Volume VIII, Number 12 Tuesday, September 4, 2001

From the Desk of R. Lewis Dark...

THE DARK REPORT

RELIABLE BUSINESS INTELLIGENCE, EXCLUSIVELY FOR MEDICAL LAB CEOs / COOs / CFOs / PATHOLOGISTs

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Commentary & Opinion by...

R. Lewis Dark

Founder & Publisher

Of Automation, the Internet, and Other Curiosities

IN READING THE FIRST DRAFTS of the stories in this issue of THE DARK REPORT, I was struck by the unsteady progress that's been made in the lab industry by emerging technologies such as total laboratory automation (TLA) and Internet-based lab services during recent years.

How many of us remember the widespread belief, back in the first half of the 1990s, that fully-automated labs would eventually dominate the lab industry? Specimens would arrive at the lab. Once put into the automated system, no human hands would touch them again as they went through accessioning, on to the test instrument, then off to storage. It was also assumed that clinical laboratories which were first to fully automate would have a competitive cost advantage and would march off to market dominance.

As the old comic character Major Hoople used to say, "Harumph!" Those bold predictions of not-so-many years ago remain unfulfilled in today's environment. The operators of the nation's highest-volume laboratories, which include **Laboratory Corporation of America**, **Quest Diagnostics Incorporated**, still deem both the economics and management challenges of TLA as not yet ready for their highest volume facilities. The promise is, as yet, unfulfilled.

The same can be said for use of the Internet by laboratories. Back in 1999, **Healtheon/WebMD** held contracts with two of the three billion-dollar national labs to implement browser-based lab test ordering and results reporting. A**dvanced Health Technologies** (AHT) had contracts with more than 60 healthcare systems to implement similar functions. Yet look at what happened during the past 24 months. WebMD acquired a lot of real healthcare businesses and found itself in a deep financial morass. AHT entered bankruptcy, was absorbed by **CyBear, Inc.** and has not been heard from again.

In my role as crusty old curmudgeon, I get to comment on the folly of vendors who tout solutions that may not yet be ready for prime-time. That's a practice that's aggravated laboratory executives and pathologists for years. But it must also be remembered that new technology never arrives in a "clean" way. Both science and the marketplace are messy, muddled environments. Successes are always accompanied by setbacks, but progress is ever forward. TLA and the Internet are examples of this process. As they shake out their bugs, both technologies will eventually bring immense benefits to both the laboratory industry and the pathology profession. TDR

It's Modular Automation At Beaumont Hosp. Lab

New lab arrangement reflects changing economics and shortage of med techs

CEO SUMMARY: Many hospital labs are evaluating laboratory automation options. The fastest-growing problem which needs an answer is the shortage of trained medical technologists and technicians. At William Beaumont Hospital's new laboratory, selective workstation and modular automation solutions were chosen as part of a master plan to reduce overall lab testing costs and minimize labor needs.

IN THE DETROIT SUBURB of Royal Oak, **William Beaumont Hospital** (WBH) opened a brand-new laboratory just two months ago.

This new laboratory's design and operation is typical of how many of the nation's hospital labs are responding to the inexorable pressures for continuously cutting lab costs even while coping with an inadequate supply of trained medical technologists.

"There was one primary goal which *never* changed in the six years of planning that led to this new laboratory," stated Frederick (Fritz) Kiechle, M.D., PhD., Chairman of the Department of Clinical Pathology at WBH. "That goal was to design a laboratory which would allow us to steadily reduce the average cost per test year-after-year.

"The result of our planning process was the construction of a new five-story building of about 50,000 square feet. It is next to the hospital and houses the clinical laboratory on the bottom three floors and research labs on the top two floors. Our lab is connected to the hospital by a pneumatic tube system," explained Dr. Kiechle.

"We currently handle about six million tests per year in the lab," he added. "Half of this volume comes from hospital inpatients and outpatients. Our outreach lab, called **Beaumont Reference Laboratory**, generates the other half from its physicians' office clients."

Of particular interest is how the new laboratory incorporates automation solutions. "For us, the most cost-

THE DARK REPORT Intelligence Briefings for Laboratory CEOs, COOs, CFOs, and Pathologists are sent 17 times per year by The Dark Group, Inc., 1731 Woodland Terrace Center, Lake Oswego, Oregon 97034, Voice 1.800.560.6363, Fax 503.699.0969. **(ISSN 1097-2919.)**

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effective decision was to pursue modular automation," observed Dr. Kiechle. "During the planning process, I made plenty of trips to visit automated clinical laboratories, including two trips to Japan. For many reasons, total laboratory automation (TLA) was not a good fit for our needs.

Modular Approach

"Our approach was to combine workstations and use modular automation," he continued. "We configured our new lab to have three modular testing lines—coagulation, hematology, and chemistry.

"Our primary vendors are **Roche** and **Sysmex**. For specimen tubes already labeled within the hospital, we use Roche's PSD workstation for specimen sorting and the pre-analytical unit," noted Dr. Kiechle. "Our pre-analytical unit has two centrifuges, an aliquotter, and cappers/decappers. It runs in a U-shape and connects directly to our chemistry instruments. Other specimens are racked and hand-carried to the appropriate testing station.

"For specimens which need to go through the full accessioning process, we use the **Labotix** track and specimen sorter. A track connects 26 workstations to the unit and we can do registration, if needed, as well as the typical accessioning steps," he said.

Smooth Start-Up

According to Dr. Kiechle, the start-up of the new lab went without major incident. "We attribute that to diligent planning, lots of meetings before the new lab went live, and quick response to any problems or issues," he observed. "Certainly there were glitches and headaches. For example, we learned some of the new equipment was having trouble reading the existing bar code labels. The solution required replacing bar code label printers throughout the hospital while the vendor tweaked the bar code readers.

"We moved into the new facility by lab division, usually over a single weekend," added Dr. Kiechle. "That method worked well and allowed us to give full attention to each division's move."

Because the new lab is still undergoing fine-tuning, it's still early to evaluate the amount of savings it's generating. "We've projected savings in two ways," noted Dr. Kiechle. "First, our primary goal is for this new configuration to drive down our average cost per test by 20% to 25% once we've 'dialed in' our workflow. Early indications are that we've already achieved a 10% reduction. "Second, our new laboratory building and equipment configuration is expected to contribute to further cost reductions over time. The new lab arrangement was designed to be a foundation that supports our efforts at ongoing work process redesign," he explained.

Med Tech Shortage

The shortage of trained medical technologists is ever-present in the design and operation of this new laboratory. "I can say this absolutely. At this time, we find it impossible to hire all the med techs we need. The new work flow and instrument systems in this new laboratory are what allow us to turn out the existing volume of work.

"It's also important to understand that our test volume continues to grow each year," he added. "That's because our laboratory outreach program is steadily generating new client accounts. We are using automated solutions as one way to compensate for the shortage of med techs and still accommodate ever-growing volumes of specimens.

"In fact, from a management perspective, one of the intriguing aspects of operating this new lab configuration is determining how it should be properly staffed," mused Dr. Kiechle. "We

are constantly learning ways to streamline workflows and eliminate unnecessary steps. Our team is learning that creativity and innovation directly translate into higher quality and lower costs."

Full Internet Capability

Prior to settling on the final design of the new lab, Dr. Kiechle and his team evaluated a range of equipment options and lab configurations. "Over 60 different scenarios were modeled. For capital invested in the new lab facility, we decided to base our economic rate-of-return strictly upon the specimen volume which we could control," he said. "That means our inpatient and outpatient work, which amounts to about 3 million tests per year. We wanted to be conservative, so we did not rely on anticipated future volume increases that would result from outreach testing or other external sources."

Diagnostic Vendor Talks

In designing its new laboratory facility, William Beaumont Hospital needed solutions for the same market pressures confronting most hospital labs, namely; how to sustain effective cost-cutting over a multi-year period and how to work around the absolute shortage of trained medical technologists and technicians.

The selective use of automation in specific testing areas, combined with a more sophisticated approach to both the pre-analytical and post-analytical stages, was a deliberate management decision. The goal was to create an operational platform that would support further process improvement and cost reduction initiatives in coming years.

This is also significant. The expectation of hospital administration is that the lab's management team will continuously drive down costs in future years by using the same management methods and tools commonly found outside healthcare. It shows how the responsibilities of lab administrators are evolving to include work flow redesign and resource allocation. TDR

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Kiechle Offers 3 Tips For Laboratory Design

DESIGNING A NEW LABORATORY often ends up as a trial and error process, since many hospital lab administrators may only do it once during a career.

When asked to pass along some useful lessons, Beaumont Hospital's Chief of the Department of Clinical Pathology, Dr. Fritz Kiechle, offered these three tips:

1. **Reduce workstations as much as possible before the final implementation.** "Every workstation is a drop-off site that must be identified by the aliquotter and specimen sorter," said Dr. Kiechle. "By reducing the number of workstations in your lab, you will greatly simplify the requirements for automating your lab. You will also reduce the overall cost of the required infrastructure and equipment."

2. **Develop auto-verification as much as possible, as early as possible.** "The high throughputs of automated workstations generate lab test results at an equally fast pace," he stated. "Auto-verifying these results is cost-effective and requires less labor."

3. **Don't organize as a "core" lab.** "We've maintained our testing sections because we wanted to benefit from that expertise," explained Dr. Kiechle. "However, we placed the instrument systems in a tight configuration so that our people could support each other more easily throughout the working day."

Wireless Lab Reporting Now Active in Wash., DC

Service is bundled with prescription ordering and AML is first to provide lab test results

CEO SUMMARY: While companies like iScribe and Allscripts have attracted lots of attention with their efforts to convince doctors to use wireless PDAs to order prescriptions, InstantDx has quietly launched its "OnCallData" service in Washington, DC. It offers both prescription-ordering and lab test results reporting and allows a wireless connection with any type of device that a doctor prefers.

GROUND ZERO IN THE MOVE to convert healthcare services to Internet-based technology is prescription ordering.

Using hand-held devices and wireless connections to the Internet, a host of companies are aggressively competing to shift doctors away from handwritten prescription orders. Instead, these companies want doctors to use their particular prescription-ordering solutions.

THE DARK REPORT has long predicted that most e-health companies will include lab testing services in their product mix for an obvious reason: the two highest-volume activities in healthcare are prescription ordering and lab test ordering/results reporting.

Early Market Introduction

One of the first companies to implement an Internet-based system which offers both prescription ordering with lab test reporting is **InstantDx, LLC**, a division of **Immunomatrix Inc.** in Gaithersburg, Maryland. In conjunction with **American Medical Laboratories, Inc.** of Chantilly, Virginia, Instant Dx has made lab test results available since late spring.

"Our 'OnCallData' product has distinctive features which make it unique in the United States," said Krishnan Seshadri, Chief Technology Officer at InstantDx. "First, we don't restrict physicians to using a specific type of PDA device. To the contrary, the physician can use any wireless device he wants to connect to our service. This includes pagers, cellular telephones, lap top computers, PDAs, and the like.

"Second, we believe we are the first company to go live with both wireless-enabled prescription ordering and lab test results reporting," he continued. "Currently there are over 100 physicians in the Washington, DC area using our service. We are ready to launch in Richmond, Virginia with an ASP (application service provider) partner that will service 400 physicians."

In addition, InstantDx has an agreement with **NDCHealth Corporation**. Its physician management systems, Medisoft and LYTEC®, are used by

130,000 doctors nationally. Both companies are working to roll out the InstantDX service to this group.

With OnCallData's lab test resulting service, the doctor can view his patients' lab results in a secure manner, using any type of wireless device which can connect to the Internet and reach the Web site of InstantDX. "This is a browser-based system which requires no software," explained Seshadri, "Doctors pay $29.95 per month for unlimited use of the system to order prescriptions and view lab results."

Fundamental Market Shifts

"Our relationship with InstantDX was a bit of serendipity," noted Jack Bergstrom, Chief Operating Officer at American Medical Laboratories (AML). "Dr. Allan Weinstein, InstantDX's CEO, has been a long-time client of AML, and they wanted to introduce this service in Washington, DC, which is one of the two areas of the country where AML provides lab testing to physicians' offices.

"That's how our two companies got together," he added. "On our side, we found it easy to participate. We only needed to write an interface that links our LIS data base with the InstantDx host. Once that was done, secure access to AML's lab test data was up and running."

Low-Cost And Low-Effort

Bergstrom noted that it's a little early to evaluate physician reaction to this type of Internet-based laboratory service. "It's been active for only about four months," he observed, "and most of the activity involves prescriptions. However, it's a low-cost, low-effort way for doctors to access their patient's lab results. The simplicity of the InstantDX approach is intriguing."

InstantDX faces a host of competitors in the prescription-ordering field. Several have a higher public profile, such as **Allscripts**, **iScribe**, and **MedScape**, just to name a few. But THE DARK REPORT is unaware of any existing, operational services that allow a physician to both order prescriptions and view lab results on the same device.

The significance of InstantDX is that it supports THE DARK REPORT'S expectation that almost any e-health service, to be economically viable in the earliest stages of Internet-based healthcare services, must include lab test ordering and/or results reporting services. Lab executives and pathologists should closely watch how this trend unfolds because it will change the way laboratories interact with their clients. **TDR**

Contact Krishnan Seshadri. at 301-208-8800; Jack Bergstrom at 800-336-3718.

POCT Development Work Leads to InstantDX

ANOTHER IMPORTANT ASPECT about InstantDX is that it was developed directly from efforts to create a point-of-care testing (POCT) instrument system

"Our parent company, Immunomatrix, is developing a POCT system for HCV and triponin testing," explained Krishnan Seshadri, Chief Technology Officer at InstantDX. "This product is now undergoing FDA review.

"At one stage in its development, the question was asked 'how do we get test results from this POCT instrument into the doctor's hands?' Laboratorians know that many good POCT testing systems fail to provide a satisfactory reporting solution," he said.

"We believe POC testing requires a different type of work flow to maximize its success in both hospital and physicians' office settings. Our approach was to report POCT results via wireless technology," observed Seshadri. "This led us directly to recognizing both the value and importance of giving doctors a way to order prescriptions and view lab results via wireless. That was the genesis of InstantDX."

Lab Industry Update

Ohio Hospitals Prevail in Suit Against Federal Lab Claims

Five-year legal battle over allegations of lab test billing violations is settled

IT TOOK FIVE YEARS, but federal courts finally gave victory to the **Ohio Hospital Association** (OHA) in its long-running battle against federal regulators over laboratory test billing issues.

Early last month, the OHA signed a settlement with the federal government which resolves the OHA lawsuit. More importantly, it preserves an earlier, very important, federal court ruling which upheld a hospital's legal right to directly challenge government billing investigations through the courts as well as administrative processes.

Early Warning To Labs

"We are pleased with what we consider to be a very positive outcome," stated Mary Yost, Vice President of Public Affairs at the Ohio Hospital Association. "It affirms that hospitals and all healthcare providers have a right to pursue legal due process whenever allegations of improper billing procedures are raised by government officials."

Yost, during an interview with THE DARK REPORT, identified three significant outcomes from the OHA's lawsuit. "Our initial accomplishment came in October 1996, when we originally filed this action. After the suit was filed, the government backed off from its claims involving the most contentious of the three laboratory test billing codes.

"The OHA argued that, at the time these lab tests were billed, no guidance or regulations were issued which specifically required such test codes to be billed in the manner the government claimed," said Yost. "Once our suit was filed, however, government regulators in both Ohio and other parts of the country dropped these codes from their allegations of billing improprieties.

"Our second success was the appellate court ruling in December 1999," she continued. "This accomplished two basic things. One, it affirmed the right of hospitals and all health providers to use the courts as part of the due process in responding to government charges. Two, it gave hospitals the right to go to court without facing the threat of the False Claims Act."

Appellate Court Ruling

Under the False Claims Act, fines for violations are mandatory and can be as much as $10,000 per incident. "The appellate court's ruling eliminated the government's game of 'settle with us now or you will have to roll the dice should you go to court and we prevail in proving violations of the false claim act'," said Yost. "Now hospitals have the right to challenge such claims

using due process, and without facing the threat of huge penalties under the false claims act.

"The third major benefit is that, under the settlement, our hospital members who have corporate integrity agreements can forego filing detailed and burdensome compliance reports," she explained. "Instead, they can simply send a letter certifying that they are in compliance."

"Operation Bad Bundle"

These corporate integrity agreements had been signed by Ohio hospitals as part of their resolution of claims that they had improperly billed government health programs for certain lab test codes. The lab billing probe, initially started by the Justice Department in Ohio, was eventually widened to other states and became known as "Operation Bad Bundle."

As part of this probe, more than 150 Ohio hospitals paid millions to settle fraud and abuse allegations. Nationally, the government collected $63 million from 288 hospitals through early this year.

THE DARK REPORT was first to report on the significance of the Ohio billing investigation. It was also first to publish a detailed interview with federal attorney James Bickett, who spearheaded the federal investigation in Ohio. *(See TDR, July 22, 1996.)*

Demand Letter To Hospitals

In that state, the **Justice Department** sent letters to virtually all hospitals. It demanded that they review claims for certain test codes dating back as far as 1989, calculate the amount of money that was inappropriately billed and send a check to Medicare for double that amount. If the hospital didn't comply, it was threatened with the full force of the False Claims Act, which triggers a minimum $10,000 penalty per incident.

Throughout the 1990s, the commercial laboratory industry was confronted by similar allegations of billing fraud and similar arguments were offered at that time. Without political influence in Congress, however, the commercial lab industry chose to settle the allegations. This was not to be the case with the federal claims concerning hospital laboratory billing practices.

Once the national nature of the Justice Department's billing probe was recognized, there was an immediate and effective reaction by the hospital industry. The hospital lobby went into action and the resulting political heat caused federal regulators to dampen their efforts to press these claims upon hospitals.

Throughout the 1990s, the commercial lab industry, when confronted with similar allegations of billing fraud, lacked political clout in Congress. That was not to be the case for the hospital industry.

From a legal perspective, it appears that the Ohio Hospital Associations' case was fundamentally sound. This is demonstrated by the fact that, over five years, federal attorneys could not prevent the lawsuit from moving forward. The key ruling was made in December 1999 by the 6th Circuit Court, which reversed a lower court ruling that threw out the lawsuit and affirmed the standing of hospitals to sue the federal government.

Settlement talks began in earnest earlier this year after federal attorneys failed to get a rehearing at the circuit court level and the Supreme Court refused to hear the case. **TDR**

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Both Vendors and Labs Seek Better Solutions

Lab Test Ordering On Web Presents Tough Challenges

CEO SUMMARY: During 1999, many factors pointed to the speedy introduction of Web-based lab test ordering between physicians' offices and their laboratory providers. Several credible players, like Healtheon/WebMD (now WebMD) and Advanced Health Technologies, held numerous contracts to implement Web-based lab test ordering and results reporting. But Web-based lab test ordering never gained traction. Most first generation software products performed poorly and failed to meet expectations, both of labs and their office-based physician clients.

PART TWO OF A SERIES

BY CORY FISHKIN

EDITOR'S NOTE: The career of Cory Fishkin, President of Mostly Medical, Inc., has been focused on developing innovative informatics solutions for labs. During the past ten years, he's worked at such companies as ***Bukstel and Halfpenny*** *(originator of Dr. Chart),* ***Reuters Health****, and* ***Abaton.com*** *(before and after it was acquired by* ***McKesson Corporation****). He is considered to have as much first-hand experience in implementing Web-enabled lab test ordering and results reporting as anyone in the lab industry today.*

WEB-ENABLED LABORATORY TEST ordering is still in its infancy. Presently only a handful of laboratories have implemented this feature, so there remains much mystery and misinformation about using the Internet for lab test ordering.

In recent years, I've been involved in refining the lab test ordering and reporting system of **Abaton.com** and helping early-adopter laboratories introduce these services to their office-based physician clients.

In responding to lab RFPs and watching competitors, I've had a unique view of the good, the bad, and the ugly of Web-browser-based systems for lab test ordering and results reporting. Having earlier shared my insights about selecting test results reporting systems *(see TDR, July 23, 2001)* I would now like to do the same with lab test ordering.

Reporting Results Is Easier

Most lab administrators and pathologists know lab test reporting is a much easier task to accomplish than lab test reporting, for a simple reason. In reporting results, the lab starts with all the information it needs to provide to its physician-clients. Better yet, the IT staff usually has experience reporting HL-7 data to clinical systems.

This is not the case with lab test ordering, where the lab literally must rely on the physician's office to provide all the information necessary to properly accession the specimen, perform the test, report the results, and successfully bill. As well, the IT staff often has little experience with HL-7 order messages. It is important to remember this fundamental difference as we discuss the challenges of designing an effective Web browser-based test ordering system. The laboratory *must rely upon the physician's office* to provide it with full and complete information to properly process the lab test requisition.

Incomplete, Inaccurate, Illegible

Paper requisitions illustrate the challenge. When left to the physician and his staff to "fill in the blanks," many paper requisitions arrive in the lab with incomplete, inaccurate, or illegible information. Here is the first slippery slope which trips up many vendors as they build a lab test ordering system.

A good order entry (OE) system is designed to minimize the effort required by doctors and their staffs to complete the test requisition. The best tools to accomplish this are interfaces with the practice management software (PMS), auto-fills, and easy-to-access test dictionaries.

The next slippery slope for vendors is the complexity of an individual laboratory's "testing rules." These govern how the test requisition is completed, which lab is to perform the test, how results are generated and reported, and how the lab bills for reimbursement.

Vendors are challenged to: 1) capture each lab's individual range of procedural rules within the software system; and 2) design a system that prompts and guides the physician to complete the test requisition accurately, without becoming burdensome in the number of screens, pull-down menus, and tables the physician or staff must negotiate as part of the process.

What makes this even more difficult for vendors is the fact that existing brows-

Labs Can Cut Costs Using Browser-based OE

Editor: *Whenever competition for physicians' office-originated lab testing services intensifies nationally, it is usually in response to some service enhancement introduced by one or both of the two Blood Brothers.*

To date, neither ***Laboratory Corporation of America*** *nor* ***Quest Diagnostics Incorporated*** *has used widespread implementation of browser-based lab test ordering as a way to gain competitive advantage in snagging new physician clients.*

It seems their common strategy is to leave in place the existing infrastructure of PCs, line printers, faxes, and dedicated phone lines until some future point in time. If browser-based lab test ordering is offered currently, it is to certain existing key accounts or new clients. That's a sensible business strategy, because it means new accounts get a browser-based order entry system. That allows the lab to avoid spending money on PCs, line printers, and dedicated phone lines for new clients.

er-based software technology cannot perform tasks in as simple a manner as the DOS-based and client server systems which have performed so well during the past ten years.

I can best illustrate this concept by pointing out that banks, airlines, hotels, and most retail merchant accounting systems continue to use character-based systems, which rely on "tab" and "enter" keys to move through the screens.

Browser technology is built upon graphical user interfaces (GUI) and rely upon "the mouse," "drop down menus," and "clicks" to move through the screens. As it turned out, the earliest OE systems required the operator to perform too many of these steps to generate a completed lab test requisition. Newer browser-based OE systems try to emulate aspects of the "tab" and "enter" type of user interface to streamline the process.

Surprised By Complexity

The next surprise to vendors was the complexity of the "data model." This is a term used by software designers to describe the number of elements in a data base and how they must be linked. It is not unusual for the typical laboratory to offer 1,000 to 2,000 tests, some with multiple order entry requirements. To this data base must be added sizeable numbers of patients, physician accounts, payers and managed care contracts. Linking these data sets is an exhausting and never-ending task.

Taken collectively, these were the factors that made it difficult for the first generation of OE systems to perform acceptably. Early adopter laboratories were surprised by the lack of performance. Compared to existing character-based OE systems which typically refreshed a screen in three to four seconds or less, these first browser-based OE systems often required up to 20 seconds or more to refresh a screen.

Not surprisingly, physicians and their office staff did not embrace these browser-based lab test ordering systems. Compared to the existing DOS and character-based systems already in use in their offices, they viewed browser-based systems as a step backwards.

No Widespread Broadband

At this point, I think it is fair to note that the earliest OE vendors believed what the telecom companies were saying. From the mid-1990s forward, a number of credible companies promised that broadband Internet access would be widespread among business and consumers. DSL, cable modems, and other technologies would enable browser-based systems to use the Internet to

speed up all sorts of commercial transactions. Pioneering lab OE companies counted on this actually occurring.

Today, in 2001, we know this didn't happen except in certain metropolitan areas. Most consumers and most physicians' offices still do not have high-speed Internet access. The recent financial problems of telecom and broadband companies amply demonstrate that predictions of widespread broadband access were overly-optimistic.

Since the earliest browser-based laboratory OE systems were designed with the expectation that users would have broadband Internet access, it should surprise no one that so many performed poorly when used on a dial-up Internet connection.

New Generation OE Systems

Collectively, these factors provide a good basis for understanding how we arrived at the current state for lab order entry systems. Today a lab can consider a variety of products, many of which are second or third generation. The best of these products reflect the experience of the past three years.

With that in mind, I believe a laboratory should ask questions about these 11 important functions when considering the purchase of such systems:

1) How easily does the OE system interface with physician's practice management systems (PMS)? Essentially, the interface allows the OE system to pull patient demographics and billing information directly from the PMS. This is crucial to the success of any hospital laboratory outreach program because physicians and their staff, when filling out the lab req, want to avoid entering duplicate data of information which they have already entered into their PMS.

Labs should realize that interfaces between browser-based OE systems and the doctors' PMS are difficult because of the differences in technology and platforms. For the interface to work, the PMS must export data to the ASP data center. Alternatively, a software module that communicates with the PMS can be installed on the browser's PC. However, this solution defeats the goal of true thin client architecture.

It's also important to know that busy physicians' offices are already savvy on this topic. They know these interfaces exist. That's because the national labs have done a good job of creating interfaces with most of the major PMS products.

2) How does the OE system interface with the lab's LIS? In the commercial lab setting, this is relatively easy, because one IT system generally manages testing information and financial and billing information.

This differs from hospital settings, where a patient registration module exists independent of the LIS. To function in this setting the browser-based OE requires two interfaces; one to link the OE to the patient registration system and one to link with the LIS. Moreover, some hospitals have a method to check and insure correct identification of the patient using an MPI (Master Patient Index). This feature can often complicate the interface.

One interesting workaround to resolve the interface problem involves using PDF 417 bar codes. PDF 417 is a two-dimensional bar code easily capable of encoding 100% of the data on the test requisition. When the physician's office completes the requisition, the OE system generates a bar code that goes on the requisition. When the lab receives the paper requisition, it scans the bar code and the data is automatically read into the LIS.

This is quite efficient and can eliminate the need for an interface between the browser-based OE and the LIS. **Quest Diagnostics Incorporated** uses this approach in several of its labs. **Sunrise Medical Laboratories**, in

Hauppauge, New York, uses PDF 417 labels on all its test reqs as the primary method to get information into its **Antrim** LIS system.

3) When an OE vendor contracts with a laboratory, how does the vendor incorporate the lab's test catalog and rules into its OE system? Effectively, this is the task of converting the OE system into a customized product for that laboratory customer. It's a substantial amount of work in its own right.

Many labs do not already have this information in electronic format. For those that do, there are often no effective tools that the lab can use to export data to the vendor or for the vendor to import data from the lab.

Not surprisingly, setting up the lab's rules into the OE system is frequently a difficult and trying process for both the lab customer and the OE vendor. Typically, it can take 60 days to convert the data necessary to implement lab test reporting and between 90 to 270 days to convert data for browser-based test ordering.

Newer vendors to the OE market spend less time on managing this issue initially, because they have fewer customers. Vendors typically improve this function in their later product releases.

Once a lab's OE system is implemented, there is the need to update changes in rules and the lab test directory. You will want to ask whether the vendor requires your lab to transmit a file with updates and rules changes, which the vendor will then update. More preferable is the capability of the OE product to allow the lab to do its own updates and not require the vendor to get involved.

4) How easy is it for the doctor to order a test and complete the requisition? Earlier I described the problem of performance, as measured by lengthy screen refreshes and having too many mouse clicks and drop down menus. I always try to design an OE system with as few screens as possible to complete the test requisition.

There's a secret that will help you evaluate this aspect of "ease of use." The secret involves how often the enter key must be hit. In browser-based systems, this triggers a cycle where data is sent to the remote host, processed, sent back and the screen is refreshed with the new information. This is a major source of time delays and causes much frustration to a doctor and his staff.

My approach is generally to combine screens wherever possible. For example, does the OE system require separate screens for information about the patient, the payer, the guarantor, and for test order and test diagnoses? Each individual screen adds to the total time for completing a requisition because of the time to transmit and refresh. Combining screens is an effective way to help resolve this issue.

5) Does the OE system prevent the user from skipping "required" data items? Certainly the laboratory wants a complete test requisition, along with the correct ICD-9 code and payer information. But preventing the user from skipping a blank field can frustrate the physician and his staff. I prefer the approach where the system gives a warning that the information is required, and allows the user to override the warning and continue. After all, we don't know the clinical situation. This arrangement allows the user to request a test with the understanding that the lab is going to call and request the missing information.

6) Can the OE system track managed care contracts? Because of exclusive laboratory provider contracts with certain payers,

Cory's "Cool Features" Are Suggested For Browser-based Lab Test Ordering

YOU CAN CALL THESE "Cory's Cool Features." What follows are several features and capabilities that add value, but are not commonly found in all browser-based order entry (OE) systems.

- **Standing Orders:** Can the OE handle standing orders? For example, if the patient is to have a hemoglobin A1c test monthly, can the OE track this? One method is to allow the user to create 12 duplicate requisitions on the patient's first visit. The unused reqs remained stored in the system and are not assigned a number and sent to the lab until the appropriate month. This type of feature should help with patient compliance issues related to standing orders for lab testing.
- **Patient Service Center Support:** Can the system be used within the patient service center (PSC) to allow test orders for multiple accounts. This has to do with ordering hierarchy. Many OEs are restricted to a two-level hierarchy; which is the group practice or the "account," and which doctor. The system must be capable of a three-level hierarchy, because the PSC must deal with account, then doctor, then patient. Another PSC capability that is useful is checking patient eligibility at the front end.
- **Supply Ordering:** Is the OE system capable of transmitting orders for supplies from lab clients? Increasingly, this is a popular feature. Some vendors, such as **Labtest.com** and **Labportal.com** support this function. The **Careevolve.com** system also supports a full physician office supply module, not just lab supplies.
- **Accounts Receivable Support:** Some labs want the capability of reviewing a patient's financial record at the patient service center. If a balance is owed, this feature allows a lab to trigger some type of collection activity in response to the patient's current visits to the PSC.

it is an advantage if the OE system can alert the user that a patient has a specific managed care plan. This allows the physician's office to direct the specimen to the correct lab and cuts down delays in getting the specimen to the right lab as well as downstream problems in billing for those tests.

7) Can the OE system respond to special information requirements? There are a variety of tests, particularly in cytology and pathology, which require detailed and specific information to perform the test properly. The OE system must be able to recognize these special tests and properly gather this information at the time the requisition is prepared in the physician's office. The best OE systems do this very well, but be forewarned that not all products perform strongly in this regard.

8) Can the OE system identify duplicate tests which are being ordered? Here's an overlooked benefit to the users of OE systems. Simply put, the OE should have the ability to check whether a test has already been ordered within a panel. It should also alert the user that the test was ordered within the past 30 days, perhaps by another physician within the group.

This feature is a way for the laboratory to add value to its physician-clients. We frequently saw situations where large groups and IPAs (independent physician association) were "at risk" with a capitated contract. We learned that much duplicate testing occurred because, when the doctor looked at the chart, an earlier test result had not yet been posted. We

added this feature to the OE functions at Abaton.com because it had real and positive impact. Our clients told us their internal studies indicated that as much as 10% of all lab tests are ordered only because an earlier test result was not in the chart at the time a patient was being seen by the doctor!

9) Does the OE system require too many look-ups to enter the right tests and diagnosis codes? Can the OE system strike the right balance between efficiently guiding a novice user while at the same time allowing the "power-user," who has the same daily ordering patterns, to speed through the screens? My recommendation is that the OE system should allow several test codes, separated by a space or comma, to go in one field and be processed with one stroke of the enter key, like the entry screens of many LIS systems. The same should be true of ICD-9 codes. These processes should not require a drop-down menu for the power-user.

10) Can the OE system easily add and delete tests as well as reprint an order? This is a customer-friendly feature. Some OE systems allow the physician to add or delete tests to an order and reprint it. Other systems require a new requisition to be prepared from scratch. At Abaton.com, we actually enhanced the product so a customer could add tests to an already-transmitted requisition. We accomplished this by allowing the user to review the existing order and "add-on" a test without having to create a new requisition from scratch.

11) Can the OE system track tests from order to reported results? I consider this a critically important function for a good OE system. It should allow the ordering party to track a lab test order from origination to reported result.

This is important because most physicians' offices already keep a hand log or a copy of the daily lab orders. The staff checks off items on this log as test results are received. When an OE system has tracking capability, the office staff is thrilled with the opportunity to scrap the hand log and track test orders electronically. When this feature was added in later releases of Abaton.com, it proved quite popular with clients.

Browser-Based Ordering

Based on work with health system laboratories, hospital-based labs, and independent commercial laboratories, my belief has always been that both laboratories and physician office clients share a mutual self-interest in the success of browser-based order entry. The potential benefits to both parties are substantial.

The first part of this briefing covered some of the challenges and difficulties encountered by the pioneering companies that entered the browser-based OE lab market three and four years ago. It is important to understand why browser-based OE systems face different technical challenges than existing character-based systems. With each product release, pioneering vendors are implementing solutions to these problems.

That is why I believe the current "best-of-class" systems can deliver the type of performance expected by laboratory purchasers and physicians' office users. As the market moves forward, ongoing advances in technology *and* bandwidth should continue to improve the performance and capability of these products. TDR

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UPCOMING

Next in this special series on browser-based lab test ordering and results reporting is an analysis of pricing models offered by different vendors and insider techniques for negotiating win-win contracts.

Dark Index

Quest & LabCorp Show Gains In Mid-Year Financial Reports

Dominant influence in revenue growth is impact of better pricing for lab testing

FOR THE FIRST SIX MONTHS OF 2001, improved pricing for lab testing services was the strongest contributor to revenue growth at both **Laboratory Corporation of America** and **Quest Diagnostics Incorporated**.

One important consequence of this development is that competing laboratories, including hospital lab outreach programs, are also enjoying the benefits of better pricing. It's another sign that the widespread "loss-leader" pricing tactics of earlier years now comprise a steadily diminishing portion of the total "book" of laboratory managed care contracts in the United States.

During the first six months of 2001, revenues climbed to $1.814 billion at Quest Diagnostics. This was a gain of 4.62% over the $1.734 billion the company generated during the first half of 2000.

Six-Month Revenue Growth

Quest Diagnostics reports that "excluding the effect of testing performed by third parties under our laboratory network management arrangements in 2000," its net revenues increased 7.5% over the same six-month period in the previous year.

Quest Diagnostics indicates that average revenue per accession increased 8.0% as a result of "improved pricing on managed care business, a shift in test mix to higher value testing, and a shift in payer mix to fee-for-service reimbursement." During this same period, clinical testing volume only increased 1.1% "after adjusting for business contributed to unconsolidated joint ventures" [involving Quest's partnerships in Phoenix, Indianapolis, and Dayton].

Strong Growth At LabCorp

LabCorp posted a healthy 13.8% increase in revenues for the first six months of 2001. Net sales were $1.075 billion, compared to $945 million for the same period of 2000.

LabCorp reported that improved pricing was responsible for 7.3% of the increase (like Quest, attributed to price increases, a shift in test mix to higher-value tests, and more fee-for-service business). But, in contrast to Quest, LabCorp's different business strategy contributed to a higher growth rate in specimen volume, totaling 6.5%.

In recent years, one primary business strategy at Quest Diagnostics has been to digest its acquisition of **SmithKline Beecham Clinical Laboratories** (SBCL). Integrating the two billion-dollar organizations has been a challenging task. To the credit of Quest CEO Ken Freeman and his management team, this chore has unfolded with a high degree of success, particularly when judged against the almost universally poor results achieved by

virtually all post-acquisition lab consolidations done during the commercial lab consolidation wave of 1986-1995.

Internal Versus External

In contrast, even as Quest Diagnostics was turning its focus inward, toward effective integration of its two national lab systems, LabCorp, during these same years, concentrated on an external business strategy. It needed revenue growth to help it service and amortize its sizable debt. That is why LabCorp's rate of growth in specimen volume has consistently exceeded that of Quest Diagnostics in recent years. LabCorp's external strategy called for considerable resources to be put into sales and marketing as the vehicle to increase revenue and create more cash flow to handle its debt.

LabCorp's major milestone during the past 14 months has been its successful financial restructuring, culminating in the 10-for-1 reverse stock split in May 2000. *(See TDR, June 19, 2000.)* This gave the company a strengthened balance sheet, and provided it with the capital resources needed to launch further rounds of system integration.

Costly To Shutter Labs

Restructuring is a costly process. When a lab facility is closed, there are sizable expenses for severance, liquidation of equipment, and termination of the lease. For instance in the two years following the spin-off of Quest Diagnostics from **Corning Corporation**, it wrote down more than $80 million as it closed down lab facilities and revamped its national service infrastructure.

Following the 1995 merger of the former **Roche Biomedical Labs** and **National Health Labs**, LabCorp's management lacked the balance sheet and resources necessary to effect a rigorous consolidation and integration of the two national lab organizations.

With its newly-strengthened balance sheet, LabCorp is continuing to implement further internal integration. LabCorp reports restructuring charges of $17.7 million for the first six months of 2001 as a result of this activity.

Over at Quest Diagnostics, the interesting new initiative is a recently-announced agreement to participate in a laboratory benefits program with **AdvancePCS**, the pharmacy benefits manager. Called "AdvancePCS's Performance Lab™", it allows members to use their pharmacy benefit card to obtain laboratory tests.

PCS Learned From Lab*One*

Long-time readers of THE DARK REPORT will recall that **Lab*One*'s** successful LabCard™ program was originally administered by PCS. However, several years ago, while PCS was still owned by **Eli Lily & Co.**, it suddenly stopped servicing LabOne's program and announced that it would establish its own lab benefits card program. PCS initially announced that LabCorp would be its partner in this effort.

Long-time readers will also recall that one of the reasons PCS wanted to develop a lab test benefits program is that it intended to begin matching clinical lab test results with prescription orders. It expected to uncover patients who had not been properly diagnosed, or who were not given the appropriate prescription. Because Quest Diagnostics wants to generate added value from its data base of lab test results, its new arrangement with PCS will help both companies pool laboratory test results and prescription data in interesting ways.

The agreement between AdvancePCS and Quest Diagnostics also demonstrates that combining pharmacy orders and lab test data is seen as a source of added value to clinicians and other healthcare entities. For that reason, expect to see other companies attempt to combine prescription data with lab test results. **TDR**

INTELLIGENCE

LATE & LATENT

Items too late to print, too early to report

Here's early warning: Medicare and Medicaid funding will become high-profile issues during 2002. Numbers just released by the **Congressional Budget Office** indicate that Medicare spending will increase by 10% during fiscal 2001 over fiscal 2000. Increased provider payments are contributing to part of the increase. Meanwhile, the nation's economic slowdown is slashing state tax collections, causing experts to predict that many states will be forced to squeeze Medicaid funding in the next budget cycle.

PROMPT PROVIDER PAY

Overly-long delays in payments to providers have been a major issue in recent years. In Texas, the **Department of Insurance** has levied fines totaling $9.6 million against six insurers. By state law, "complete and accurate claims" must be paid within 45 days or fines of up to $1,000 per day per incident can result. Other states are becoming more assertive in supporting speedy payment of provider claims.

SIEMENS BECOMES FIRST HEALTH INFO FIRM TO GET ISO-9000

After nine months of preparation, **Siemens Medical Solutions Health Services Corporation**, a division of **Siemens Medical Solutions** of Malvern, Pennsylvania, was granted ISO-9000:2000 certification following its audit last month. This division of Siemens now has the distinction of being the first large healthcare information company in the United States to earn its ISO-9000 certification.

ADD TO: SIEMENS MEDICAL

THE DARK REPORT believes that other healthcare IT companies will work toward ISO-certification during the next few years. Most diagnostic manufacturers have been ISO-certified for years. As more healthcare IT companies gain this certification, it will benefit the clinical laboratory industry. ISO principles require vendors to pay close attention to the needs of their lab customers.

WEB-BYTES

• Canadian consumers are using the Internet to do extensive health research. The **Canadian Online Health Monitor** released a new study which reveals that 80% of all Canadians who use the Web seek out health information. Moreover, the Internet is now the second most common way that Canadian consumers gather health information! In fact, the only source of healthcare information that ranks higher than the Internet is face-to-face interaction with health professionals.

• Internet-surfing consumers are also the target of the recently-introduced "www.labtestsonline.com." Operated by a consortium of six lab trade groups, along with a starting initial group of six major diagnostics sponsors, the Web site provides noncommercial information about most common lab tests.

• Remote monitoring of diagnostic instruments by vendors is gaining momentum. **Beckman Coulter** will use **eMation, Inc.'s** system to monitor the operation of its Synchron LX Chemistry analyzers. The first lab sites will become operational during the next few months.

That's all the insider intelligence for this report. Look for the next briefing on Monday, September 24, 2001.

UPCOMING...

- *Why Prospects Look Brighter for Reforms to Medicare Lab Test Reimbursement Policies.*
- *How Pro-Active Pathology Groups Are Winning Their Marketing Battle Against National Anatomic Pathology Companies.*
- *Florida Hospital System Slashes Lab Testing Costs in a "Risk-Free" Setting.*