functions from the workstation. Status updates, flags, and alerts on the computer screen make it easy for the lab professional to know what needs to be done and take required action right from the workstation. This expedites processes by ensuring timely action. Taking this one step further, alerts can be preset to different levels of priority and forwarded to responsible supervisors by email when required.



Proactive and efficient response to actionable information

Exception management

Information overload can sometimes delay necessary action because of the time elapsed while lab personnel review the data to identify problem areas. Exception management is a key component of process management. It enables actionable information to be presented to the lab professional when action is required. This allows lab personnel to intervene only as required so that there is more time to focus on what needs to be done. Productivity is increased since lab personnel's efforts are properly directed and key issues are addressed in a timely manner. Exception management also reduces errors due to information missed during human review.



Drive efficiency with process analytics

Performance metrics

Process and quality improvements begin with an accurate understanding of how well current operations are achieving desired goals. Performance metrics empower lab management to troubleshoot and perfect processes and identify opportunities for improvements. But the value of performance metrics goes beyond looking at the past or troubleshooting current operations. Labs can also use performance metrics to assess the impact of proposed changes in processes or workflow and fine-tune them before implementation. This facilitates early troubleshooting and helps drive ongoing improvements to achieve operational and business goals.

Conclusion

As labs ready themselves to assume a more significant, more visible role in healthcare, they will increasingly rely on the power of diagnostics IT to increase productivity and deliver high-quality, timely patient results consistently. A more interconnected health system will enable labs to work effectively with clinicians to assist them in arriving at the correct diagnosis and patient care decisions, potentially improving care and reducing costs. Labs can also help clinicians navigate the myriad of diagnostic tests available and order the most appropriate ones for the patient. Equally important are the productivity gains in the lab and the resulting cost savings and improvement in staff satisfaction. In sum, by optimizing the use of diagnostics IT, process management paves the way for labs to add significant value to the health system by helping to improve patient care while contributing to more efficient use of personnel and budget resources in their own lab and throughout the health system.

Siemens Healthcare Diagnostics, a global leader in clinical diagnostics, provides healthcare professionals in hospital, reference, and physician office laboratories and point-of-care settings with the vital information required to accurately diagnose, treat, and monitor patients. Our innovative portfolio of performance-driven solutions and personalized customer care combine to streamline workflow, enhance operational efficiency, and support improved patient outcomes.

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