

Special Internet Issue!
Predictions About
Web-Based Lab Test Ordering & Reporting

From the Desk of R. Lewis Dark...

THE **RD** **REPORT**

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

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Commentary & Opinion by...

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Big Challenges For Clinical Laboratories

AS YOU WILL READ IN THIS ISSUE, IT IS A REMARKABLE PREDICTION. Our editor states that, in only 24 months, virtually every physicians office in the United States will be connected to its laboratory providers through a web-based arrangement.

In my decades of watching the clinical laboratory industry, I have never seen anything approaching the speed with which this new technology will take over the clinical laboratory profession. It is a clear sign that the Internet economy is now targeting healthcare. It is also a sign that the pace of technology change in our industry is about to shift into high gear. Frankly, I don't know if most laboratory administrators and directors are ready for this development.

In coming issues of THE DARK REPORT, there are some equally remarkable stories to introduce to our clients. More new technology is about to hit the marketplace which will radically change the organizational structure of both hospital labs and commercial laboratories. I don't believe I would be going out on a limb to declare that the variety of new technology soon to arrive in the clinical laboratory marketplace will make this an exciting, but frustrating, business.

It will be exciting because all this new technology expands the usefulness and relevance of the laboratory to integrated clinical care. But it is frustrating because the sheer volume of new technology, and the speed with which it arrives in the marketplace, will challenge laboratory managers and pathologists. Our industry may be about to undergo a "technology overload." As that occurs, many lab administrators and directors may mentally burn out from the non-stop pressure to evaluate and implement new technologies.

Maybe the global message to extract from this coming tidal wave of new technology is that clinical laboratories will finally be forced to abandon the "top down" hierarchal style of management that still predominates. No longer can one solo lab administrator reserve the right to make all major decisions. Instead, we will finally see the adoption of management philosophies rooted in Deming, Juran, ISO-9000, and the like. These are team-based management styles. They empower people closest to the problem, and the customer, to develop the best solutions for meeting and exceeding customer needs. As that happens, it should spark a new golden age for the lab industry.

Internet-Based Lab Info Racing Into Marketplace

We predict that lab ordering/results reporting will be totally web-based within 24 months!

By Robert L. Michel

CEO SUMMARY: *It's another roller coaster ride for clinical laboratories and pathology practices. Within 24 months, virtually all physician offices will be using web-based technology to order lab tests and receive test results. Web-based ordering/reporting of laboratory testing will drive the organizational form of laboratories and pathology groups throughout the upcoming decade.*

IF LABORATORY CONSOLIDATION was the big story of the 1990s, then laboratory information enhancement will be the dominant theme during the first decade of the 21st century.

THE DARK REPORT makes a startling and absolute prediction: within 24 months, *every* physician office in the United States which generates a high volume of laboratory testing will be using a web-based system for ordering lab tests, receiving results, and accessing a patient's complete lab test history.

By December 31, 2001, it will be difficult to find *any* physician office continuing to use paper test requisitions for ordering lab work and a line printer for receiving lab test results. Web-based test ordering/reporting will sweep the clinical laboratory industry.

Obviously, this has major ramifications for the competitive position of individual commercial labs and hospital laboratory outreach programs. During the next 24 months, those labs first into their local market with effective web-based test ordering/reporting systems will have a competitive advantage.

Further, clinical laboratories which are early adopters of this new way to communicate with physician offices will probably find themselves with a competitive advantage. They will find it easier to enlarge market share even while protecting existing clients from competitors.

Our confidence in this prediction is absolute. Nothing can stop this transformation from occurring—and it will take only 24 months to sweep through the commercial laboratory industry. In

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so doing, this will be the swiftest technology revolution ever to hit the clinical laboratory industry.

THE DARK REPORT recommends that laboratory executives and pathologists devote *immediate and full attention* to this subject! On a priority basis, every clinical laboratory and pathology group practice serving physician offices should create a business strategy that responds and incorporates this web-based technology into its business and operational plan.

24-Month Transformation

Because this whole transformation will occur in only 24 months, no responsible lab executive can ignore, nor delay, his laboratory's response. And, although the primary emphasis will be on clinical lab testing, anatomic pathology will find itself driven on a comparable implementation curve.

To aid our clients and regular readers, THE DARK REPORT intends to provide intensive coverage to this topic in coming months. There is no other single aspect of laboratory management which approaches the impact of web-based lab test ordering/reporting.

Asleep At The Switch

Yet, it seems that most of the lab industry is asleep at the switch. To our knowledge, this article in this issue of THE DARK REPORT is the first public recognition that the clinical lab industry is about to plunge into a revolutionary change in how labs communicate with physicians' offices. Only a handful of laboratory executives, early adopters themselves, appreciate the full implications of this impending transformation.

Even as information links between labs and physician offices move to a web-based infrastructure, similar changes will be happening between hospitals and their reference laboratories.

Within this segment of the laboratory industry, the signals are less clear. Reference laboratories already have a

variety of ways to directly connect with their hospital laboratory clients.

Also, the information system needs of hospitals are more complicated than those of physician offices. With the typical physician office setting, there is probably one practice administration software system. This is not true of a hospital laboratory, which utilizes a relatively complex LIS software program that must interface with a variety of other IS programs used within the hospital or integrated delivery network (IDN).

For these reasons, THE DARK REPORT believes it will take more than 24 months for hospital laboratories to fully migrate onto a web-based solution for communicating with its users and reference laboratories.

However, it won't take much longer than 24 months. THE DARK REPORT predicts that web-based lab test ordering and reporting will also become the communications standard between reference labs and their hospital lab clients.

This entire issue of THE DARK REPORT is devoted to the subject of web-based lab ordering and reporting. Clients and readers will learn about the market forces pushing this development and gain a first look at the major companies offering web-based products to laboratories.

Business Drivers

Because it is important to understand the business drivers creating this change, THE DARK REPORT is also providing insightful interviews from two executive leaders involved in web-based technology. (*See pages 11-17.*)

It is crucial that laboratory executives and pathologists gain an accurate perspective about this trend. Web-based laboratory information systems will drive the organizational design of clinical laboratories throughout the next decade.

TDR

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Physicians Demand Web Solutions From Clin Labs

It will be doctors who drive the transition to web-based lab test ordering/reporting

CEO SUMMARY: *As physicians gain personal familiarity with the Internet and its potential to enhance their medical practice, they logically begin to want their clinical laboratory to offer web-based solutions. Physicians are driving this impending marketplace shift away from proprietary PC computer ordering/reporting systems to web-based products. Only labs willing to respond will maintain their position in the market.*

PHYSICIAN DEMAND will be the force driving the wholesale transformation of how tests are ordered and reported between commercial laboratories and physician offices.

It is why THE DARK REPORT predicts that only 24 months will be required to convert virtually all doctors' offices away from existing proprietary lab test ordering/reporting systems. Expect web-based solutions to be the norm for the lab industry by December 31, 2001.

This unfolding trend will directly impact two classes of clinical laboratories: commercial laboratories and hospital laboratory outreach programs. These are the laboratories which serve physician offices.

Physicians Drive Transition

It is the assessment of THE DARK REPORT that physicians will drive the transition from PC workstations and teleprinters to web-based lab test ordering/reporting. It is important for laboratory executives and pathologists to understand this fact.

Simply put, it is the customers of the laboratory who will force this change upon laboratories. The ramifications of these fact are equally simple. Labs which are too slow to respond to the higher expectations of their client physicians will lose those accounts.

Laggard Labs Will Lose

Because this is a paradigm-shifting trend, the movement towards web-based test ordering/reporting represents an opportunity for aggressive laboratories to solidify and expand their share of the testing marketplace. Laggard laboratories will find themselves losing customers.

That is why this developing trend requires immediate action by any laboratory which provides testing services to physician offices. This is a trend which will create new winners and new losers within the laboratory industry.

Understanding this phenomenon is relatively simple. Two separate factors are combining to create this revolution in how clinical laboratories handle information. One involves demand, the other involves technology.

On the demand side, it will be physicians who drive this transition. This is a change from past technology introductions involving the clinical laboratory industry. Historically, labs were first to recognize the value of new technology that could help clinicians. But once a lab acquired new technology, it was necessary to educate physicians about the benefits of this technology.

Ordering Patterns

One example is the technology that automated chemistry and hematology. Before ordering patterns could change, labs needed to educate doctors about the benefits of this new technology. Similarly, when labs introduced PC computer workstations to physician offices in the early 1990s, it was necessary for labs to educate doctors on how these workstations could improve test ordering and results reporting.

What will be different for the clinical laboratory industry in this current technology cycle is that doctors will drive its implementation. This is a major reason why THE DARK REPORT predicts a total conversion of the marketplace in only 24 months.

Physician demand to have labs provide web-based ordering/reporting capability springs from marketplace dynamics. First, doctors are becoming personally familiar with the Internet.

80% Of Docs Using Internet

Studies show that, just within the last 12 months, upwards of 80% of the nation's 600,000 physicians now use the Internet on a regular basis. They access the Internet from either their office or home, or both.

Once physicians gain experience about the Internet, they seek vendors and suppliers offering Internet features that might be useful. In other words, as physicians gain personal knowledge about the Internet, they begin to ask their suppliers to provide Internet-com-

patible solutions to their practice needs.

It is important for laboratory executives and pathologists to fully understand the ramifications of this development. It means their customers, the clinicians, are becoming increasingly sophisticated about the potential of the Internet to enhance their medical practice and its administration.

It raises the expectations physicians have about the level of service they get from clinical laboratories. (A side note to pathologists: with each passing month, a greater number of clinicians will expect their pathologists, radiologists, and other physician referrals, to be Internet capable.)

Another significant element driving physician demand for web-based lab test ordering/reporting is the reality of today's healthcare marketplace. In many cities, it is increasingly common for a physician's office to regularly refer specimens to as many as four or five clinical laboratories, based on managed care provider panels.

Economic Benefits

In larger physician group settings, there may be two or three lab PCs, plus a couple of line printers. A web-based laboratory test ordering/reporting capability makes all that hardware and clutter disappear from the physician's office. These are direct economic benefits motivating a physician to move his practice onto a web-based lab test ordering/reporting system.

Accept these two elements and it becomes easy to understand why physicians will drive the widespread implementation of web-based lab information capability. This reverses the traditional manner in which enhanced lab technology made its way into physicians' offices.

The key business concept here is "customer expectations." It is the laboratory customer, the clinician, who is changing

“It’s the Internet, Dummy!” Finally Hits the Clinical Laboratory Industry

SOONER OR LATER IT HAD TO HAPPEN to the clinical laboratory industry. The impending arrival of web-based laboratory services brings with it a new type of business cycle.

What will be different about this business cycle is that it accelerates, forever, the pace of change to the lab industry. From this point forward, industry-wide trends will take only months, not years, to transform laboratory operations.

Against this background, it is quite apt to state “It’s the Internet, dummy!” Laboratory executives and pathologists face the same business dilemma that confronted Bill Gates of **Microsoft Corporation** in 1995. Some of our more astute readers will recall the famous memo he wrote and distributed on May 26, 1995.

Bill Gates had realized that the future of the computer industry and information management was going to be based upon the Internet, not on customer-owned and maintained internal computer systems.

Immense Paradigm Shift

This was a paradigm shift of immense proportions. As Chairman of Microsoft, he needed to get the immediate attention of all employees, and direct their efforts away from existing projects and towards Internet-based products.

To accomplish this, Bill Gates wrote a widely-publicized memo, the gist of which said “Drop everything today. It’s the Internet!”

From the perspective of 1999,

Bill Gates certainly got it right in 1995. He recognized, ahead of just about everyone else, how rapidly Internet-based goods and services would capture the marketplace.

The experience of Bill Gates and Microsoft has direct application for clinical laboratory executives and pathologists. It is a warning, and an encouragement, that it is essential to change the operational basis of a laboratory or pathology group in response to new market developments.

Business Strategy

In fact, proactive change is probably the only business strategy which supports a financially-viable business in today’s healthcare marketplace.

At Microsoft, Bill Gates was the canny leader who recognized the next business trend, and had the guts to lead his team in that direction, ahead of most competitors. Within the lab industry, are there comparable leaders?

As of publication time, a handful of laboratory organizations have committed to implementing web-based test ordering/reporting capabilities. These are the organizations led by practical visionaries.

Management teams at these labs recognize the fundamental changes now occurring in the marketplace. They also want to seize the opportunities such changes make possible. Certainly these will be the lab organizations that set the pace for the year 2000 and beyond!

his/her expectations about the quality of laboratory service which is desired.

Note that the two drivers behind the upcoming growth in physician demand for web-based lab test ordering/reporting services are independent of another well-established trend that remains influential. That trend is the desire of clinicians and other users of lab data for increasingly sophisticated lab information services.

Even patients themselves are going to demand that laboratories provide them with information that allows them to better understand why the test was ordered and what the results mean to them.

THE DARK REPORT already sees this trend at work. As payers get their own information house in order, they begin to request that laboratory data be made available in forms that make it easier to evaluate utilization, cost of care, outcomes, and physician practice patterns that involve diagnostic testing.

As users of lab data, physicians will increasingly want the laboratory to do more than simply report individual test results for individual patients. Cost pressures will give physicians the motivation to use clinical pathology to improve healthcare outcomes while reducing the cost of care.

Even patients themselves are going to demand that laboratories provide them with information that allows them to better understand why the test was ordered and what the results mean to them. Any laboratory which ignores the needs of consumers will find itself at risk in coming years.

On the technology side, rapid and ongoing improvements to software, hardware, and the Internet will contin-

ue at a break-neck pace during the next decade. This will give laboratories the technology tools to create added-value information services. With enhanced information management tools available, during the next few years, the marketplace will quickly separate laboratories into two categories: financial winners and financial losers.

Developing Technology

Winning laboratories will be those that proactively developed ways to apply this developing technology into the types of information products and services that users want, need, and demand.

Losing laboratories will be those that decided to wait for the market to identify the types of laboratory information services it wanted. By the time such labs can recognize these winning services, their innovative competitors will have already captured the business.

We believe these two factors, user demand and continually improving technology, are now poised to begin stimulating radical change in the marketplace for laboratory testing services. This was not true in the years leading up to 2000.

Accelerated Change

That is why this issue of THE DARK REPORT targets laboratory information system products. The clinical laboratory industry is now entering a period of accelerated change—driven by information technology.

With firm conviction, we recommend that every independent lab, every hospital lab, and every pathology practice *immediately* make laboratory information system service enhancements their number one business strategy. In so doing, laboratories will be prepared to meet the steadily increased expectations of their physician customers.

TDR

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New Internet Companies Target Clin Lab Services

Internet start-ups recognize importance of lab data to entire healthcare system

CEO SUMMARY: *During the coming transition from proprietary PC-based to web-based lab test ordering/reporting systems, it will be Internet start-up companies that have the competitive jump over traditional LIS vendors. There are many reasons why this is true. Here is a first look at the major players who will compete to provide Internet links between clinical laboratories and physicians, payers, patients, and hospitals.*

TODAY'S LEADERS in the LIS industry may well find themselves also-rans in tomorrow's race to use the Internet to connect clinical laboratories with their users.

Today, the field of lab information systems is dominated by such companies as **Meditech, Sunquest, Cerner, HBO & Co.,** and **SMS.** The laboratory information system software they provide drives most of the nation's largest commercial and hospital laboratories.

Unrecognized Phenomenon But there is a new class of competitors gathering momentum in the marketplace. Among the leaders in this group would be **Healtheon Corporation, Advanced Health Technologies,** and **Abaton.com.**

It should be noted, however, that this new class of competitors is focused on a specific market opportunity. These are companies developing web-based products that connect the clinical laboratory to its users. They are not offering software to connect the laboratory's internal functions. Instead, these com-

panies are focused on connecting a laboratory with various external users, including physicians, payers, hospitals, and even patients.

As the table on page 10 shows, there are at least five different types of companies now in the marketplace with web-based solutions for connecting a clinical laboratory with physician offices. It shows that competition will be intense.

If there is a "big dog" in the fight to link clinical laboratories with physician offices, it would have to be Healtheon. Healtheon already has signed contracts with **SmithKline Beecham Clinical Laboratories (SBCL,** now owned by **Quest Diagnostics Incorporated); Laboratory Corporation of America; DIANON Systems, Inc.;** and **UroCor.**

With these contracts, Healtheon is positioned to offer connectivity to physicians affiliated with these labs. These contracts represent about \$3.5 billion in lab testing revenues every year. Thus, Healtheon has already

positioned itself as the designated web services provider for as much as 10% of the nation's \$30+ billion in annual diagnostic tests. Healtheon appears to be the first internet start-up to firmly establish a major presence in the commercial laboratory marketplace.

WebMD Also A Player

Healtheon is buying **WebMD, Inc.**, an internet company which offers portal services to physicians. (See *TDR, July 19, 1999.*) WebMD, with 60,000 participating physicians, already has its own significant presence in the health-care marketplace.

Advanced Health Technologies, Inc. (AHT) of Chicago, Illinois has a product familiar to many laboratorians. It owns Dr. Chart. In contrast to Healtheon's focus on commercial laboratories, AHT wants to serve integrated delivery networks (IDN). Its web-based products are designed to address the laboratory testing needs of an IDN, which are different than those of commercial laboratories.

AHT has 60 contracts with IDNs that are currently operational. It also has a contract with LabCorp to provide "middleware" that will connect LabCorp with its IDN clients.

Thus, Healtheon has already positioned itself as the designated web services provider for as much as 10% of the nation's \$30+ billion in annual diagnostic tests.

Abaton.com represents a slightly different focus on the market. Technology used at this company was developed at the **University of Minnesota** and in close cooperation with **United Healthcare Corporation**. Abaton.com includes a data repository as part of its connectivity solution. **Allina Healthcare System** in

Minneapolis and **Centrex Clinical Laboratories** of Syracuse, New York are early users of the Abaton.com product.

Not to be overlooked are the traditional LIS companies. These companies recognize the growing threat that web-based software services represent to their closed, proprietary software products. They are racing to add web-based features to their existing line of products. THE DARK REPORT is developing a full assessment of the specific plans these LIS vendors have for web-based laboratory software services.

It should be noted that the traditional LIS vendors face a challenging contradiction. Their revenue and operating profits are based on selling a software program to a laboratory client. That client also pays an annual service/maintenance fee.

Emerging Business Model

However, the emerging business model for internet-based software services is quite different. Basically, the vendor keeps and maintains the software. Clients and users use the Internet to access that software. Applets, similar to Java, are downloaded to the customer's workstation, perform the desired work, and are closed out when the work is completed.

Under this model, it is the vendor who continues to hold the software and maintain it. The challenge for the large LIS vendors, such as Meditech, Cerner, Sunquest, and others, is to successfully make the transition from the old model of software services to this Internet-based business model.

Another class of competitors offering web-based laboratory test ordering/reporting are clinical laboratories themselves. Many hospital laboratories are familiar with the efforts of **Specialty Laboratories, Inc.** of Santa Monica, California. Specialty has

Competitors Lining Up to Offer Web-Based Laboratory Test Ordering/Reporting Services

When surveying the marketplace, at least five distinct types of entities seek to offer links between physician offices and clinical laboratories. Here's how THE DARK REPORT sorts them out:

1. Transaction & Portal Firms:

Newly-founded companies which are designed totally around Internet technology. Healtheon and WebMD are the biggest and fastest-moving competitors in this category.

2. Information Consolidators:

Our name for companies which, in the process of providing healthcare information, want to aggregate it and create useful knowledge. Advanced Health Technologies (Dr. Chart) is an example. They are moving to combine their existing offerings in pharmacy with laboratory testing services.

3. Data Base Repositories:

Here's a new class of companies which want to use Internet technology to create healthcare data repositories as

part of their total service menu. Abaton.com represents an early leader in this segment. It provides web connectivity between laboratory and users, plus a data repository for clinical and other information.

4. Traditional LIS Companies:

Major LIS vendors will not cede this part of the clinical laboratory marketplace. All these companies are developing solutions to connect clinical labs with physician offices. Meditech, Sunquest, Cerner, SMS, and HBO are the major players in this category.

5. Independent Developers:

The American way is to let independent inventors bring their ideas to market. Already a number of laboratories have designed their own web-based solutions. Specialty Laboratories of Santa Monica, California; and Clinical Laboratory, Inc. of Scranton, Pennsylvania offer their laboratory services clients home-grown web services.

committed a lot of resources to develop web-based solutions for its laboratory clients.

In Scranton, Pennsylvania, **Clinical Laboratory, Inc.** has offered its laboratory clients a web-based test ordering/reporting system for almost two years. This independent commercial laboratory demonstrates that even home-grown web solutions can provide added value to clients and customers of laboratory services.

The extensive line-up of companies committed to bringing web-based lab test ordering/reporting to the marketplace demonstrates that a serious effort is now under way to wean the lab industry from its current reliance on PC workstations and teleprinters.

The fact that Healtheon has already positioned itself to be the transaction provider for as much as \$3.5 billion in annual laboratory testing proves that radical change is already occurring. It is just one reason why THE DARK REPORT confidently believes that all high-volume physician offices will be connected to their laboratory by the Internet within the next 24 months.

Laboratory executives and pathologists should confront this trend head-on. Every laboratory and pathology group needs an Internet strategy if it is to survive and prosper in the coming decade.

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Advanced Health Targets Integrated Health Networks

"The question that every clinical laboratory must now ask is this: will my lab be a technology differentiator or a technology enabler?"

Rob Alger, Advanced Health Technology

Connecting laboratories with various providers inside health systems requires different solutions

CEO SUMMARY: Many hospital-based laboratories have a different mission than commercial laboratories. They must support the variety of provider types that participate inside the integrated healthcare system. Advanced Health Technologies (AHT) serves this market. Earlier this month, *THE DARK REPORT* traveled to Chicago for a personal visit with AHT's President, Rob Alger. In this exclusive interview, Alger reveals why AHT pioneered a web-based solution for lab test ordering and reporting. He also explains why Internet technology will revolutionize the clinical lab industry and the healthcare system.

EDITOR: You have incisive views about how and why web-based lab test ordering/reporting is about to transform the clinical laboratory industry. Would you share them with us?

MR. ALGER: Certainly. Starting early in the 1990s, national laboratory companies used information technology as a differentiator. The laboratory owned the test ordering/reporting system and used it to lock in doctors as clients.

EDITOR: You are referring to the PC-based computer systems that the three blood brothers would put into physician offices?

MR. ALGER: Precisely. However, as lab consolidation created the oligopoly situation we now see in the market, this oligopoly brought about the non-differentiated lab testing product we now see.

EDITOR: In other words, although the lab industry has consolidated into just a few giants, the service menu and quality of its testing is seen as about the same by most doctors and insurers.

MR. ALGER: Yes, and because these lab

services are non-differentiated, they end up being sold on cost. The range of capitation rates for laboratory services demonstrates this point. Since capitation rates were too low to recover costs, most commercial laboratories lost huge amounts of money in recent years.

EDITOR: I suspect that you are leading up to another influence that commodity pricing has had upon the lab industry.

MR. ALGER: Even as lab services became undifferentiated, insurers and HMOs developed exclusive lab provider panels. If doctors want access to the patients, they must use the lab designated by the insurer. In many cities, it is very common to find larger physician groups having to use several laboratories.

EDITOR: How is that a problem?

MR. ALGER: Remember those proprietary computer systems? Each lab created its own, and it sits in the doctor's office. Consequently, many physicians have several lab PC workstations and dedicated printers. This takes up valuable space and they are unhappy about that.

EDITOR: This means that doctors want a different solution.

MR. ALGER: Definitely. And there is another technology accelerating the obsolescence of proprietary lab test ordering/reporting systems. That is the Internet, which creates a common technology platform for delivering laboratory and other clinical services.

EDITOR: Your observation is that both of these market developments cause physicians to be unhappy with the current arrangement for ordering and reporting laboratory tests.

MR. ALGER: True. The question that every clinical laboratory must now ask is this: will my lab use information technology to be a differentiator or an enabler?

EDITOR: What you are suggesting is that the days of closed, proprietary lab systems is ending. The business strategy of using proprietary technology for differentiation is no longer effective. Instead, the lab's strategy must be to offer lab information services in a different manner.

MR. ALGER: I agree with that. Moreover, I see two distinct segments in the marketplace. Among commercial laboratories offering services nationally or regionally, cost is the big driver. Because of the low reimbursement for most high-volume tests, commercial laboratories are motivated to reduce costs wherever possible.

EDITOR: What is the second segment?

MR. ALGER: Integrated delivery networks (IDNs). As hospital-based systems, these IDNs have unique needs for laboratory services. For one thing, IDNs want to create an affinity, a bond, with physicians. IDNs need to give physicians

the tools to make it easier to practice medicine and participate in both clinical and operational integration with other providers in the IDN.

EDITOR: Are these two segments leading to different kinds of web-based information system solutions?

MR. ALGER: I believe so. For example, commercial labs will be emphasizing a web-based test ordering system which is closely designed to meet the needs of the phlebotomist or nurse. These individuals, drawing blood at the point of care, have the most interaction with the laboratory at a critical point in originating both the specimen and information required to properly complete testing, billing, and compliance.

EDITOR: That is logical. Commercial labs want to make it as easy as possible for anyone in the physician's office to originate a test requisition, send the specimen, and receive results. If the lab's ordering/reporting software is complicated and involved, that is a competitive disadvantage for the commercial laboratory. What will be different with systems for IDNs?

MR. ALGER: Their design will be structured around a different issue: if a lab test has been ordered, where does it go within the IDN? Lab information systems serving IDNs have to help the individual at the point of care determine where the specimen will go, which entity within the IDN will perform the test, and which parties should get test results.

EDITOR: Unlike the relationship between a commercial lab and a doctor's office, the IDN has more places where lab testing can occur. Point-of-care, near

patient, rapid response labs, physician office labs, and the hospital core lab are all capable of performing lab tests.

MR. ALGER: That is why lab test ordering/reporting solutions for an IDN are radically different. Web-based solutions for IDNs will have ordering rules and similar features that are not necessary in a commercial laboratory's web-based solution. Also, IDNs tend to emphasize their clinical relationship with the provider, which requires a different approach to the user interface.

EDITOR: Go beyond the fundamental differences of the web-based solutions necessary for commercial labs and IDNs. What market trends do you see that will shape how the Internet changes current clinical laboratory practices?

MR. ALGER: I see at least two important forces now at play. The first is real-time management of information by physicians. The second is integrating lab test results with therapeutics.

EDITOR: Please elaborate.

MR. ALGER: Physicians today are in a state of work and information overload. They are ready to embrace any lab information solution which addresses these problems. At one level, can the system automatically notify both patient and physician once lab test results become available? At the next level, can the system assist the doctor in making complex therapeutic decisions, based on those lab test results?

EDITOR: You are alluding to the value of e-commerce to deliver information in real time, both to patients and physicians. They can then act upon this information in a convenient manner.

MR. ALGER: Yes, but the Internet also gives the doctor another benefit. It promises to allow him to customize the way he looks at test results. Lab data repositories, accessed via the web, will permit the doctor to intuitively arrange data in new ways, while preserving the specific look that he prefers.

EDITOR: What about the second trend?

MR. ALGER: Matching diagnostics with therapeutics is inevitable. After all, 80% to 90% of all pharmacy prescriptions are based on laboratory test results.

EDITOR: But how rapidly will this occur?

MR. ALGER: Perhaps much faster than most laboratorians appreciate. PBMs (pharmacy benefits managers) are worth a study by lab executives and pathologists. PBMs are leaders in using certain data sets to create disease management services. There is plenty of "managed pharmacy" and virtually no "managed laboratory." I've often wondered why laboratories seem to disconnect themselves from disease management. Historically, they appear to focus on the "diagnostic moment" and then fade from further involvement in the patient's case.

EDITOR: Why should laboratorians pay attention to PBMs?

MR. ALGER: PBMs are knowledge managers. Inventory and product are not their focus. Their offer the service of advising how to dispense and manage drugs. I should point out that brick and mortar pharmacies thought there was only one way, their way, to deliver pharmaceutical services. PBMs proved them wrong. Clinical laboratories should take note. As brick and mortar institutions, they are vulnerable to knowledge managers who apply the PBM business model to diagnostic testing. I believe that laboratorians need to define themselves as knowledge managers, not asset and process managers.

EDITOR: That makes sense. Are there other ways that the Internet threatens the commercial laboratory industry as we know it today?

MR. ALGER: I believe so. The economics behind laboratory logistics seem to indicate that rapidly evolving point-of-care technology will erode the existing marketplace owned by commercial laboratories.

EDITOR: Are you referring to the costs of transporting specimens from the physicians offices to the huge regional laboratories operated by the blood brothers?

MR. ALGER: Yes. It is expensive to maintain an in-house courier system. Look at how the Internet retailers are using **Federal Express**, **UPS**, and **Airborne Express** to replace traditional distribution channels. Without question, the overnight package delivery companies will become major vendors to the clinical laboratory industry.

EDITOR: What other type of healthcare provider might be at risk in the new world of the Internet?

MR. ALGER: Hospitals have risk. Traditionally, hospitals have been the controlling entity at the local level. But will this "hospital control model" be relevant in a healthcare environment that is dispersed and emphasizing ambulatory care? What has allowed hospitals to maintain control is their ability to collect and manage data. But healthcare data is fungible, just like cash.

EDITOR: Meaning that virtually any entity beside the hospital can accept healthcare data and manage it.

MR. ALGER: Yes. The Internet levels the playing field and allows new types of competitors to enter the market and compete with hospitals for that data management function. I don't know if the hospital industry understands this yet.

EDITOR: What other insights would you offer our clients and readers?

MR. ALGER: I believe that healthcare is moving away from closed proprietary business models and towards a team, or project, business model.

EDITOR: Explain that please.

MR. ALGER: A good metaphor is the movie industry. During Hollywood's golden decades, studios handled every detail, from creative to production to distribution. That has all changed. Now, each movie is actually assembled from a

unique team of contributors. This team works until the movie is completed. Healthcare is heading in the same direction. Various components of the healthcare system, whether it's hospitals, insurers, physicians, or other provider types, will be assembled into project teams to tackle the project at hand.

EDITOR: What you are saying, then, is that the Internet becomes the equalizer. It allows information to flow cheaply among users. Within healthcare, the lowered cost of transmitting information will change the basis upon which laboratories and other providers compete.

MR. ALGER: Yes. It means that core competencies matter more than horizontal or vertical integration. Thus, many hospital institutions and commercial laboratory organizations that exist today may transform into very different organizations in coming years.

EDITOR: Rob, how quickly do you see web-based laboratory ordering/reporting products transforming the marketplace?

MR. ALGER: Swiftly. It will occur in months, not years. Advanced Health Technology already has operational contracts with more than 60 IDNs. Our challenge is to keep up with the demand for our web-based products.

EDITOR: Any final thoughts?

MR. ALGER: Only this. As fast as the Internet is revolutionizing every aspect of business, it is essential for every clinical laboratory to have its own plan of action. This technology revolution is backed by billions of dollars. For that reason, no laboratory administrator should feel safe in following a "wait and see" strategy. By the time he/she recognizes the right decision, the healthcare market will have probably already determined winners from losers.

TDR

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Healtheon Already Choice Of Public Lab Companies

Internet firm lands contracts to create links for SBCL, LabCorp, DIANON, and UroCor

CEO SUMMARY: *Probably no single individual has greater insight about the changes now occurring to web-based laboratory test ordering and results reporting than Healtheon Corporation's Nancy Ham. As Vice President of Connectivity & Institutional Services, Nancy is responsible for Healtheon's clinical laboratory product, called Healtheon DX. THE DARK REPORT recently traveled to Healtheon's corporate headquarters in Santa Clara, California to learn first-hand about Healtheon and its plans for the clinical laboratory industry. In this interview, Nancy Ham shares her perspectives on upcoming changes to the laboratory marketplace.*

EDITOR: In this interview, I would like for you to share with our clients and readers the global influences that you see driving the implementation of web-based laboratory test ordering and results reporting products. In a future interview, we can discuss the specific business strategies and products of **Healtheon Corporation**.

MS. HAM: There are really two market forces now encouraging the development of web-based products for clinical laboratory services. One market force is centered around the needs of physicians. The other market force is rooted in the economics of clinical laboratory operations.

EDITOR: When you refer to the needs of physicians, does that involve changes in their expectations about the kinds of laboratory services they want for their medical practice?

MS. HAM: Yes. Physicians are becoming Internet-savvy. The shift towards Internet usage is of seismic proportions. Physicians are adopting the Internet at a rate that goes off the scale. Upwards of 80% of all physicians now regularly log on from either

home or office. As they gain knowledge and sophistication about the world wide web, these physicians want their suppliers and vendors to offer web-based services.

EDITOR: You describe a process where physicians' expectations are increasing. Their personal knowledge of the Internet encourages them to raise the bar on the level of services they deem essential, including clinical lab services.

MS. HAM: That's certainly true. What is important for your readers to understand is that doctors will be requesting, even insisting, that their laboratory providers offer web-based laboratory services. Physician-initiated demand is unlike what laboratories have experienced in past years. We will talk more about that in a minute.

EDITOR: The other market force you mentioned involves the economics of clinical laboratory operations.

MS. HAM: Correct. Continual enhancements to Internet technology are now constantly changing the cost/benefit relationships available to clinical laboratories. We

believe these improved cost/benefit relationships now allow laboratories to "raise the bar" with the services they offer their client physicians.

EDITOR: Let's focus exclusively on laboratory information management and systems for a moment. How and why is the Internet changing today's lab information system technology?

MS. HAM: For one thing, the Internet represents a fundamentally new way for commercial laboratories to compete. It moves labs away from proprietary systems to an open platform.

EDITOR: Please explain.

MS. HAM: In the early 1990s, commercial laboratories introduced PC computer-based lab ordering/test reporting systems to physicians. The pitch to doctors was "use my lab and you get this wonderful ordering/reporting system which does things competing labs cannot."

EDITOR: So, for example, **SmithKline Beecham Clinical Laboratories** (SBCL) could go to a client of **Allied Clinical Labs** and say "our SCAN system can do things which you need, and which Allied's system can not."

MS. HAM: Basically yes. But in the second half of the 1990s, proprietary lab systems began to impede both clinical and operational integration. It is not uncommon today to see doctor's offices where two or three of these lab systems sit side-by-side taking up desk space.

EDITOR: Yes.

MS. HAM: The Internet simplifies this for both the doctor and the laboratory. There is no more DOS-based PC computer. Rather, the Internet connection allows the laboratory to deliver premium service to any physician client, regardless of volume.

EDITOR: Explain that, please.

MS. HAM: The Internet reduces a laboratory's cost to create and maintain a proprietary system. First, all the hardware provided to the physician by the

laboratory disappears. Dedicated telephone lines, PC stations, line printers, even faxes can be removed.

EDITOR: And second?

MS. HAM: The cost of developing and maintaining a proprietary lab information system is immense. As ongoing technology enhancements occur to software and hardware, costs of upgrading a closed, proprietary lab system go up.

EDITOR: Thus, at a lab the size of **Quest Diagnostics Incorporated** or **Laboratory Corporation of America**, the expense of maintaining their proprietary IT staff is burdensome.

MS. HAM: Yes, but more importantly, the cost to service an individual client is significant. That is why only high-volume clients have premium lab information services. Smaller doctors' offices generally get only a line printer or fax.

EDITOR: I think I get it. The national laboratories see web-based test ordering/reporting technology as a way to provide a high level of service to almost any physician client while reducing the total cost of providing electronic test ordering/reporting to individual clients.

MS. HAM: Basically correct, but there is more. Any lab which outsources this function also minimizes its exposure to laboratory compliance issues. For example, the lab ceases to provide dedicated telephone lines, PC workstations, printers, and faxes to the doctors' offices. Compliance issues related to those items are minimized if not eliminated.

EDITOR: May I can summarize at this point? First, you've noted that physician expectations will cause them to demand this type of service from clinical laboratories. Is that right?

MS. HAM: Certainly. Any laboratory which provides testing services to a doctor's office should expect its physician client to raise the issue of a web-based ordering/reporting capability.

EDITOR: Second, you've noted that commercial laboratories are motivated to switch their clients from a proprietary, PC-based solution to a web-based solution for the following reasons: 1) it lowers the cost of providing an individual client with ordering/reporting services; 2) it allows them to eliminate the cost of supporting their legacy systems and focus management priorities on other issues; 3) it reduces compliance risk, particularly involving lab-provided office equipment; and 4) it gives any commercial laboratory a cost-effective way to offer prime service to every client, regardless of the volume of specimens originated by that client.

MS. HAM: I would say that is a reasonable summary of the key motivations.

EDITOR: Another issue of high interest to our readers is the cost of handling lab information via the Internet. I understand the Healtheon business model is built upon a fee for individual transactions.

MS. HAM: Our goal is to replace the fixed, and expensive, overhead of these existing proprietary lab systems with a cost-effective capability. Depending on the type of transaction, that fee will vary. Medical claims, for example, range from 25¢ to 35¢ while clinical lab transactions average about 75¢, based on volume.

EDITOR: In your economic models, do these types of fee arrangements lower the cost of providing test ordering/reporting services to physician offices?

MS. HAM: Yes. In fact, currently these are fixed costs to the laboratory. Moving to a transaction-based arrangement converts these into variable costs. That is one reason why a web-based ordering/reporting system allows the laboratory to offer the same level of service to any physician client, regardless of the specimen volume originated by that client.

EDITOR: Given your view of the marketplace for clinical laboratory services,

what recommendations would you make to laboratory executives and pathologists?

MS. HAM: That is simple. Every clinical laboratory should have an Internet strategy. If its strategic business plan doesn't include an Internet strategy, the lab should immediately tear up that business plan and write a new one that does address the Internet.

EDITOR: Wow! That is a strong recommendation.

MS. HAM: Certainly, but the Internet does three wonderful things for every laboratory. First, it allows the lab to give premium service to every physician client, regardless of that client's actual test volume. Second, it improves the billing and collections process, yielding a sizable benefit to the laboratory. Third, it lowers the distribution cost of test ordering and test reporting. After all, teleprinters are now a 10- to 12-year old technology.

EDITOR: What about the competitive position of the lab in the marketplace?

MS. HAM: Your readers should understand how rapidly web-based technology is entering the physicians' marketplace. Early laboratory adopters will be grabbing market share at the expense of slower laboratories. All mid- to high-volume lab clients are at risk. The reason is simple. The biggest physician group practices are not choosing a web solution because it is Goodlab.com or Betterlab.com. They are choosing a solution which is compatible with their practice administration software and improves their ability to capture essential information and practice good medicine. That is why the conversion to web-based solutions is a customer-driven transformation, not lab-driven.

EDITOR: Thank you, Nancy, for your fascinating insights on this subject. You've given our readers plenty to think about!

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INTELLIGENCE

LATE & LATENT
Items too late to print,
too early to report

Well-run hospital laboratory outreach programs continue to thrive. Last week THE DARK REPORT was in Chicago to visit **Genesis Clinical Laboratory**. Located in Berwyn, Illinois, Genesis is a for-profit subsidiary of **McNeal Hospital**. During the last two years, Genesis President Eugene Heidt has kick-started the sales program and reports steady growth in outreach revenues along with strong doctor loyalty. Genesis Clinical Laboratory represents one more example that hospital outreach programs remain a viable way to strengthen hospital laboratory operations.

GOVERNMENT-MANDATED HEALTHCARE

Here's an illustration of how legislators can pass laws that distort the free market for healthcare. California Governor Gray Davis signed a law last month which will regulate nurse-to-patient ratios in the state's hospitals. According to the *1999 Dartmouth Atlas of Healthcare*, nurse staffing ratios in California hospitals are the 49th lowest in the nation, eclipsed only by Washington State. Ratios will be set by the Department of Health Services.

WHO'S GOING TO PAY FOR LIQUID PREP PAP SMEARS?

Remember that question? Critics of technology used to produce liquid prep Pap smears said the healthcare system would not bear the increased cost associated with this technology. For third quarter 1999, **Cytec Corporation**, maker of the ThinPrep® thin-layer Pap smear prep system, reported revenues of \$21.3 million, compared to \$12.3 million for third quarter, 1998. Multiply this by four, and Cytec has reached an annual revenue run rate of \$85 million. This certainly indicates that someone in the healthcare system is willing to pay for enhanced Pap smear technology.

ADD TO: PAPER SMEARS

Cytec's main competitor, **TriPath Imaging, Inc.** (formed from the merger of **AutoCyte, Inc.** and **NeoPath, Inc.**) is now in the marketplace pushing its thin-layer Pap smear technology. Although TriPath reports just \$4.8 million in sales for third quarter, FDA approval of its thin-layer technology was only forthcoming earlier this year. The sales effort is now

shifting into high gear. Total revenues generated by these two companies will provide a good benchmark as to whether the healthcare marketplace is truly embracing enhanced Pap smear technology.

IMPACTH, Inc. of New York City announced another strategic relationship. This time it's with **ILEX Oncology Services, Inc.**, the clinical trials division of **ILEX Oncology**. IMPACTH becomes the preferred provider for anatomic and molecular pathology services. The objective of both companies is to advance international drug development. ILEX has expertise in developing oncology drugs. IMPACTH brings diagnostic and prognostic tumor analysis to the relationship. This partnership demonstrates that diagnostic information has value, and that IMPACTH is willing to invest capital and management resources to convert that value into revenue.

*That's all the insider intelligence for this report.
Look for the next briefing on Monday, November 22, 1999*

MARK YOUR CALENDARS!

**EXECUTIVE
WAR COLLEGE DATES**

MAY 16-17, 2000

Fairmont Hotel, New Orleans
(Laboratory CEO Day—May 18, 2000)

UPCOMING...

- ***Exciting New Point-Of-Care Technology About to Hit Laboratory Marketplace.***
- ***First Reports From The Dark Report's Pathologist's Income Symposium.***
- ***Big Opportunities For Hospital Lab Outreach: Exploiting the Quest/SBCL Merger.***
- ***Quarterly Earnings Reports Indicate Improving Finances at Commercial Labs***